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Towards an integrated, technology-led and user friendly system

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COMMUNICATION FROM THE COMMISSION

A sustainable future for transport: Towards an integrated, technology-led and user friendly system

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A sustainable future for transport: Towards an integrated, technology-led and user friendly system

1. INTRODUCTION

1. In 2001, the Commission issued a White Paper¹ setting an agenda for the European transport policy throughout 2010. This programme was updated in the mid-term review of 2006². Approaching the end of the ten-year period, it is time to look further ahead and prepare the ground for later policy developments.
2. Transport is a complex system that depends on multiple factors, including the pattern of human settlements and consumption, the organisation of production and the availability of infrastructure. Owing to this complexity, any intervention on the transport sector must be based on a long-term vision for the sustainable mobility of people and goods, not least because policies of structural character take long to implement and must be planned well in advance.
3. That is why transport policies for the next ten years must be based on a reflection on the future of the transport system that embraces also the following decades. The Commission has launched such a reflection, comprising an evaluation study on the European Transport Policy (ETP); a debate within three 'Focus Groups'; a study – 'Transvisions' – identifying possible low-carbon scenarios for transport; and a consultation of stakeholders, notably through a High Level Stakeholders' Conference on 9-10 March 2009³.
4. The present Communication summarises the results of this wide reflection. In section 2, it refers to recent developments of the ETP and outstanding issues. In section 3, it looks at the future, identifying trends in transport drivers and the likely challenges they could pose to society. In section 4, it proposes some intermediate policy objectives, which could be pursued to address the emerging challenges in the transport sector. In section 5, it describes some available instruments and possible lines of intervention for achieving the stated objectives.
5. The ideas put forward in this Communication are meant to stimulate further debate aimed at identifying policy options, without prejudging the formulation of concrete proposals in the next White Paper of 2010.

¹ COM(2001) 370.

² COM(2006) 314.

³ All relevant documents can be downloaded at:
http://ec.europa.eu/transport/strategies/2009_future_of_transport_en.htm

2. THE EUROPEAN TRANSPORT POLICY IN THE FIRST DECADE OF THE 21ST CENTURY

6. Before looking at the future, it is useful to take stock of developments in the recent past. While it is too early to fully assess the impact of a number of policy measures taken since 2000, a few indications can nevertheless be distilled from market trends and data. These can be assessed against the policy objectives set in the mid-term review of the White Paper and those set for transport by the Sustainable Development Strategy (SDS) of 2006⁴. The following section shows that the ETP has largely achieved the objectives set out in the above mentioned strategic documents, by substantially contributing to the development of the European economy and its competitiveness, by facilitating market opening and integration, by establishing high quality standards for safety, security and passenger rights and by improving working conditions.
7. Transport is an essential component of the European economy. The transport industry at large accounts for about 7% of GDP and for over 5% of total employment in the EU⁵. The ETP has contributed to a mobility system that compares well in terms of efficiency and effectiveness with that of the economically most advanced regions of the world. The ETP has assisted social and economic cohesion and promoted the competitiveness of the European industry⁶ therefore contributing significantly to the Lisbon Agenda for Growth and Jobs⁷. More limited, however, have been the results with respect to the goals of the EU SDS: as indicated in the progress report of 2007⁸, the European transport system is still not on a sustainable path on several aspects.
8. Market opening has generally led to more efficiency and lower costs. This can be seen in air transport where the process is more advanced⁹. The EU is on its way to create a level playing field in the increasingly integrated transport market, but issues such as differences in taxation and subsidies still need to be addressed. It is worth to note that not only large companies but also small and medium enterprises (SMEs) have benefited from market opening and integration in the different modes of transport.
9. Trans-European Transport Networks (TEN-T) policy has much increased the coordination in the planning of infrastructure projects by the Member States. Progress in implementation has been substantial and about one third of the necessary investments (€ 400 billion) in the TEN-T have been made¹⁰. The extension of the

⁴ CS (2006) 10917.

⁵ Of which 4.4% corresponding to transport services and the rest to transport equipment manufacturing, while 8.9 million jobs correspond to transport services and 3 million to transport equipment.

⁶ COMPETE, “Analysis of the contribution of transport policies to the competitiveness of the EU economy and comparison with the United States”, October 2006, ISI-Fraunhofer with INFRAS, TIS, and EE for EC-DG TREN.

⁷ COM(2007) 803.

⁸ COM(2007) 642.

⁹ Intra-EU routes have increased by 120% between 1992 and 2008. Intra-EU routes with more than two competitors increased by 320% in the same period. Low-cost carriers represent today over a third of total intra-EU scheduled capacity.

¹⁰ COM(2007) 135. Among the projects completed there are the Oresund link, the Malpensa airport and the Betuwe rail freight line. Other projects will be completed very soon, like the PBKAL project (HST

TENs to cover the new Member States, building on the investment already made prior to enlargement¹¹, has provided the blueprint for Structural and Cohesion funds to gradually fill their infrastructure deficits. Much remains to be done, but the TENs have already gone a long way in linking EU markets and peoples.

