# *ASSESS*

***Assessment of the contribution of the TEN and other transport policy measures to the mid-term implementation of the White Paper on the European Transport Policy for 2010***

FINAL REPORT
**ANNEX IV EXTERNAL DEVELOPMENTS**

European Commission
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# Preface

This is ANNEX IV of the final report for *'Assessment of the contribution of the TEN and other transport policy measures to the mid-term implementation of the White Paper on the European Transport Policy for 2010'.*

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# Scope

**Scope of the ASSESS project**

The ASSESS study is about the ***"Assessment of the contribution of the TEN and other transport policy measures to the mid-term implementation of the White Paper on the European Transport Policy for 2010"***.

The European Commission's White Paper of 12.9.2001 "European transport policy for 2010: time to decide" aims to promote a sustainable transport policy. The White Paper proposes to achieve sustainability by gradually breaking the link between transport growth and economic growth, principally in three ways: changing the modal split in the long term, clearing infrastructure bottlenecks and placing safety and quality at the heart of the transport policy.

As foreseen, the White Paper on Transport undergoes in 2005 an overall ***assessment concerning the implementation of the measures it advocates and to check whether its targets*** - for example, on modal split or road safety - ***and objectives are being attained or whether adjustments are needed.***

ASSESS provides technical support to the Commission services for the above mid-term assessment of the White Paper.

The analysis accounts for the economic, social and environmental consequences of the proposed measures and their contribution to sustainable development objectives. It provides also a detailed analysis of those effects of enlargement likely to affect the structure and performance of the EU transport system.

The study takes a three pillar approach based on the use of analysis, indicators and models. National transport policies are reviewed for compatibility and coherence with the White Paper objectives. The models used allow a detailed analysis of the freight market, the passenger market and their infrastructure networks under a number of scenarios.

**Scope of this Annex**

Is the political, socio-economic and technological development in line with the conditions when the White Paper was drafted or are major differences observable which could lead to policy modifications or a re-valuation of objectives? This questions is answered in this annex by reviewing for each of the 12 transport policies of the white paper on transport which external developments are relevant and significant. It is aimed to introduce the most important external developments, without being exhaustive or definite. The review can be used to interpret observed transport developments and to contribute to a better understanding of future challenges.

# Index



# Tables



# Figures

# ANNEX IV Impact of external developments

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Since the transport sector is not only influenced by transport policy but also by autonomous changes in the transport sector and its surroundings, other than political developments on the EU level are analysed in this chapter. A specific question in relation to the analysis of these other developments is: Are the political, socio-economic and technological development in line with the conditions when the White Paper on European transport policy (White Paper) was drafted or are major differences observable which could either foster or hamper the achievement of the White Paper objectives? The review will focus on the 12 elements of the transport sector presented in the policy review framework and aim to relate socio-economic, technological and other developments to the 12 transport sector fields.

## IV.1. Action priority 1: shifting the balance between the modes of transport

### *IV.1.1. Improving quality in the road transport sector*

*General economic development*

According to the European Transport Report 2004 (ProgTrans, 2004), the general socio-economic development in Europe led to significant structural changes in the transport sector, e.g. a considerable growth in disposable income and time for leisure, the increasing horizontal and vertical division of labour, and structural changes of the national, European and global economies. These developments have strongly supported growth in road transport and at the same time rely on it as a highly flexible means of transportation. Thus, ProgTrans reports an increasing transport intensity and share of road transport for the past decade which is expected to continue, however at less speed for the period up to 2015. These trends were however acknowledged at the time the White Paper was written and no large abnormality has been observed the last five years, although the expectations on economic growth in the Euro zone have been lowered.

Increases in fuel prices in many Member States in recent yeas and in competition intensity at the same time have put tremendous pressure on carriers and transporters to reduce costs. E.g. the German Federal Agency for Freight Transport (Bundesamt für Güterverkehr, BAG) grades the current market situation in their regular market observation as strained, leading to structural changes and concentration on the freight transport markets. Although this clearly imposes additional incentives for exceeding rest and driving times as well as speed limits, no indication for increasing infringements could be found.

*Technological development*

IRU (2005) states that though the hardware for the introduction of the digital tachograph will be available in sufficient quantities according to the Commission's target, the finalisation of the software developments depends on the completion of the Conciliation process for the agreement on driving and rest time rules. As a consequence, a delay in the establishment of service and training networks is feared. At the same time, several manufacturers already offer the digital tachograph and advertise additional benefits for fleet and operation management. Therefore, general technological barriers cannot be stated.
The diversity of fuel prices between the Member States has led to the installation of larger tanks on trucks and a considerable increase of traffic for the purpose of tanking. This trend underlines the importance of a European policy of fuel price harmonisation.

*Transport Fuel Price*

Figure 1 and Figure 2 present trends in petrol and diesel fuel price fluctuations inclusive of all taxes for the EU15, adjusted for inflation. The average real price of petrol has remained relatively stable over the 1995-2004 period, increasing by roughly 1.2% from 749.64 Euros/1000L in 1995 to 758.84 Euros/1000L in 2004. By contrast, the variability in petrol prices, as measured by the standard deviation, more than doubled, rising from 80.54 in 1995 to 164.79 in 2004. A similar pattern is evident for diesel, the average price of which rose by 2.2% between 1995 and 2004 but whose variance increased by 72%. The high variances in price for both petrol and diesel are indicative of increasingly heterogeneous regimes of taxation on fuel consumption across Europe. In many countries the share of taxes and duties in total petrol prices has risen to well above 50% and in some countries even to approx. 70%. Since in many cases taxes are not related directly to production costs total petrol price is less dependent on crude oil prices than is often thought.