10. Progress has been achieved in reducing air pollution and road accidents. Air quality in European cities has significantly improved through the application of ever stricter Euro emission standards, but more needs to be done, above all to reduce emissions in urban areas of NO_x and fine particles (PM₁₀) – the latter being particularly damaging for human health – as well ensuring that real world emissions are adequately controlled. The expansion of transport infrastructure has also resulted in habitat loss and landscape fragmentation. The objective to halve casualties in road transport by 2010, included in the 2001 White Paper, will likely not be achieved although action has been triggered in many Member States leading to significant progress. With still over 39 000 deaths in the EU in 2008, transport by road remains far too costly in terms of human lives.
11. In the maritime sector, marine pollution and maritime accidents were considerably reduced and the EU has established one of the most advanced regulatory frameworks for safety and for pollution prevention (lastly with the third Maritime Safety Package). In aviation, it has adopted a comprehensive set of common, uniform and mandatory legislation covering all the key elements affecting safety (aircrafts, maintenance, airports, air traffic management systems, etc). Safety agencies have been set up for aviation (EASA), maritime (EMSA) and rail transport (ERA).
12. The 2001 White Paper did not refer to security. After the attacks of 11 September 2001, however, a security policy was developed. Nowadays there are EU legislative measures on transport security for most transport modes and for critical infrastructures. The EU also cooperates with the international community to improve security: recently, EU naval operations have been launched to fight piracy.
13. Quality services for transport users have been promoted by strengthening passenger rights. Legislation on aviation passengers' rights has been adopted and is now in force. In the field of rail¹², a regulation was adopted in December 2007 which provides for extensive passenger rights. In December 2008 two proposals¹³ have been adopted on passenger rights in the field of bus and coaches and in the maritime sector. On the other hand, public transport (bus and rail) has been identified as one of the sectors where consumer satisfaction is the lowest¹⁴.
14. The social dimension of transport policy was strengthened also with respect to transport workers. Legislation on working time, on minimum level of training, on mutual recognition of diplomas and qualifications, was introduced – in collaboration with the social partners – to improve working conditions in road, rail and maritime transport.

Paris-Brussels-Cologne, Amsterdam, London). Large sections of projects have also been put into operation like the Madrid-Barcelona HST link or the first phase of TGV Est in France.

¹¹ In particular through the Instrument for Structural Policies for Pre-Accession.

¹² OJ L 315, 3.12.2007, p. 14–41, Regulation (EC) No 1371/2007.

¹³ COM(2008) 817, COM(2008) 816.

¹⁴ http://ec.europa.eu/consumers/strategy/docs/2nd_edition_scoreboard_en.pdf

15. The environment remains the main policy area where further improvements are necessary. In the EU, compared to 1990 levels, in no other sector has the growth rate of greenhouse gas (GHG) emissions been as high as in transport¹⁵. GHG emissions can be seen as the product of three components: the amount of the activity that generates the emissions; the energy intensity of that activity; and the GHG intensity of the energy that is being used. Applying this analysis to past developments in transport, it can be seen that the sector has greatly increased its activity while making insufficient progress in reducing its energy and GHG intensity.
16. Decoupling transport growth from GDP growth, which was one of the objectives of the 2001 White Paper and of the SDS, has taken place on the passenger side, where transport demand grew on average by 1.7% per year between 1995 and 2007, as opposed to an average GDP increase of 2.5%. The demand for freight transport in the EU, on the other hand, grew on average by 2.7% per year. The strong increase in global trade and the deepening integration of the enlarged EU prevented the decoupling of freight transport from GDP in the last decade. The growth of freight transport is also linked to economic practices – concentration of production in fewer sites to reap economies of scale, de-localisation, just-in-time deliveries, wide-spread recycling of glass, paper, metals – that allowed reduction of costs and, possibly, of emissions in other sectors at the expense of higher emissions from transport.
17. The energy efficiency of transport is increasing, but the gains in efficiency have not been entirely devoted to reducing overall fuel consumption and have not been enough to outweigh the larger transport volumes. Legislation setting emission performance standards for new passenger cars was adopted in April 2009 in response to the insufficient pace of improvement¹⁶. There has also been limited progress in shifting transport to more efficient modes, including through the development of short sea shipping, although a certain rebalancing has taken place and the relative decline of rail transport appears to have stopped¹⁷. A number of surveys show that in many cities the modal share of cycling has grown significantly in recent years¹⁸.
18. Transport did not reduce significantly its GHG intensity by switching to cleaner energy sources and still depends to 97% on fossil fuels, which has negative implications also for the security of energy supply. Measures to improve fuel quality¹⁹ and a binding target of 10% share of renewable energy sources in transport by 2020 have been adopted recently as part of the Climate and Energy package²⁰.

3. TRENDS AND CHALLENGES

19. This section describes trends in the main transport drivers up to the middle of the century and the related challenges. It is difficult to anticipate which of them will have the greatest influence in shaping the future of transport.

¹⁵ Unless stated otherwise, the source of data is DG TREN (2009), EU energy and transport in figures. Statistical pocketbook 2009.

¹⁶ OJ L 140, 5.6.2009, p. 1-15, Regulation (EC) No 443/2009.