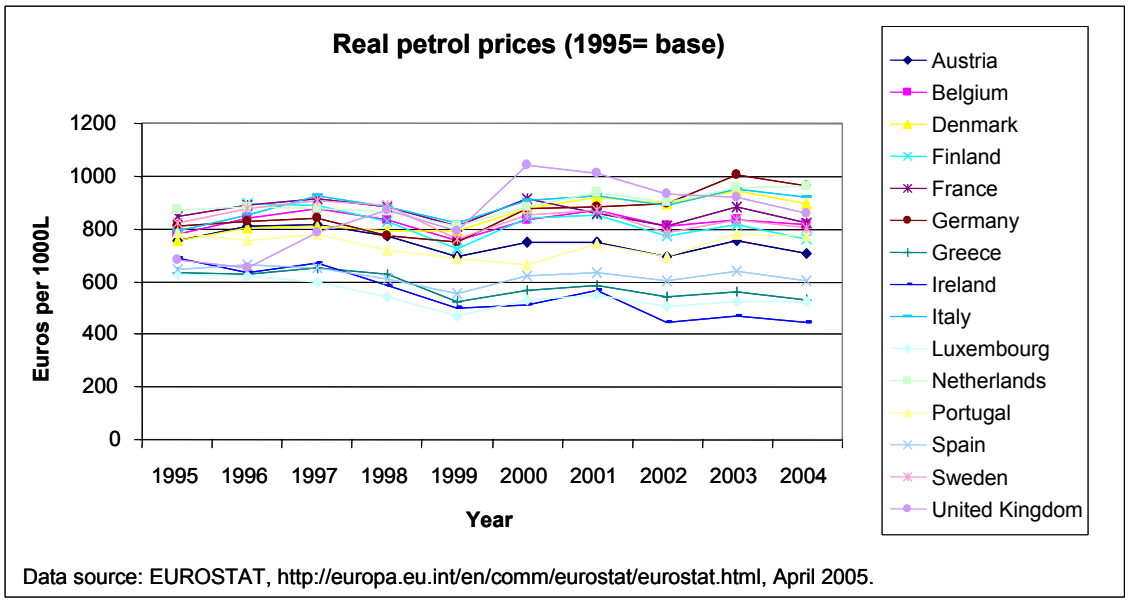



***Figure 1: Real petrol prices in EU 25***

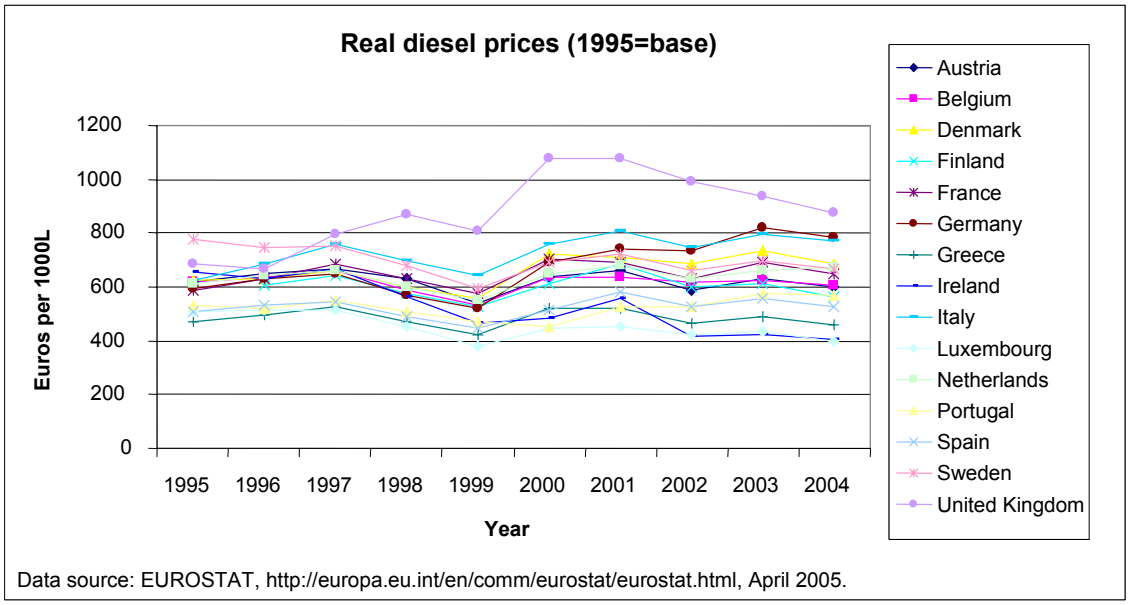



***Figure 2: Real diesel prices in EU 25***

Despite the relatively stability of real fuel prices over the past decades, there is increasing evidence that prices could rise dramatically in the coming years. Partly this increase has to do with the supply of oil and partly with tax increases due to environmental and climate policies. Although no consensus has been reached on the date when oil production will peak - defined as the point at which half of the total oil known to have existed has been consumed - most analysts concur that this will occur sometime between 2003 and 2020 (See Figure 3 and Figure 6). Given the already evident disparity between increased demand and declining discoveries, crude oil price increases in the future are highly likely, with profound implications for the transport sector and the economy at large.

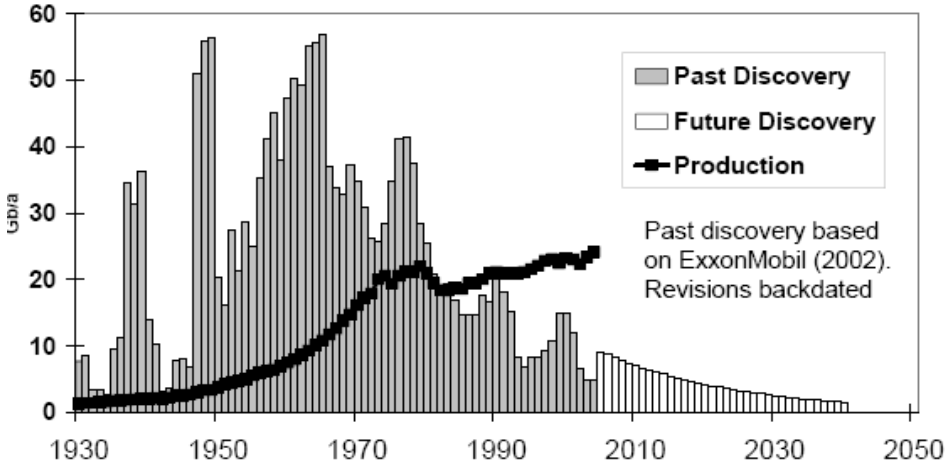



***Figure 3: Discovery of regular oil in billion barrels oil per year (Campbell, 2005)***

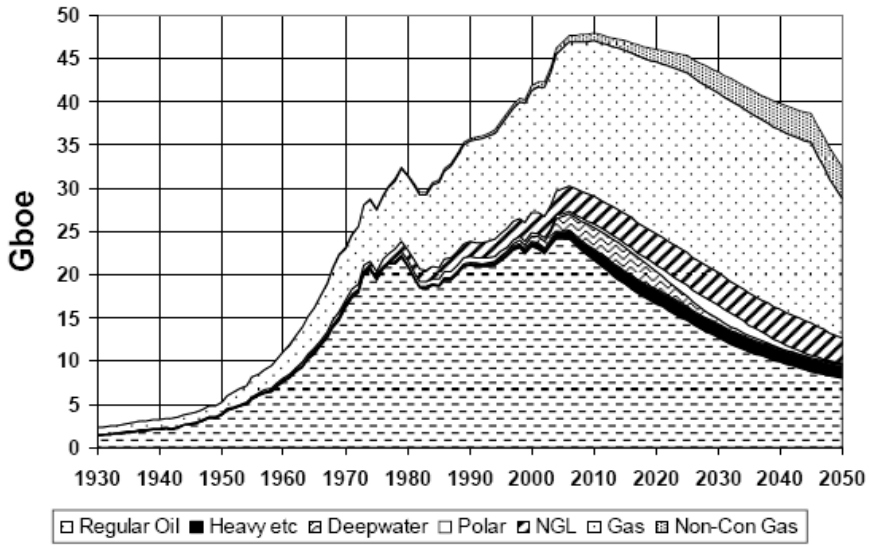



***Figure 4: Oil and gas depletion profiles in Billion barrels oil equivalents (Campbell, 2005)***

The shortage of traditional fuels will stimulate the development of renewable fuels. This opinion is becoming more and more mainstream. In Figure 5, for example, a long term scenario on total energy sources developed by Shell is shown. It refers to total energy demand not just for transport purposes. It shows that also the oil companies are expecting that a substantial share of future energy supply will come from non fossil sources. This trend helps to achieve the objectives of the EU in the area of sustainable transport.

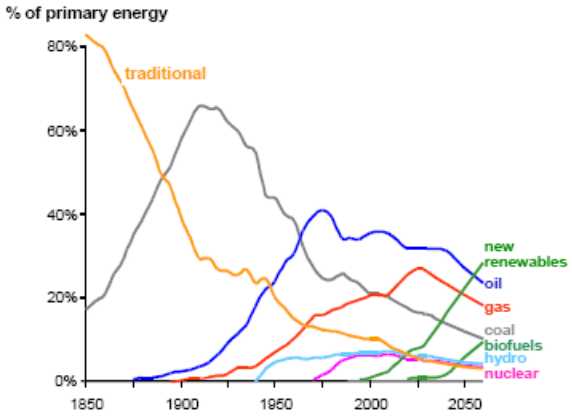



***Figure 5: Emerging market of new renewables energies (Shell, 2001)***

Based on a comprehensive review of elasticity studies, Goodwin, Dargay and Hanly (2004) and Hanly, Dargay and Goodwin (2002) reckon that if the real price of fuel rises by 10% and stays at that level, the long run (roughly 5 years) impacts on travel by passenger car would include:

- A reduction of about 3% in the volume of traffic, i.e. vehicle kilometres travelled
- A reduction of over 6% in the volume of fuel consumed, accompanied by a 4% increase in the efficiency fuel use
- A reduction of 2.5% in the total number of vehicles owned. However, the support for this latter figure is seen by the authors as rather weak.