¹⁷ At 10.7%, freight rail had the same modal share in 2007 as in 2001.

¹⁸ <http://spicycles.velo.info>. Spicycles is a project supported by the EU IEE – STEER programme.

¹⁹ OJ L 140, 5.6.2009, p. 88-113, Directive 2009/30/EC.

²⁰ OJ L 140, 5.6.2009, p. 16-62, Directive 2009/28/EC.

3.1. Ageing

20. By 2060, the median age of the European population is projected to be more than 7 years higher than today and the number of people aged 65 or more is expected to represent 30% of the population as opposed to 17% today²¹.
21. Although above a certain age people generally travel less than when they were younger, aged people of today tend to travel more than their parents did. This tendency is expected to continue and is reinforced by improved health, more travelling options and better foreign language skills. An ageing society will place more emphasis on the provision of transport services involving a high level of perceived security and reliability, and which feature appropriate solutions for users with reduced mobility.
22. A society with higher ratio of older people will need to devote more public resources to pension payments, health care and nursing. Through its effect on public finances, ageing will put a strain on the supply and maintenance of transport infrastructure and set a limit for funding available to public transport. A scarcity of labour and skills may arise, further aggravating the shortage of skilled labour already experienced in some segments of the transport sector. Overall, this may result in higher transport costs for society.

3.2. Migration and internal mobility

23. Net migration to the EU might add 56 million people to the EU's population in the next five decades²². Migration could play an important role in mitigating the effect of ageing on the labour market. Migrants, generally young and mainly living in urban areas, will further intensify Europe's ties with neighbouring regions, by creating cultural and economic links with their country of origin. These links will entail more movement of people and goods.
24. Mobility of workers within the Union is also expected to increase with the gradual removal of administrative and legal barriers and further deepening of the internal market.

3.3. Environmental challenges

25. There is growing urgency for the transport sector to mitigate its negative impact on the environment. The EU has recently adopted a Climate and Energy package that sets a target of reducing GHG emission in the EU by 20% with respect to 1990. Transport has a key role to play in achieving this goal and an inversion of some of the current trends will be necessary.
26. The 2008 TERM Report²³ of the European Environment Agency, which provides indicators tracking transport and environment in the EU, shows that many Europeans still remain exposed to dangerously high levels of air and noise pollution. In

²¹ Eurostat (2008), Population and social conditions, Statistics in Focus 72/2008; and European Commission, Demography Report 2008: Meeting Social Needs in an Ageing Society. SEC(2008) 2911.

²² See footnote 21.

²³ EEA, Transport at a crossroads, TERM 2008, No 3/2009.

particular, the concentration of PM₁₀, of which transport is the second most important source, exceeds the 2005 limit value in many air quality zones. Also pollution from shipping emissions of NO_x and SO_x needs to be addressed.

27. Transport itself will suffer from the effects of climate change and will necessitate adaptation measures. Global warming resulting in a rising sea level will amplify the vulnerability of coastal infrastructures, including ports²⁴. Extreme weather events, would affect the safety of all modes. Droughts and floods will pose problems for inland waterways²⁵.

3.4. Increasing scarcity of fossil fuels

28. In the coming decades, oil and other fossil fuels are expected to become more expensive as demand increases and low-cost sources dry up. The negative impact on the environment will be greater, as conventional sources are replaced by more polluting supplies. At the same time, the need to move to a low-carbon economy and the growing concerns about energy security will bring about a greater supply of renewable energy, made much cheaper by technological progress and mass production.
29. The shift in relative prices will make investments in alternative energy sources more attractive, in spite of the high variability of those prices. The need to establish supporting infrastructures and the long life span of vehicles will delay the transition process.
30. The immediate consequence of such transformation will be the reduction in the need to transport fossil fuels, which currently represent around half of the volume of international shipping²⁶.

3.5. Urbanisation

31. Urbanisation has been a clear trend in the past decades and is expected to continue, with the proportion of European population residing in urban areas increasing from 72% in 2007 to 84% in 2050²⁷.
32. The proximity of people and activities is a major source of advantages that drive urbanisation. However, in the past 50 years, the growth of urban areas across Europe was even larger than that of the resident population. This urban sprawl is the main challenge for urban transport, as it brings about greater need for individual transport modes, thereby generating congestion and environmental problems. Urban transport

²⁴ SEC(2009) 387, Commission Staff Working Document accompanying the White Paper “Adapting to Climate Change: Towards a European framework for action”.

²⁵ IPCC (2007), Fourth Assessment Report.

²⁶ The share of fossil fuels among the main commodities traded in the world by sea is around 51%, of which crude oil (32%), oil products (8%) and coal (11%) (based on billions of ton-miles, 2005 figures, source: UNCTAD).

²⁷ United Nations, Department of Economic and Social Affairs/Population Division (2008), World Urbanization Prospects: The 2007 Revision.

accounts for 40% of CO₂ emissions and 70% of emissions of other pollutants arising from road transport²⁸.

33. Congestion, that is prevalent in agglomerations and in their access routes, is the source of large costs in terms of delays and higher fuel consumption. As most freight and passenger transport starts or ends in urban areas, urban congestion also negatively impacts inter-urban travel. While denser cities are better served by collective modes of transport, the availability of land and public acceptability to construct new infrastructures for public or alternative means of transport will remain a great challenge.