For freight traffic on the road the picture is less clear. Much less work has been done on freight traffic and the empirical evidence on fuel price elasticities is relatively weak. Graham and Glaister(2002) conclude that different elasticities emerge for different commodity groups and trip length classes; even within these segments wide ranges of values have been found. It should be realised that the elasticities for passenger car travel reflect only partial effects of fuel prices, not including many other factors. Furthermore, even the long term elasticities refer to period in which no substantial technological changes in the transport system can take place. If petrol and diesel prices will remain for a longer period of time on a substantially high level it may be expected that fuel technology and power train systems of cars will change. So called alternative fuels(fuel cells, hydrogen etc) will most likely become technologically feasible and economical and the car park will adapt, thereby reducing the effects of petrol prices.

Ergo the development of fuel prices are likely to complement the EU policy to achieve a modal shift from road and air to rail and water.

### *IV.1.2. Revitalizing the railways*

In general, the impact of external developments on the development of the rail sector is difficult to distinguish from the impacts of the White Paper measures and their national implementation which dominate the development in this sector. However two potential developments that might hamper the achievement of the White Paper objectives are due to the general economic development and financial restrictions.

*General economic development*

The growth of the European economy to a large part is based on an increasing importance of services as compared with manufacturing. At the same time, the structure of the commodity types to be transported has changed from bulk goods towards high-valued commodities. Both these developments are largely dependent on highly flexible modes of transport in terms availability in time and space. For this reason, even assuming a better rail competitiveness and increasing lengths of haul, the European Transport Report 2004 (ProgTrans2004) expects only a slight improvement of the market position between 2010 and 2015 following a stabilisation of modal split in Western Europe in recent years. Developments in the passenger sector have been somewhat more favourable than for freight, with growth in high speed inter city traffic following major investments, and in suburban traffic with the growth of commuting into the major cities.

*Financial restrictions*

The White Paper gave priority status to a large number of railway projects generally belonging to the high speed network. In order to progress with funding for cross-border links and for crossing natural barriers such as the Alps, the Pyrenees and straits, the commission is earmarking over 60% of the budget for the TEN to railway projects and a large proportion of the Cohesion Fund benefiting Spain, Portugal, Ireland and Greece is also invested into rail. The main obstacle to carrying out these projects, apart from technical or environmental considerations, is obtaining capital investment. Traditionally funding for transport infrastructure has come from national public funding and so traditionally priority has been given to lines within Member States rather than schemes to improve the quality and capacity of cross border links. This situation has not improved, by contrast due to the weak economic development several Member States are struggling with meeting the stability criteria of the Maastricht treaty and even have to reduce public spending. In some circumstances public funding is supplemented by private funds in the form of public/private partnerships, e.g. the Oresund bridge/tunnel. Such schemes put almost the entire risk onto the State, but despite this the public/private partnership formula has found it difficult to attract investors. Thus, funding remains a big issue. The priority projects together require funding of the order of 220n euros and the

entire TEN-T network some 600b euros. The combination of national and European funding sources will not be adequate for this. Given the doubtful financial case for much of the investment, securing a significant private sector contribution will be difficult. A final source of funding might be cross funding from road, but the current Eurovignette directive ties charges for the use of roads to the cost of providing road infrastructure (at the time of writing an amendment has just been agreed in council which will allow up to a 25% surcharge in sensitive mountain regions to be applied to funding of other modes), but this still has to go to the parliament.

### *IV.1.3. Balancing air transport and environment*

The external developments since the release of the White Paper in 2001 have once again shown the dynamic nature of the air transport industry. Airlines, airports and air traffic providers had to revise their business models due to groundbreaking changes in how the industry operates. On the demand side, the terrorist attacks of September 11, 2001, the SARS crisis and the Gulf war had a strong negative effect on the ability to cover the high ratio of fixed costs in the air transport sector. On the supply side, the expansion of low cost carriers put further pressure on traditional hub carrier´s intra-European yields. In addition to the already difficult environment, fuel price hikes have raised operating costs, leaving the chances of survival for some carriers at stake.

*The impacts of September 11, SARS and the Gulf war on Air Transportation*

The September 11, 2001 terrorist attacks in the USA, the SARS crisis in Asia and the Gulf war lead to an unprecedented drop in air traffic. In addition to the difficult economic environment passengers' individual security concerns aggravated the drop in demand for private and business travel. Companies slashed travel budgets and often advised their employees to use economy instead of business class in order to improve the bottom line, which resulted in a drop in yields for the airlines. The economic downturn also had a negative impact on the cargo business, as trade in many industrialized nations temporarily dropped.

More or less, the events worked like a catalyst to reshape the airline industry. In order to survive, airlines had to reduce their high cost base built up during the times when the aviation market was still regulated. Older aircraft were retired, new deliveries deferred and employees were laid off in order to reduce costs. Severely impacted were mainly smaller European airlines that were formerly national flag carriers. Their business practices and structures still resembled in many instances the times when they were fully protected. In order to survive the radical changes in demand patterns they were forced to implement painful restructuring programs to enhance efficiency. Although the economic viability of these operations due to the limited size of their home markets is questionable, they continued to operate in some instances with ongoing losses. The most successful reorganization attempts so far were those, where traditional carriers changed their business model radically and adopted the concepts of low cost carriers.

Another important impact of the events of September 11, 2001 is a boost in attention for security issues. Security in fact has become one of the dominating concerns in the aviation industry worldwide. The heightened security standards on the one hand made flying more secure, but on the other hand generated higher costs, increased total travel times, complicated operating procedures and finally caused a lot of inconveniences for passengers. The Commission has been working on these issues intensively and the legislative bodies in the EU have acted with several regulations and directives regarding this matter.

*The Development of Low Cost Carriers*

Low cost carriers (LCC) have continued to exert enormous pressure on incumbent carriers, forcing them to offer lower fares and increase efficiency. The LCC's lean business models enabled them to earn profits even during the difficult circumstances after 2001 and continue to grow at unprecedented rates.
But the low cost carrier market was not only characterized by the growth of larger players, but also by several market entrances and exits. These developments show the low barrier to enter the Community's aviation market following the liberalisation of air transport, but also the high level of competition within the air transport sector resulting from it.

LCC evade hub airports and sometimes use secondary airports to connect remote regions with European business centres at comparably low fares, creating more travel and business opportunities. Although this is perceived to stimulate the economy and consumer welfare, environmental and competitive aspects have to be addressed, too. Subsidies paid by airport operators and public authorities are of special concern when it comes to the question of fair competition within and between the modes.

*The Development of the Airport Industry*

While the traffic downturn in and after 2001 has temporarily eased the problem of congestion and delays at major European airports, with increasing traffic in 2004 and 2005 the same nuisances have returned. Many airport expansion projects planned before 2001 could not be realized due to acceptance problems and legal disputes.

The growth of LCC also has impacts on how airports operate. LCC have a different demand pattern concerning airport services than traditional hub carriers making it necessary for the airports concerned to adapt, e.g. with the construction of low cost terminals and increasing operational efficiency. As LCC often demand start-up subsidies by regional airports, several of these airports had been unprofitable in the past and had the need for public finance. This raises the question if the operation of airports for the almost exclusive use of LCC falls in the field of the provision of public services or if subsidies by public authorities for airports impede competition.

*The Development of Mergers and Acquisitions*

Although airlines have shaped globalisation with their passenger and cargo services enhancing the accessibility of formerly remote areas of the planet, they themselves have widely abstained from the global trends like mergers and acquisitions that can be observed in other sectors. The in comparison to other sectors antiquated looking rules that connect traffic rights to the nationality of air carriers have effectively obstructed far-reaching changes in the industry structure on a European or even global level.

With the decision of the Court of Justice on 5th November 2002 and the Commission's notion of taking a European Community nationality for air carriers to an external dimension, new possibilities will come up on the horizon.

Although still today complicated legal structures are needed in the case of cross-border airline mergers to retain traffic rights with third countries, a shift towards mergers and acquisitions can be observed. Further developments in this field are highly dependent on the results of the negotiations with third countries concerning air service agreements. Especially the termination of ownership provisions could lead to a higher degree of cross-border merger activities. If this will lead to a weakening of the alliances however must be questioned.

## *IV.1.4. Promoting transport by sea and inland waterway*

*Economic development*

A main driver for sea transport is the development of external trade (import and export). In the European Union, the external trade has grown much more rapidly than GDP: in EU 15 the increase of external trade amounted to 53% between 1995 and 2003 versus 18% growth of GDP. A similar situation can be observed in the 10 new Member State, whose external trade between 1995 and 2003 grew by 113%, while GDP grew by 33% (ProgTrans, 2004). This strong increase of external trade had a positive impact on all freight transport movements, however in particular on sea transport. On the one hand, the external trade outside the European Union to large part depends on sea transport. On the other hand, trade between the Member States as well as feeder transport movements are carried out my means of short sea shipping between the large seaports. It is expected that this development will continue within the next decade. According to the European Transport Report 2004, even the structural change towards a more service oriented economy will not greatly affect this expectation.

An increasing share of high valued goods in international trade is transported by means of container loads, resulting in a strong increase of containerised transport. The growth of container handling in worldwide seaports between 2000 and 2001 alone amounted to 10%. This lead to a gain in market shares for inland waterway shipping besides the transport of bulk goods, in particular along the Rhine corridor (Internat. Verkehrswesen 7/2003, p. 359). According to a study by ISL on behalf of HCI (2003), the worldwide container handling in seaports will double within the next decade. In the container ships market, the segment with the largest expected growth is ships above 4800 TEUs. Additional gains in sea and inland waterway shipping respectively are expected due to the increased trade between the former and new Member States along the Baltic Sea and on the Danube.

Overall, the economic development has been favourable for the development of sea and inland waterway shipping in Europe. Expectations are that this development will continue. However, inter-European transport is still mainly carried out by road.

*Seaport, Stevedoring and Carriers Industry*

Three major developments can be observed in the shipping and stevedoring industry leading to a strong concentration and oligopolic structures: increased private sector development, expansion of existing private sector operators into overseas ventures, and merger & acquisition activities (Midoro et al., 2004). Currently, most of the top twenty largest carriers are associated to one of three alliances. The development of the seaports shows a growing degree of specialisation, e.g. for specific goods or mega-vessels. Besides, the involvement of global ocean carriers in port terminal investments and operation leads is growing. In some key areas, a shortage of terminal capacity can presently be observed. This could lead to even greater efforts for port facilities. This restructuring of the market had significant influence on the maritime transport by the establishment of a network of preferred seaports (hubs, gateway ports) and corresponding feeder transports. It is expected that the globalisation and concentration of this industry will continue, accompanied by global carriers heavily investing into mega-terminals at selected ports.

*Technological Development of Vessels*

Under the pressure of dramatic fluctuations of freight rates, the large carriers explored economies of scale and invested in increasingly growing vessel sizes. In the meantime, container ships with a capacity of more

than 8000 TEU are operating, ship sizes above 12,000 TEU are being planned. The Chinese States Carrier Cosco has already ordered four ships with a capacity of more than 10,000 TEU which are planned to go in operation in 2008 (Internationales Verkehrswesen, 04/2005, p. 130). However, this development leads to increases in port time, number of transhipments, and stevedoring costs. The largest vessels are restricted to a limited number of port terminals. This has lead to a concentration on the ports of the "Northern Range" and subsequent feeder traffic in short sea shipping.

In inland waterway shipping, some new technological developments are under way. They aim at greater flexibility, a higher independence of weather conditions and lower transport costs. For example, the catamaran "Futura Carrier" and combined bulk and container ships are under development. These are capable of strengthening the inland waterway sector, the regarded time horizon is too short to expect high impacts.

*Safety and security*

The oil tanker accidents with the Erika (dec 1999) and Prestige (nov 2002) have given safety aspects of maritime transport priority. This already seen in the White Paper on transport and on the measures that have been initiated in the last five years (for example the development of the European maritime safety agency).

The same can be said on the issue of security. Water transport is particularly affected by  In order to prevent future terrorist attacks, the United States has launched the Container Security Initiative (CSI). The aim is to install safety locks and electronic tag-transport-systems on overseas containers in order to enable a full monitoring of the handling and detection of potential violations. Besides the technological development of the monitoring system, an operating concept is under discussion that takes operational aspects and current initiatives such as the introduction of the ISPS code into account. The additional time and cost that are imposed could have a negative impact on maritime transport in general.

### *IV.1.5. Turning intermodality into reality*

The external developments that are reported in the previous sections on especially rail and water  but also air and road do also impact on policies to improve intermodality, such as the macro polo initiative of the European Commission.

There are three trends that are most significant with regard to intermodality

1. The observed emergence of low cost carriers in the air industry is hampering the modal shift from air to rail passenger transport. This does also affect the usage of TEN infrastructure like the Channel tunnel between France and England.
2. The growth of intercontinental transport and the development of larger container ships does stimulate the use of sea and inland waterway transport and consequently intermodality.
3. The growing importance and requirements in the area of security is especially putting demands on water transport transport. It remains to be seen to what extent this endangers the competition between water transport with the other transport modes. Extra transhipments of cargo from one mode to another can result in extra security costs, especially in terms of information supply. On the other there are also signs that security requirements will increase efficiency in supply chain management. The benefits of most security measures  may be higher than the costs.

# IV.2. Action priority 2: Eliminating bottlenecks

## *IV.2.1. Building the Trans-European transport network*

The external developments affecting the transport modes are also relevant for the TENs. This is especially valid for the external developments that impact upon rail transport since a large part of the TENs are rail infrastructure projects.

*Financial restrictions*

Due to the weak economic development several Member States are struggling with meeting the stability criteria of the Maastricht treaty and had to reduce public spending, among others in infrastructure. This endangers the objective of the EU to eliminate bottlenecks on cross-border links and on natural barriers such as the Alps, the Pyrenees and straits (see for more detail the section of revitalizing rail transport). This development can affect supply side measures such as the development of a priority freight rail network at the EU level (see for more detail the section of revitalizing rail transport).

*Changing demography and spatial distribution*

The total population of the EU25 is expected to increase from 456.8 million in 2004 to 470.1 million in 2025, accounted for mainly by net migration, after which a fall is projected. The largest falls are projected in the new member states, with rates ranging between -19.2% in Latvia to -11.8% in Poland. Increases over the period until 2050 are expected in Luxembourg (42.3%), Ireland (36%), Cyprus (33.5%) and Malta (27.1%). All else equal, the overall reductions in population can be expected to reduce pressure on transport infrastructure. Moreover, the increase in the share of the elderly will most likely lead to an increase in leisure and social travel which will to a larger extent take place off-peak. Especially the linkages between the old and new member states may be affected. However, these impacts are likely to occur in the long term, thus a significant impact on the transport sector development until 2010 is not expected. Until 2015, a further increase in passenger mobility in Europe is expected, however at much lower growth rates than during the last 15 years.

*Increasing pressure/globalisation*

Growth in freight lengths of haul and globalisation of the freight market are imposing ever-increasing pressure, making more difficult the objective of the EU to eliminate bottlenecks on cross-border links and on natural barriers such as the Alps, the Pyrenees and straits. The volume of imports and exports and exports for both the EU10 and EU15 has increased dramatically over the past decade, with the addition of the New Member States likely to stimulate continued increases in the near future. Between 1995 and 2004 the imports of the EU15 increased by 67% while those of the EU10 increased by 134% (see Figure 6). The corresponding figures for exports are 67% and 144%, respectively.