3.6. Global trends affecting European Transport Policy

34. Together with further deepening of the Single Market, integration of the EU with neighbouring regions (Eastern Europe, North Africa) and into the world economy is likely to continue. Globalisation has been a powerful trend of the past decades, enabled by trade liberalisation agreements and by revolutionary developments in transport and communication technologies (from containers to satellite radio-navigation) that have reduced distance and time barriers.
35. Although it may be temporarily halted by economic crises and geopolitical instability, the strong economic growth of many developing countries implies further globalisation. Transport outside Europe will increase much more than inside Europe and EU external trade and transport are likely to keep growing rapidly in the coming years.
36. The world population is expected to exceed 9 billion by 2050²⁹. This increase, by roughly a third from 6.8 billion people in 2009, will have a tremendous impact on global resources, making the goal of setting up a more sustainable transport system – one which uses fewer resources – all the more important.
37. More people and greater economic affluence mean more mobility and more transport. Some studies suggest that the number of cars in the world will increase from around 700 million today to more than 3 billion in 2050³⁰, creating serious sustainability problems unless there is a transition towards lower and zero-emission vehicles and a different concept of mobility is introduced.

4. POLICY OBJECTIVES FOR SUSTAINABLE TRANSPORT

38. The goal of the ETP is to establish a sustainable transport system that meets society's economic, social and environmental needs and is conducive to an inclusive society and a fully integrated and competitive Europe. The ongoing trends and future challenges highlighted in the previous paragraphs, point to the need for satisfying a rising demand for 'accessibility' in a context of growing sustainability concerns. The most immediate priorities appear to be the better integration of the different modes of

²⁸ COM(2007) 551.

²⁹ United Nations Population Division (2009): World Population Prospects: The 2008 Revision.

³⁰ See, e.g., M. Chamon, P. Mauro and Y. Okawa (2008): The implications of mass car ownership in the emerging market giants. Economic Policy, Volume 23, Issue 54, p. 243-296.

transport as a way to improve the overall efficiency of the system and the acceleration of the development and deployment of innovative technologies. This within an approach that always keeps the transport users and workers, with their needs and rights, at the centre of policy making. The following chapters decline the above priorities into more operational goals, proposing seven broad policy objectives for consideration.

4.1. Quality transport that is safe and secure

39. Transport provides access to many of our freedoms. The freedom to work and live in different parts of the world. The freedom to enjoy different products and services. The freedom to trade and to establish personal contacts.
40. Demand for these freedoms will likely increase in the more multicultural, heterogeneous society of the future, with deeper links to other regions of the world. Access to goods and services will have to be ensured to an ageing society that is likely to demand greater transport safety, security and comfort, at a time in which the growth of traffic and the tensions of the urban environment risk to work in the opposite direction.
41. Therefore an improvement of the overall quality of transport, including personal security, the reduction of accidents and of health hazards, the protection of passengers' rights and the accessibility of remote regions, must remain a high priority of transport policy. Road safety will remain an issue of concern and following the expiration of the road safety action plan in 2010, appropriate consideration must be given to a follow up strategy to ensure that the number of deaths on European roads is reduced. Working conditions must also be improved for transport workers, particularly as regards risks to health and safety.
42. In improving safety and security conditions, attention should be given to the issue of privacy and data protection that can arise in relation to the means employed for surveillance, registration and control purposes.
43. People with reduced mobility should be supplied with comfortable transport solutions. Infrastructure has to be built, maintained and upgraded on the principle of accessibility to all. A safer and more secure urban environment can be conducive to greater use of public transport, of cycling and of walking, which would not only ease congestion and reduce emissions, but also have positive effects on peoples' health and well-being.

4.2. A well maintained and fully integrated network

44. Transport is a network industry that comprises several elements: infrastructure, nodes, transport vehicles and equipment, ICT applications related to the infrastructure and on-board, network services, and operational and administrative procedures. The ability to move people and goods effectively and efficiently relies primarily on the optimal functioning of all these elements in combination.
45. A better exploitation of the network's capacity and of the relative strengths of each mode could contribute significantly to reducing congestion, emissions, pollution and accidents. This however requires the optimisation and operation of the network as a

single entity, whereas currently modal networks are largely separated and even within modes there is a lack of integration between countries.

46. In particular, with regard to passenger transport, the integration of aviation with high-speed rail will be a crucial development. Concerning freight transport, an intelligent and integrated logistic system must become a reality, where development of ports and intermodal terminals is key element. Finally, the above-described urbanisation trend will make ‘modal shift’ towards more environmentally friendly modes particularly important in the context of urban transport.
47. Infrastructure should be well maintained and improvement works coordinated. This reduces accidents and operating costs as well as congestion, pollution and noise. New infrastructure should be planned and prioritised with a view to maximising socio-economic benefits taking into account externalities and effects on the total network.

4.3. More environmentally sustainable transport

48. To respond to the goals of the EU SDS and reduce transport’s environmental impacts involves progress towards a number of environmental policy objectives. Lowering consumption of non-renewable resources is essential for all aspects of transport systems and their use. The undesired environmental consequences of transport activity will require further action in particular on noise, air pollutant emissions and greenhouse gas emissions. EU legislation sets requirements in many of these areas but these will require assessment and updating in the future.
49. For some aspects, in view of the long time required to effect change, long term strategies are required to provide assurance for different actors in the market. In devising the future of the transport system, all elements of sustainability should be taken into account. This concerns the operation of transport means (emissions, noise) as well as the provision of infrastructure (land occupancy, bio-diversity).

4.4. Keeping the EU at the forefront of transport services and technologies

50. Technological innovation will be a major contributor to the solution of the transport challenges. New technologies will provide new and more comfortable services to passengers, increase safety and security and reduce the environmental impacts. “Soft infrastructures”, like intelligent transport systems for road (ITS³¹) and traffic management systems for rail (ERTMS³²) and aviation (Single European Sky’s SESAR³³), backed by Galileo, can optimise the use of the network and improve safety; innovative vehicle technology can lower emissions, reduce oil dependency and increase comfort.
51. The development of technological solutions for sustainable transport is also important to promote growth and safeguard jobs. Population ageing might jeopardise Europe’s competitive position in the world economy and its ability to maintain high standards of living. To face this challenge, it will be particularly important for the

³¹ COM(2008) 886 and COM(2008) 886/2.

³² COM(2005) 903.

³³ Council Decision 2009/820/EC.

EU economy to enhance its productivity, namely by maintaining an efficient transport system and by investing more on R&D.

52. Europe is a world leader in many fields of transport including infrastructure, manufacturing of transport equipment, transport services and logistics. In view of the expected increase in global competition, keeping and enhancing this leadership is a key factor in preserving the overall competitiveness of the EU economy, and will also provide an opportunity for our transport industry to serve new and expanding markets.

4.5. Protecting and developing the human capital

53. The transport system will experience substantial changes due to further market opening and innovation. The competitiveness of the EU economy and the resilience of the transport firms depend on the capacity to adapt to innovation and new market needs. Competition and innovation have positively impacted on the transport labour market. However, transport workers in some sectors may be displaced from their jobs as a result of the adjustment to a radically different economic and energy context. It is important to ensure that such change is well anticipated and managed, so that changing conditions will also be a source of new jobs and that transport workers can participate in, and respond to, the process. This can be done through a range of instruments, including information and consultation of workers, social dialogue, early identification of skills shortages³⁴, training, and ensuring that any restructuring is carried out in a socially responsible way. Social protection and public services should provide a safety net to facilitate the adjustment. Gender considerations should also be taken into account, to facilitate women's access to transport jobs.
54. It must also be ensured that working conditions are maintained or improved. Differences in rights and social conditions between Member States should not result in a race to the bottom and become a factor of competitiveness with the increasing cross-border mobility of transport workers.

4.6. Smart prices as traffic signals

55. In transport, like in any other sector, there cannot be economic efficiency unless the prices reflect all costs – internal and external – actually caused by the users. By providing information on the relative scarcity of goods or services, prices convey essential information to economic actors. The transport system would particularly benefit from better price signals. It is rare to have price differentiation for the use of the road in peak versus off-peak hours. Similarly, there is no economic incentive to use more silent vehicles, safer modes of transport or more environmentally friendly means.
56. Transport operators and citizens are not always in a position to identify among several transport alternatives what is best for the economy and the environment, but with correct pricing of externalities for all modes and means of transport they would make the right choice just by opting for the cheaper solution.

³⁴ Cf. Commission's Communication "New Skills for New Jobs: Anticipating and matching labour market and skills" - COM(2008) 868.

57. The next decade is likely to be one of transition for the transport system. New practices and new technologies will emerge; long-term investments, for example in infrastructure, will be made. Europe will have to live with these choices for a long time: it is therefore essential that they are guided by correct price signals.

4.7. Planning with an eye to transport: improving accessibility

58. The introduction of a correct pricing system will help in better factoring transport costs in location decisions; even so, however, there is a risk that transport costs are not properly taken into account by planners and that the availability of cheap transport solutions is taken for granted.
59. Many public services have been progressively centralised with a view to increasing efficiency. The distances between the citizens and the service providers (schools, hospitals, shopping malls) have been on the increase. Firms have followed the same trend by keeping a smaller number of production, storage and distribution centres. The trend towards the concentration of activities has produced a large amount of ‘forced’ mobility, owing to a worsening of accessibility conditions.
60. When taking land-use planning or location decisions, public authorities and companies should take into account the consequences of their choices in terms of travel needs of clients and employees in addition to the transport of goods. Sound planning should also facilitate the seamless integration of the different transport modes.
61. Transportation needs can also be reduced by increasing ‘virtual’ accessibility through information technology (teleworking, e-Government, e-Health, etc.). Evidence on the effect of these practices is still limited, but it seems they have a significant and yet unexploited potential for replacing travel. On the other hand, greater ease of contact might encourage people to live further from their workplace and firms to disperse their activities. The net result could be fewer, but longer journeys related to work. In any event, teleworking has the great advantage of providing flexibility in the choice of when to travel, therefore significantly reducing congestion³⁵.