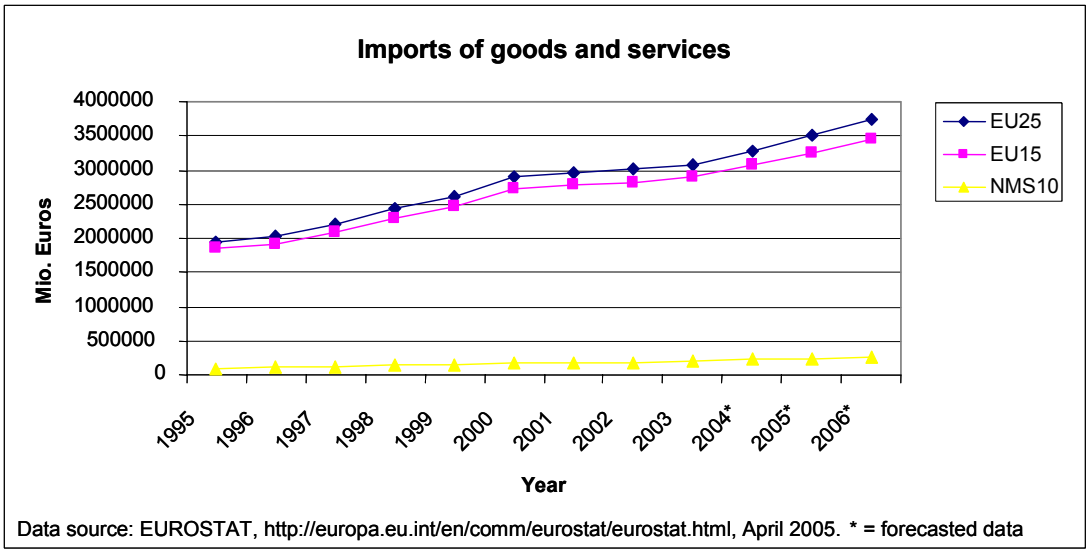



***Figure 6: Imports of goods and services***

These developments are likely to exert increased pressure on the European transportation infrastructure network. In the European Transport Report 2004, it is expected that freight transport will rise faster that GDP, by 32% from today till 2015 as a consequence of the "economic forces supporting the EU progress towards a Single Market" (ProgTrans, 2004, p. 3).

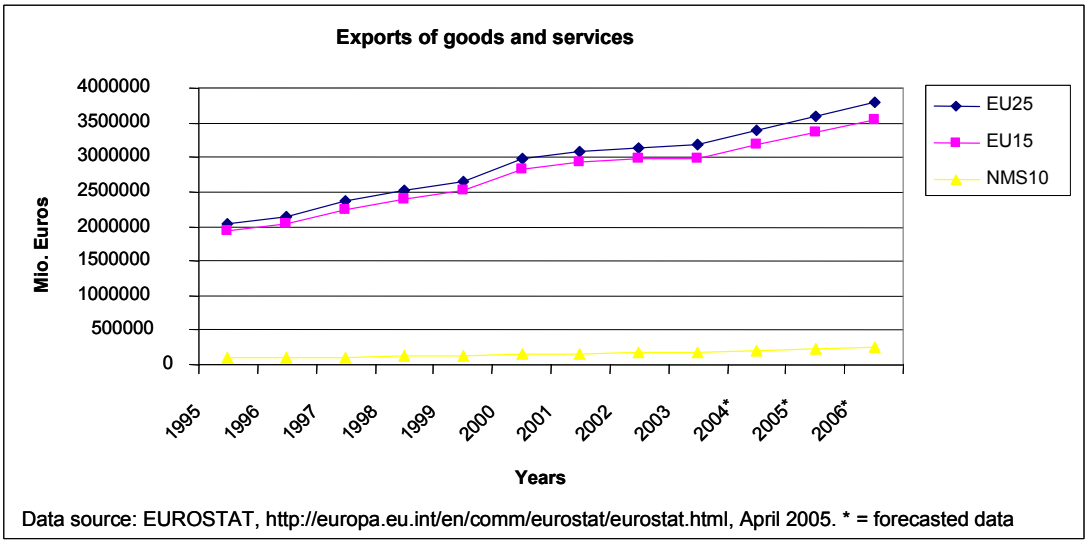



***Figure 7: Exports of goods and services***

Besides the growth of import and export, the European economy is also changing towards a more service based economy and the transport of commodities is changing towards the transport of more high-valued commodities. Both these developments stimulate the usage of highly flexible modes of transport in terms availability in time and space. Rail transport has difficulties to deliver such flexibility. On the other hands increasing lengths of haul offer better opportunities for rail in the unit load market. This kind of impacts of globalisation on the market opportunities of the different transport modes are likely to have a significant impact on the usage of TEN infrastructure, although the direction of the impact is mixed.

*Increasing pressure/Tourism*

Also growth trends in international passenger transport are making it more difficult the objective of the EU to eliminate bottlenecks on cross-border links and on natural barriers such as the Alps, the Pyrenees and straits. As far as passenger travel is concerned much attention is traditionally being paid to business travel as an important travel market to be served. However, it should be realised that tourism mobility is one of the dominant cross-border, long distance travel markets. In a recent EU project ARTIST (Agenda for Research on Tourism by Integration of Statistics and Strategies for Transport) which was carried out during 1999 – 2000, the importance, nature and research and policy implications of tourism mobility were investigated. See Manente(2000) for an overview of the main results.

It is concluded that in total cross-border passenger mobility tourism and leisure related travel is dominant with an estimated share of about 75%! The main modes used are the car and the plane. In fact available data suggest that investments in airports and long-distance rail connections largely serve tourism and leisure travel. By the way, due to the fact that the main emphasis in transport planning has been on business and work related travel, relatively little is known of this travel segment. This applies in particular to data and models.

The observed trend is that tourism and leisure travel is increasing rapidly, both within the EU as well as from and to the EU. Furthermore, the trend within this segment is towards more trips for shorter breaks and with more diversified destinations. It was summarised as "more often, more diversified and more cultural" (Potier, 2002)

This affects the economic feasibility of planned expansions of roads but in particular of airports and long distance railways significantly.

*Growth of GDP and car ownership in the new member states*

In low income countries, the effect of increased GDP on the number of vehicles is expected to be positive as increases in income spur the purchase of durable goods such as automobiles. Between 1995 and 2004, aggregate GDP growth in these countries has been strong, averaging 4.3% per year, however at a much lower per capita level. By contrast, growth in the EU15 has been fairly stagnant at around 2.1% per year. It must be mentioned that, as income increases further, the strength of this effect is expected to taper off, resulting in a non-linear or inverted-U curve that has been confirmed by some empirical studies of automobile ownership (e.g. Ingram and Liu, 2000). Nevertheless, it is expected that the current growth of car ownership will remain in the coming decade. This growing car ownership rate in the new members states might conflict with the priority given in the TENs to rail infrastructure.

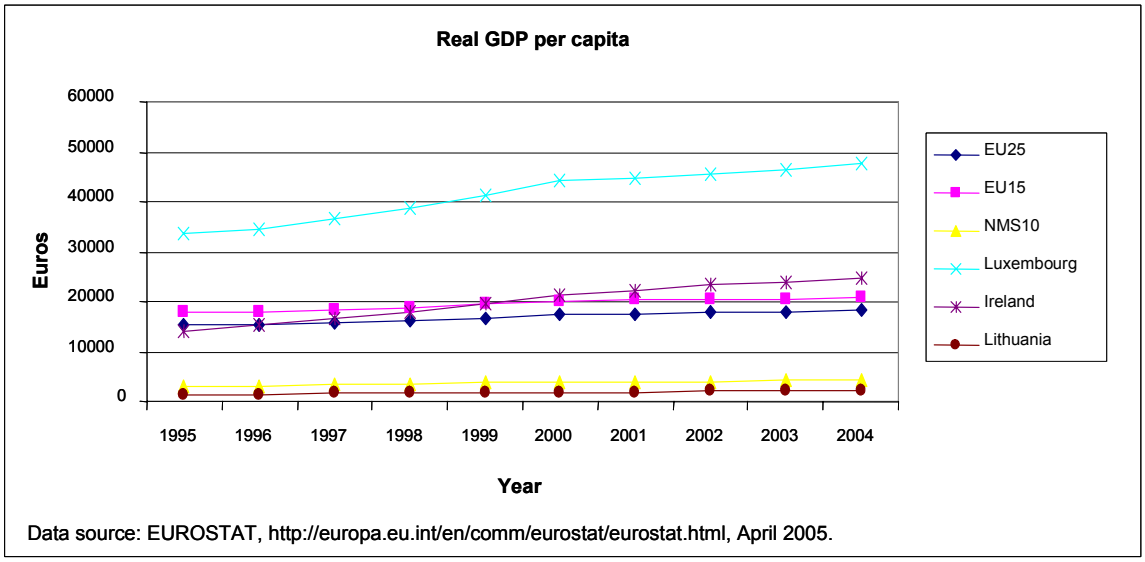



***Figure 8: Real GDP per capita in the European Union and selected countries***

# IV.3. Action priority 3: Placing users at the heart of transport policy

## *IV.3.1. Improving road safety*

*Demography*

The ageing of the population of many countries may have an impact on transport safety. Schoon (2005) found that the risk of being involved in a traffic incident increases after the age of 75. Figure 9 shows the age distribution of the population between 1995 and 2001.

Overall, this distribution as well as the total number of inhabitants in the EU has remained fairly stable over the time segment. There is, however, some evidence of a slight decrease in the in the percentage of the population under 24, which appears to be primarily attributed to a decrease in this segment in the new member states, along with a slight increase in the segment over 65. According to recent projections from Eurostat, this pattern is expected to become more pronounced in the future. Between 2004 and 2050, the proportion of elderly people (aged 65 and more) is expected to increase from 16.4% in 2004 to 29.9%, while the share of the working age population (between 15 and 64) is expected to decrease from 67.2%.

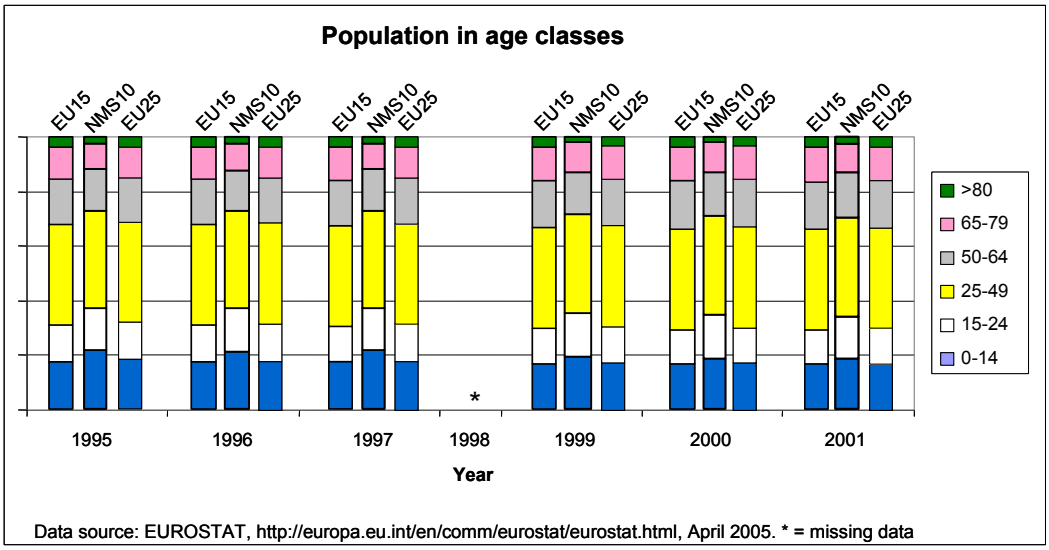



***Figure 9: Population in age classes in the EU***

*Technology*

The market introduction of larger passenger cars like the so-called special Utility Vehicles (SUVs) might result in more and more serious traffic accidents. This is impact is however still under investigation both at the national level (for example in the Netherlands) and at the EU level.

On the other hand, safety performance of cars has become a key element of buyers purchasing decision. The European Commission has encouraged the introduction of safer cars by promoting the European New Car Assessment Programme (EuroNCAP). Passenger cars complying with EU Directives on frontal respectively side impact meet in the EuroNCAP the two stars rating. Such cars, however, are nowadays lagging far behind the safest cars on the market which have five stars. The assessment of EuroNCAP is based on a frontal, side and a pole crash test as well as on a series of tests to replicate accidents involving pedestrians. This has increased the safety for car passengers considerably leading to a further decline in the number of persons killed on the road. Regarding passive safety for pedestrians and cyclists, first steps have been taken. For the near future, it can be expected that the implementation of intelligent driver assistance systems will further support the safety in the road sector, both for passengers as well as non-motorised transport participants.

## *IV.3.2. Effective charging for transport*

*Technological development*

In order to promote effective charging of infrastructure use, the White Paper encourages the implementation of pricing schemes that take into account the intensity of the infrastructure utilization and hence vary e.g. between infrastructure category, time of day, and type of vehicles. In order to keep investments on the side of the infrastructure low, some expectations are being set in the application of electronic road-charging systems. To this end, several different systems have been tested in research projects or are already applied in praxis. With respect to motorway tolls, the most ambitious effort to this end has been undertaken in Germany. Although there has been considerable delay in the introduction of the motorway tolls for heavy trucks due to technological difficulties, a system with reduced functions is now in place. Expectations are that the system will be operating with its full functionality by the beginning of 2006. Less complex technological systems are already in place in other countries, e.g. Austria. Research activities (e.g.

in the PROGR€SS project for Copenhagen) and the successful introduction of the city toll in London demonstrate the feasibility of new technologies for introducing effective charging also on the urban level. Therefore, from the technological development, no significant obstacles to the introduction of effective charging schemes can be seen.

*Pressure on public budgets*

The growing pressure on the public budgets not only on the national but also on the municipal level fosters the necessity for implementing effective charging schemes in order to gain revenues for the improvement of the transport networks and services. However, at the same time this could imply obstacles with respect to the harmonisation of taxes due to a reluctance to abandon potential sources of revenues. This is already seen in the rail sector which is characterised by an enormous range of structures and levels of access charges even within the constraints imposed by Directive 2001/14. High charges in central and Eastern Europe, particularly amongst new member states, are a significant problem for the development of international rail freight. Changes go slow since the charges deliver important revenues for governments. Since there has been little development with regard to pricing on other modes, the imbalance between access charges for different transport modes remains..

### *IV.3.3. Recognizing the rights and obligations of users*

*Economic pressure*

The weak economic development may affect the willingness at both public and private stakeholders to initiate policies that improve the rights and obligations of users. Often such measures do cost at the short term while the benefits are indirect or long term. It may therefore be expected that the resistance will grow to European regulations in this area that are too costly.

*Security requirements*

There has been a shift in focus from rights towards obligations of users due to the increasing requirements in the area of insecurity. This trend is likely to continue in the coming years. It is however not yet clear whether or not security obligations do hamper or stimulate the White Paper policy on recognizing the rights and obligations of users in the area of transport. In most cases there are no relationships.

### *IV.3.4. Developing high-quality urban transport*

*Socio-economic development*

The general trends in the development of urban areas in the European urban areas continue as they are a continuing suburbanisation (with some exceptions), a weakening in urban density in large and small towns and growing densities in mid-size towns, and an increasing motorization in most European areas. As described above, effects of the demographic change, in particular the increasing share of the elderly are likely to occur in the long term. Until 2015, a further increase in passenger mobility in Europe is expected, however at much lower growth rates than during the last 15 years. There are first signs of stabilisation of motorised trip lengths and rates in some of the old Member States (e.g. Germany, Chlond, Zumkeller 2002). This development has to be taken into account in the planning and design of future infrastructures and services. Due to the ongoing economic growth and disposable incomes, it is likely that the development in the new Member States will show further increasing shares of private motorized transport.

*Improvements of Urban Public Transport Systems*

The European Transport Report 2004 (ProgTrans, 2004) observes a relatively strong increase in urban rail due to better services and modernised rail systems in agglomeration areas such as metro systems in Athens, Madrid, Lisbon and new tram systems in some French and English cities. This development is compliant with the White Paper measures.

*Financial Restrictions*

The deterioration of the financial situation of the municipalities in most Member states has made the financing and provision of urban infrastructures and provision of public transport from public budgets increasingly difficult. E.g. in Germany, the share of investments in total municipal spending has dropped from 23,2 % (33,1 Mrd. €) in 1992 to 15,8 % (23,6 Mrd. €) in 2002, meaning a reduction of investments by 30% between 1992 and 2002 (Döring, 2002). Against this background, the local authorities are recognising the necessity for efficient funding schemes and the promotion of competition in public investments and services. To this end, new and alternative means of financing infrastructure developments, traffic management and public transport services are being applied.