5. POLICIES FOR SUSTAINABLE TRANSPORT

62. Whereas the previous section proposes the broad objectives for future transport policy, this section puts forward some suggestions on how the available policy instruments could be activated to reach those goals and respond to the sustainability challenge.

5.1. Infrastructure: maintenance, development and integration of modal networks.

63. The optimal functioning of the transport system requires full integration and interoperability of the individual parts of the network, as well as interconnection between different (modal) networks. Crucial in achieving this result are the nodes,

³⁵ TRANSvisions: Report on Transport Scenarios with a 20 and 40 Year Horizon.
http://ec.europa.eu/transport/strategies/doc/2009_future_of_transport/20030331_transvisions_task_1_final_report.pdf

which are the logistics centres of the network and offer connectivity and choice for both freight and passenger transport. Intermodal and transshipment platforms should be promoted and developed where there is a potential for consolidation and optimisation of passenger and freight flows. This will typically be the case in areas with a high activity of passengers and freight transport, i.e. in urban areas, and where high volume corridors are intersecting.

64. Well focused infrastructure expansion will help avoiding congestion and time losses. In this respect, infrastructure needs to be carefully planned and prioritised with a view to optimising transport chains and the overall transport network. In addition to the removal of bottlenecks, it will be essential to identify green corridors in order to reduce congestion and environmental pollution. Infrastructure projects include the European global navigation satellite systems (Galileo and EGNOS), which will complement the ‘traditional’ networks and improve their exploitation.
65. Drawing from the experience provided by the application of the EIA and SEA Directives³⁶, common methodologies and similar assumptions should be adopted in the appraisals of infrastructure projects across modes and, possibly, countries³⁷. Common data and indicators are needed, starting by those on traffic and congestion. This will help selecting projects on the basis of comparable cost-benefit ratios and taking all relevant elements into account: socio-economic impacts, contribution to cohesion and effects on the overall transport network.
66. New infrastructure is costly and making the optimal use of existing facilities can already achieve a lot with more limited resources. This requires proper management, maintenance, upgrading and repair of the large infrastructure network that has so far given Europe a competitive advantage. Upgrading the existing infrastructure – also through intelligent transport systems – is in many cases the cheapest way to enhance the overall performance of the transport system.
67. Up till now, infrastructure has been mainly designed for joint usage by passenger and freight vehicles, but the growth in traffic and the related congestion, especially in and around cities, has led to frictions between passenger and freight transport. Where justified by traffic volumes, the possibility to provide dedicated infrastructures for passenger and freight should be considered, either in the form of dedicated freight corridors or by setting ‘smart’ priority rules. In general, a more efficient use of infrastructure can be obtained when users have similar profiles (loads, speeds, etc).
68. Thanks to Europe’s long coast-line and large number of ports, the maritime sector is a valuable alternative to land transport. The full implementation of the European Maritime Space without Barriers³⁸ and the maritime transport strategy for 2018³⁹ can make the ‘motorways of the sea’ a reality and exploit the potential of intra-European

³⁶ Directive on Strategic Environmental Assessment (2001/42/EC) and Directive on Environmental Impact Assessment (85/337/EEC, as amended by Directives 97/11/EC and 2003/35/EC).

³⁷ In this context, the Commission will adopt environmental guidelines for ports expansion as foreseen in the Integrated Maritime Policy Blue Paper (COM(2007) 575).

³⁸ COM(2009) 10 and COM(2009) 11.

³⁹ COM(2009) 8, "Strategic goals and recommendations for the EU’s maritime transport policy until 2018".

short sea shipping. Logistics operations using synergies between sea and rail and/or river also have great potential for development.

69. Information systems are essential in overseeing complex transport chains involving several actors, as well as in informing transport users of available and alternative options and of possible disruptions. Transport documents and tickets should be made electronic and multi-modal, while preserving privacy of personal data. Questions of liability, dispute settlement and complaints handling across the whole transport chain should be clarified and streamlined. ICT solutions should be developed as a support for better management and integration of transport flows.

5.2. Funding: finding the resources for sustainable transport

70. The transition towards a low carbon economy will impose a substantial overhaul of the transport system. This will require considerable and well coordinated funding, but the necessary resources will be difficult to find: the current economic crisis is putting public finances under pressure and is likely to be followed by a phase of budgetary consolidation. Ageing will increasingly absorb public funds for pensions and health care.
71. Transport generates a substantial amount of revenues for public budgets. Energy taxes amount to 1.9% of GDP, most of them coming from fuel taxes on road transport and the private car. A further 0.6% of GDP is collected in the form of vehicle taxes⁴⁰. In addition to taxes, there are also tolls and charges for infrastructure use. Transport users, thus, already pay a significant amount, but the price they pay often bears little connection to the real costs on society of their choices.
72. Investment in transport infrastructure is mainly financed with public funds, which often also cover around 50% of operating costs of public transport services. The use of public funding in addition to ‘user-pays’ sources is justified on the basis of wider socio-economic benefits (e.g. regional development, public goods). These benefits should be assessed through project appraisal methods progressively harmonised at EU level. Total infrastructure costs in road transport – that is fixed cost plus maintenance – are estimated at about 1.5% of GDP⁴¹.
73. According to the available estimates – which refer to road transport – the most common external costs reach 2.6% of GDP⁴². These costs are generically paid by all citizens, thus not in ways that are related to the externalities: the incentive effect and the benefits of price signals are lost. The Treaty principle that the polluter should pay⁴³ is not respected in all cases.
74. The Commission proposed last year a stepwise strategy for the internalisation of external costs in all transport modes⁴⁴, which, contemplates, among others, the

⁴⁰ Eurostat (2008), Taxation trends in the European Union, 2008 edition.