*Technological development*

The rapid dissemination of new technologies for intelligent transport systems supports the introduction of flexible and user friendly information systems and charging schemes for road traffic as well public transport services (e.g. ticketing by mobile phones etc.). On the one hand, this development leads to an improvement of quality and increasing attractiveness of services in the public transport sector. On the other hand, it undermines the necessity of co-operation between regional service providers for a harmonisation of standards to provide for seamless technological applications across regions.

A rapid technological development can also be observed in the application of intelligent traffic management services for urban areas. This is e.g. demonstrated in the foundation and technological enhancement of traffic management centres in several cities (e.g. London, Delft, Berlin) and the growing number of privately operated traffic information services. Again, a challenge lies in the harmonisation of technological standards in order to provide for cross-regional services.

The ongoing growth in freight transport and the increasing importance of E-commerce and E-business is likely to impact urban commercial transport. A trend towards an increasing use of light duty vehicles, problems of unloading / stopping and a growing number of trips due to absence of customers at time of delivery can already be observed. Therefore, future urban transport planning will have to direct particular attention to the issue of commercial transport.

## *IV.3.5. Enabling clean, efficient transport*

*Car Market Developments*

There is a steady growth in the range of different car types in Europe. The variety in car body forms is growing to a great extent and there is an increasingly smooth transition between the car types. This development has taken place due to the fact that there is a general demand for different car types that better fit the consumer needs. In this context, factors such as functionality or driving pleasure are important criteria that influence the consumer's car purchase decision. Generally, well equipped cars are demanded. In this

respect, safety and comfort are two attributes that have a particularly high priority. As published surveys have demonstrated, consumers in Europe are looking for lifestyle-oriented products and premium brands. To a large extend, this leads to an increase in weight and engine power of cars, contrasting the objective of more energy efficient cars. At the same time, the diesel share of cars has grown significantly due to an improved range of models by the manufacturers and supported by fuel price increases. This leads, on the one hand, to a reduction of the average fuel consumption of new cars, on the other hand to increased exhaust emissions of fine particles, as particle reduction measures are not yet widely applied. However, for the near future, a significant further extension of the diesel share is not expected.

*Technological Developments*

Further improvements of the energy efficiency of new passenger cars can be expected due to the self-commitment by ACEA / JAMA / KAMA. As described in the review of other EU policies, it is expected that the 2008 goal of 140 g $CO_2$/km will be achieved although the initial rapid progress towards the achievement of the interim target has slowed down and the necessary efficiency improvements are difficult to achieve. Currently, further improvements are expected from hybrid solutions. The technological development for alternative fuel / power train systems has not yet reached full market ripeness and will therefore not play a major role in the car market by 2010 except for 'island' solutions for small fleets or for urban transport. For a successful market implementation on the European level it will be necessary to solve the provision of fuel provision and technological implementation in a cross-border transportation context.

# IV.4. Action priority 4: Managing the effects of globalization

## *IV.4.1. Managing the effects of globalization*

*Continuing globalisation process*

The opening of the markets has fostered the global interrelation of market activities, especially the linkages with Asian countries such as China are growing. The volume of imports and exports and exports for both the EU10 and EU15 has increased dramatically over the past decade, with the addition of the New Member States likely to stimulate continued increases in the near future. Between 1995 and 2004 the imports of the EU15 increased by 67% while those of the EU10 increased by 134%. The corresponding figures for exports are 67% and 144%, respectively. See also the import and export data presented in the section of external developments affecting the TENs.
The growing import and export to other parts of the world does underline the importance of the EU policy on managing the effects of transport globalisation. The assumptions on which this policy is based are of increasing importance.

*Changing international relationships*

After the terrorist attacks in the USA, Spain, Turkey and other countries and the Gulf war, security issues are high on the international political agenda. This has lead to a shift of focus in international relations and a shift of alliances between countries. International organisations, also in the area of transport, have shifted their efforts on managing the newly required security issues. This does not hampers the objective

of the White Paper to increase the EU presence in Global forums. It might even strengthen the role of supranational bodies like the EU since the importance of supranational co-ordination has grown..

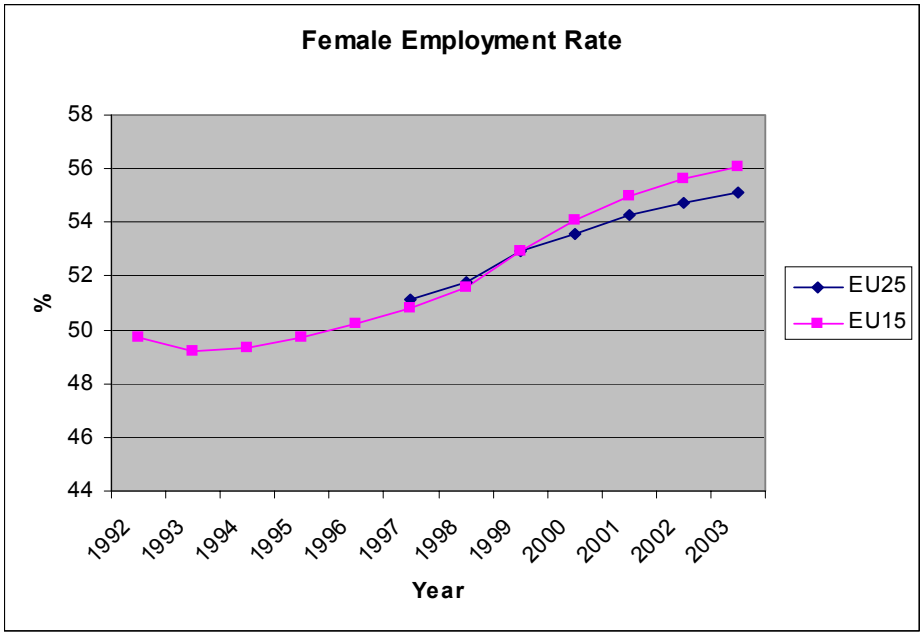
*Disappointing employment growth*

Two goals regarding the (un)employments rates have been set by the EU: 70% total employment rate and 60% female employment rate of the age group 15 -64 in 2010. Implicit is the substantial reduction of the unemployment. Recent statistics show that many of the EU countries are not on track in reaching these objectives. Especially in the current stagnant economies of many countries it will prove to be difficult to increase the employment levels in the next years unless more drastic economic reforms will actually take place. Of course, the situation is very different between the new member states and in particular many of the larger old member states. In the new member states economic transformation is taking place since their entry in the EU. Quite different are the size of the economy and the nature of the economic problems in e.g. Germany, France and Italy. If the economic growth remains low, it may effect the priority setting of the EU and the White Paper on transport. Member states will emphasize economic goals like optimal facilitating transport demand and the attention for environmental and social goals, like the modal shift objectives of the White Paper, will be lower. Note that also a revival of the economy has its impacts on the White Paper policies. If income levels rise and employment increase than this will lead to additional growth in passenger mobility and freight transport, making it more difficult to reduce the number of bottlenecks at the European network.

*A changing workforce*

It is foreseen that in the EU the population is aging strongly in the next decades and that total population will shrink. This will have tremendous social and economic effects. A possible solution in the form of an active immigration population is difficult to realise in the current turbulent political situation. It is obvious that in order to maintain or restore economic growth and to guarantee the viability of essential social systems active policies are being or will be implemented to increase the employment rate of the older persons (e.g. 55+). A first step is the reduction or abolishment of collective subsidised early retirement schemes. A second step on the what longer run may be the increase of the old age retirement age which is nowadays in many countries 65. It is to be expected that this latter step will only be taken if the increase of employment rate of the younger age brackets will not increase sufficiently.

The increasing participation rate of females in the labour force is significant to a range of themes that have relevance for transport policy, including the provision of public transportation and highway infrastructure. As seen from Figure 10, this rate has been increasing steadily over the past decade in the EU15, rising from almost 50% in 1993 to 56% in 2003. When additionally considering the 10 New Member States, a continuous increase is also observable, reaching 55% in 2003. Despite these gains, the participation rate is still slightly below the 57% target set by the Stockholm European Council (2001) for the Union as a whole.