European Commission, Excise Duty Tables, Tax Receipts – Energy products and Electricity, July 2008.

⁴¹ Cf. Project UNITE for EC 5th FP, by C. Nash et al., ITS University of Leeds.

⁴² See footnote 41. The calculation includes the costs of congestion, accidents, air pollution, noise and global warming.

⁴³ Article 174(2) of the EC Treaty.

⁴⁴ COM(2008) 435.

inclusion of aviation in the EU Emission Trading Scheme from 2012⁴⁵ and the introduction of internalisation charges for heavy goods vehicles. Where appropriate, action from Member States and international organisations should complement this strategy and ensure that users' costs include relevant externalities for all modes and vehicles. The development of technology – for example on-board units and global positioning systems for tolling – will facilitate the future implementation of this strategy. Internalisation charges to complement revenues from energy taxation are likely to be necessary in any event, since excise duties on oil derivatives will presumably decline with wider diffusion of vehicles running on alternative sources of energy.

75. It is also predictable that the transport sector has to become increasingly self-financing also in relation to infrastructure. Congestion charges, which represent the cost of infrastructure scarcity, can give a good indication of the needs for additional capacity and can provide funding for expansion of infrastructure or for alternative transport solutions.

5.3. Technology: how to accelerate the transition to a low-carbon society and lead global innovation

76. Science and industry are already very active in searching solutions for transport safety, fuel dependency, vehicle emissions and network congestion. In view of the mentioned trends in world population and global car ownership, there is a compelling need for a technological shift towards lower and zero-emission vehicles and for the development of alternative solutions for sustainable transport. Europe must pave the way to sustainable mobility, where possible providing solutions that are valid on a global scale and that can be exported to other regions of the world.
77. For promising technologies, the necessary framework conditions to introduce them commercially on the market have to be put in place by policy makers without giving undue advantage to any specific technology. This requires, in particular, setting open standards, ensuring interoperability, increasing R&D expenditures for technologies that are not yet mature for market application, defining a clear legal and regulatory framework – e.g. for liability and privacy issues – and promoting best practice examples.
78. The most important policy instrument will probably be standard setting. The transition to a new and integrated transport system will only be quick and successful if open standards and norms for new infrastructure and vehicles and other necessary devices and equipment are introduced. The standard setting should aim at interoperable, safe and user-friendly equipment. This is not only important for the internal market, but also to foster European standards on an international scale. The developments of Intelligent Transport Systems or of alternative vehicles propulsion systems could provide a success comparable to that of GSM technology. Policy makers must, however, ensure that the standard setting process avoids the introduction of barriers to market entry and to the development of alternative technologies.

⁴⁵ A Commission proposal on aviation activities was made in 2006 and the resulting Directive adopted in November 2008.

79. Another policy instrument is to foster R&D expenditures towards sustainable mobility, for example through the European Green Cars Initiative⁴⁶ and Joint Technology Initiatives⁴⁷. New transport systems and vehicle technologies will have to be first implemented as demonstration projects, to assess their feasibility and economic viability. Public intervention would also be needed at various stages of the development of the infrastructure that supports new vehicles, for example smart grids for electric transport or hydrogen distribution networks. Much work remains to be done to speed up the integration of already available applications in our transport system. Finally, state aid rules will also be an important policy instrument to favour the development of new technologies and of alternative modes of transport.

5.4. The legislative framework: further promoting market opening and fostering competition

80. The EU has embarked in a market opening process which has already proved successful where more advanced. As a result, a growing number of firms are active across national markets and different modes, which benefits overall economic performance and employment in the EU. Partially open markets, however, carry the risk that operators acting in protected environments subsidise their operations in liberalised markets.
81. The completion of the internal market with a strong enforcement of competition rules is essential. It should also include administrative simplification aiming at reducing unnecessary burdens on transport companies. On the basis of the achievements in the field of air and road transport, new rules for opening up the markets coupled with effective enforcement of existing legislation will be particularly important in the rail sector.
82. At the same time, the regulatory framework needs to evolve towards harmonised environmental obligations, effective supervision, uniform protection of workers conditions and users' rights. The legislative framework will need to make sure that competition not only takes place on a level playing field, but also does not sacrifice safety and security standards, working conditions and the rights of customers, with particular care of those with limited mobility and special needs. At the same time, environmental standards must converge 'upwards' rather than on the minimum common denominator.
83. Large logistics multimodal operators have the know-how and the resources to carry out investments involving advanced technologies and to participate in public-private partnership (PPP) projects, but public authorities must ensure that third-party access to infrastructure is not precluded. The possible creation of transnational infrastructure managers would be a welcome development that may reduce frictions which currently still exist.

⁴⁶ COM(2008) 800.

⁴⁷ As an example, the new Joint Technology Initiative "CLEAN SKY" is expected to develop breakthrough technologies significantly reducing the impact of air transport on environment. It will bring together EU-funded projects and major industrial stakeholders.

5.5. Behaviour: educate, inform and involve

84. Education, information and awareness raising campaigns will play an important role in influencing future consumer behaviour and facilitating sustainable mobility choices. Transport policies have a very direct impact on peoples' lives and tend to be highly controversial: citizens should be given better information on the reasoning behind policy decisions and on the available alternatives. A better understanding of the challenges ahead is a precondition for public acceptance of the solutions.
85. Greater public involvement in transport planning can be ensured by recourse to participatory instruments, namely open consultations, surveys and stakeholders' representation in decision processes.
86. Transport workers and the sectoral social partners should be informed and consulted on the development, application and monitoring of transport policy and related measures, both at sectoral and at enterprise level.

5.6. Governance: effective and coordinated action

87. The transport system involves complex interactions among political, economic, social and technical factors. The sector can only thrive if policy makers are capable of providing sound planning, adequate funding and a proper regulatory framework for market operators.
88. This is a challenging task since it requires policy co-ordination between different bodies and at different levels. The ETP is a particular point in case: its success depending to a large extent on how it is implemented and complemented by measures decided at other levels of government. There are at least two areas in which the benefits of effective coordinated action, beyond what is currently done at EU level, are worth emphasising:
- **Standards and interoperability.** Many new technologies and regulatory practices will develop in the next few years to address transport challenges. Coordination will be needed to ensure equipments' interoperability and to avoid the proliferation of different systems at national level, for example rules and standards for tolling, for ITS or for access to congested areas.
 - **The urban challenge.** For subsidiarity reasons, the EU role in regulating urban transport is limited. On the other hand, most transport starts and ends in cities and interconnection and standardisation issues do not stop at city limits. Cooperation at EU level can help urban authorities in making their transport systems more sustainable. There are a range of activities and fields where the EU can set examples and continue to promote and support demonstration projects and the exchange of best practices, notably through the 7th Framework Programme and Cohesion Policy programmes. Moreover, the EU can provide a framework in which it will be easier for local authorities to take measures.

5.7. The external dimension: the need for Europe to speak with one voice.

89. The transport sector is increasingly international. The ETP needs therefore to project internationally so to ensure further integration with the neighbouring countries and advance Europe's economic and environmental interests in the global context.

90. Closer economic integration and migration flows from neighbouring countries and the African continent will be one of the key challenges that Europe will have to face in the future. International transport co-operation aiming at establishing the necessary interconnection of the major transport axes of these regions should be further promoted, helping in ensuring sustainable development in the neighbouring countries and in the African continent.
91. Indeed, the development of the South East Europe Core Regional Network as a precursor of the TEN-T is crucial for the stability and economic prosperity of South East Europe and will strengthen also the links with the candidate and potential candidate countries from the region. Moreover, the European Neighbourhood Policy (ENP) Action Plans, as well as bilateral Partnership and Cooperation Agreements, include substantial sections on transport policy cooperation, including to varying degrees the adoption by ENP countries of EU transport legislation. The EU's transport relations with eastern ENP countries, as well as Belarus, also include ambitious plans for the extension of the TEN-T network
92. On a global scale, the EU is already now a major standard setter. To name but a few examples, EURO emission standards for road vehicles and the European Rail Traffic Management System (ERTMS) are increasingly being adopted also outside Europe. These developments need to be supported in international forums. The international role of the EU is particularly important for maritime and air transport, which are intrinsically global industries. To maintain a prominent position in these markets in the next 40 years, Europe needs to speak with one voice in those instances that bring together governments, industry representatives and regulators at a global level.

6. WHAT COMES NEXT?

93. The Commission encourages all interested party to contribute to the consultation exercise launched by the present Communication⁴⁸. Views on the future of transport and on possible policy options should be submitted to the mailbox: tren-future-of-transport@ec.europa.eu by 30 September 2009⁴⁹.
94. The results of the above mentioned consultations will be presented at a stakeholder conference in autumn 2009. On the basis of the feedback received from stakeholders and from the European Parliament and the Council, the Commission will issue in 2010 a White Paper which will set out the policy measures to be adopted in the next decade 2010-2020.

⁴⁸ Guidance on how to respond to the consultation will be available on DG TREN's website: http://ec.europa.eu/transport/strategies/2009_future_of_transport_en.htm

⁴⁹ Contributions will be published on the Internet. It is important to read the specific privacy statement attached to this consultation for information on how your personal data and contribution will be dealt with. Professional organisations are invited to register in the Commission's Register for Interest Representatives. (<http://ec.europa.eu/transparency/regrin>). This Register was set up in the framework of the European Transparency Initiative with a view to provide the Commission and the public at large with information about the objectives, funding and structures of interest representatives.