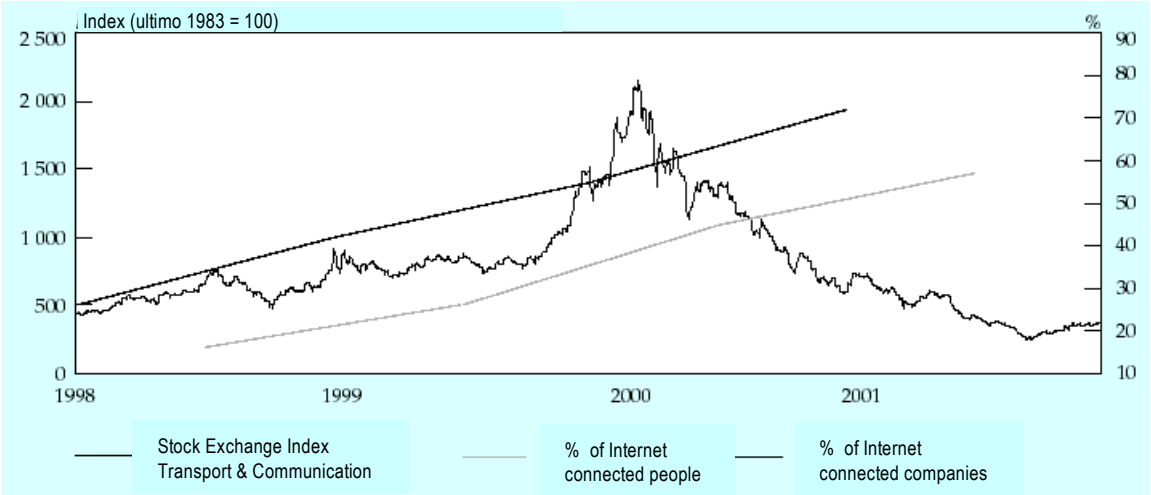

http://epp.eurostat.cec.eu.int/portal/

***Figure 10: Female employment rate in the European Union***

The exact impact of these factors needs to be determined by an adequate model given the complexity of the causal relationships through income, activity patterns, residential and job location etc. Generally speaking, it may be expected that all these developments and policies will lead to an extra growth of passenger travel especially for work and business purposes. Indirectly through the increase of economic activities and income also freight transport will increase.

*ICT development*

Around the publishing of the White Paper the stocks of ICT businesses collapsed. Nevertheless, statistics show that the penetration of ICT hardware in every day life is still steadily growing (Figure 11). Developers of ICT services have however since then faced more reluctance and prudence. This may impact upon the development of services that make use of the Galileo project.




Source: Digitale economie 2002

***Figure 11: Development of ICT stocks values and ICT market penetration in the Netherlands.***

# IV.5. Summary

Since the transport sector is not only changed by transport policy but also by autonomous changes in the transport sector and its surroundings, the latter will also be taken into account. A specific question in relation to the analysis of the other developments is: Is the political, socio-economic and technological development in line with the conditions when the White Paper was drafted or are major differences observable which could lead to policy modifications or even a revaluation of objectives?

The following table presents a conclusive survey of the findings on the impacts of external developments on the transport sector development as it is outlined in the White Paper on European transport policy. One can distinguish developments that are largely in line (complementing) with the expectations as they have been anticipated in the formulation of the White Paper and issues that are not in line (contrasting) with the White Paper objectives.

***Table 1: Impact external developments on the transport sector***

| White Paper policies | Relevant external developments | Potential impact on transport sector development |
|---|---|---|
| Improving quality in the road transport sector | Socio-economic development<br>Transport fuel price | Low, contrasting<br>High, complementing |
| Revitalizing the railways | Socio-economic development<br>Financial restrictions | Low, contrasting<br>Low, contrasting |
| Balancing air transport and environment | External events (SARS etc.)<br>Low Cost Carriers<br>Airport Industries<br>Mergers and Acquisitions | Low, complementing<br>Low, contrasting<br>Low, contrasting<br>Low, indifferent |
| Promoting transport by sea and inland waterway | Socio-economic development<br>Market development<br>Technological development<br>Safety and security issues | High, complementing<br>Low, complementing<br>Low, complementing<br>Low, complementing |
| Turning intermodality into reality | Low cost carriers in air transport<br>Globalization of transport<br>Security | Low, contrasting<br>High, complementing<br>Low, mixed |
| Building the Trans-European transport network | Financial restrictions<br>Changing demography<br>Tourism<br>Globalisation<br>GDP/car ownership growth in NMS | Low, contrasting<br>Low, contrasting<br>Low, complementing<br>High, mixed<br>Low, contrasting |
| Improving road safety | Changing demography<br>Technological development | Low, contrasting<br>Low, mixed |
| Effective charging for transport | Technological development<br>Pressure on public budgets | Low, contrasting<br>High, complementing |
| Recognizing the rights and obligations of users | Economic pressure<br>Security requirements | Low, contrasting<br>Low, contrasting |
| Developing high-quality urban transport | Improvement of systems<br>Technological development<br>Financial restrictions | Low, complementing<br>Low, complementing<br>Low, contrasting |
| Enabling clean, efficient transport | Car market developments<br>Technological development | Low, contrasting<br>Low, complementing |
| Managing the effects of globalization | Continuing globalisation process<br>Changing international relationships<br>Disappointing employment growth<br>Changing workforce<br>ICT developments | Complementing<br>Complementing<br>Contrasting<br>Mixed<br>Low, contrasting |

The most relevant external developments that have emerged after the introduction of the White Paper and might present an issue for some reconsideration of measures refer to the issues of security, a lower than expected GDP and employment growth, continuous globalisation and a high instability of fuel prices.

The issue of security has become dominant in the international discussion after the terrorist attacks in 2001 and later and led to a temporary drop in international traffic, in particular air transportation. It also presents potentially new barriers to international passenger and freight traffic, which has potentially negative effects on seaborne traffic.

The lower than expected growth of GDP and employment result in reduced growth rates in the transport sector, a high competitive pressure on the markets in order to reduce transport prices, higher pressure on public budgets and private financing, and the instability of fuel prices. The declining public budgets, worsened by the stability criteria of the Maastricht treaty, have lead to pressure on public funding for improvement of the quality and capacity of cross border links. Member States rather spend their available public funding on national infrastructure projects. However the pressures on public budgets on the other hand boost the need for gaining (new) revenues and may therefore positively influence the introduction of effective charging for transport.

The continuous globalisation of trade has already resulted in a sharp increase of imports and exports of both the EU15 and the NMS. Globalisation results to increasing lengths of haul and this may benefit rail and inland waterway shipping. On the other hand, the strong growth of haul and the increasing lengths of haul do also endanger the objective to eliminate bottlenecks on cross-border links and on natural barriers such as the Alps, the Pyrenees and straits.

The instability of fuel prices is a development which calls for an even stronger focus on achieving higher energy efficiency in transportation. It also puts more pressure on carriers and transporters. The market developments within the air and seaborne sector have largely developed as it could be expected at the time of the White Paper approval. This has been supported by a positive development of international trade and the opening of the markets in parallel. However for air transport important unforeseen event ware the September 11, 2001 terrorist attack in the USA, the SARS crisis in Asia and the Gulf war which lead to an unprecedented (temporary) drop in air traffic. Another unforeseen development was the rise of low cost carriers (LCC) which evade hub airports and sometimes use secondary airports to connect remote regions with European business centres at comparably low fares. This has created more travel and business opportunities which put pressure on capacity and environmental aspects.

In consideration of external developments, there are no principle obstacles to be expected for the implementation of the White Paper measures. However, the lower than expected economic development and corresponding higher pressure on public budgets needs to be taken into account in particular in the context of infrastructure development and the provision of public transport services. The future development with respect to GDP growth will be further investigated in the scenario analysis. The new issue of security presents a new challenge on the political agenda and needs to be taken into account in the future formulation of a common transport policy.

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