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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**ROADMAP TO A SINGLE EUROPEAN TRANSPORT AREA – WHITE PAPER ON  
COMPETITIVE AND SUSTAINABLE TRANSPORT**

*DRAFT – 21/02/2011*

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## 1. PREPARING THE EUROPEAN TRANSPORT AREA FOR THE FUTURE

1. Transport is fundamental to our economy. Mobility is vital for the internal market and to citizens as they enjoy their freedom to travel. Transport enables economic growth and job creation: it must be sustainable in the light of the new challenges we face. Transport is global, so effective action requires strong international cooperation.
2. The future prosperity of our continent will depend on the ability of all of its regions to remain fully and competitively integrated in the world economy. Efficient transport is vital in making this happen.
3. This Road Map takes a global look at developments in the transport sector, at its future challenges and at the policy initiatives that need to be considered. The Commission's vision of future transport is presented in Part 2, with key concrete measures to achieve it outlined in Part 3 and in the Annex<sup>1</sup>.
4. A lot needs to be done to complete the *internal market for transport*, where considerable bottlenecks and other barriers remain. We need to readdress these issues – how to better respond to the desire of our citizens to travel, and the needs of our economy to transport goods while respecting environmental challenges. The transport systems of the eastern and western parts of Europe must be united to fully reflect the transport needs of almost the whole continent and our 500 million citizens.
5. European Transport is at a cross roads. Old challenges remain but new have come.
6. *Oil* will become scarcer in future decades, sourced increasingly from unstable parts of the world. As the IEA has recently pointed out, the less successful the world is in decarbonising, the greater will be the oil price increase. In 2010, the oil import bill was around € 210 billion for the EU. If we do not address this oil dependence, people's ability to travel – and our economic security – could be severely impacted<sup>2</sup>.
7. At the same time, the international community agrees on – and the European Council has accepted – the need to drastically reduce world *greenhouse gas emissions*, with the goal of limiting climate change to 2°C. Overall, the EU needs to reduce emissions by 80-95% below 1990 levels by 2050 in order to reach this goal. Commission analysis shows that while it is economically more efficient to have deeper cuts in other sectors of the economy, the reduction for the transport sector (which is a significant and still growing source of GHGs) should be at least 60%<sup>3</sup>. By 2030 the goal will be to reduce GHG emissions to around 20% below their 2008 level. Given the substantial increase in transport emissions over the past two decades, this would still put them 8% above the 1990 level<sup>4</sup>.

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<sup>1</sup> These are examined in more detail in the accompanying Commission Working Document  
<sup>2</sup> Reference to Energy Efficiency Action Plan, COM(2011)xxx final of 8 March 2011.

<sup>3</sup> This would correspond to emissions cuts of around 70% below 2008 levels.

<sup>4</sup> COM (2011) XX. Roadmap towards a 2050 low-carbon economy and the accompanying impact assessment.

8. Since the first big oil crisis 40 years ago, despite technical progress and policy efforts, the transport system has not fundamentally changed. Transport has become more energy efficient, but EU transport still depends on oil and oil products for more than 96% of its energy needs. Transport has become cleaner, but increased volumes mean it remains a major source of noise and local air pollution.
9. *New technologies* for vehicles and traffic management will be key to lower transport emissions in the EU as in the rest of the world. The race for sustainable mobility is a global one. Delayed action and timid introduction of new technologies could condemn the EU transport industry to irreversible decline.
10. Many European companies are world leaders in infrastructure, logistics, traffic management systems and manufacturing of transport equipment – but as other world regions are launching huge, ambitious transport modernisation and infrastructure investment programmes, it is crucial that European transport continues to develop and invest to maintain its competitive position.
11. *Infrastructure* shapes mobility. No major change in transport will be possible without the support of an adequate network and more intelligence in using it. Overall, public resources for transport are increasingly constrained, and a new approach to funding is needed. Transport infrastructure investments boost economic growth, create wealth, and enhance trade, geographical accessibility and the mobility of people. They are a highly effective engine of job creation.
12. Congestion is a major concern, both on the roads and in the sky. In addition, transport infrastructure is unequally developed in the eastern and western parts of the EU which need to be brought together, and there is increased pressure on resources for infrastructure funding. The EU's transport sector faces growing competition in fast developing world transport markets.
13. Since the 2001 White Paper on Transport, a lot has been achieved. Further market opening has taken place in aviation, road and partly in rail transport. The Single European Sky has been successfully launched. The safety and security of transport across all modes has increased, both in the EU and worldwide. New rules on working conditions and on passenger rights have been adopted. Trans-European transport networks (TEN-T) have contributed to territorial cohesion and the building of high-speed railway lines. International ties and cooperation have been strengthened. A lot has also been done to enhance transport's environmental performance.
14. Still, looking 40 years ahead, it is clear that transport cannot develop along the same path. If we stick to the business as usual approach, the oil dependence of transport might still be little below 90%<sup>5</sup>, with renewable energy sources only marginally exceeding the 10% target set for 2020. CO<sub>2</sub> emissions from transport would remain one third higher than their 1990 level by 2050. Congestion costs will increase by about 50% by 2050. The accessibility gap between central and

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<sup>5</sup> Even in this scenario there would still be some increase in the use of biofuels and electricity compared to today.

peripheral areas will widen. The social costs of accidents and noise would continue to increase<sup>6</sup>.

## **2. A VISION FOR A COMPETITIVE AND SUSTAINABLE TRANSPORT SYSTEM**

### **2.1. Growing Transport and supporting mobility while reaching the -60% emission target**

15. There is a large pay-off in taking decisive policy action. The transport industry in itself represents an important part of the economy: in the EU it directly employs more than 10 million people and accounts for about 5% of GDP.
16. The EU and Governments need to provide clarity on the future policy frameworks (relying to the greatest extent possible on market based mechanisms) for manufacturers and industry so that they are able to plan investments. Coherence at EU level is vital – a situation where (for example) one Member State opted exclusively for electric cars and another only for biofuels would destroy the concept of free travel across Europe.
17. Curbing mobility is not an option. Future development of the industry, in particular decarbonisation, must rely on a number of strands:
  - Improving the energy efficiency performance of current vehicle types across all modes;
  - Developing and deploying new and sustainable fuels and propulsion systems;
  - Optimising the performance of multimodal logistic chains, including by making greater use of inherently more energy-efficient modes, where other technological innovations are insufficient (e.g. long distance freight);
  - Using transport and infrastructure more efficiently through use of improved traffic management and information systems (e.g. ITS, SESAR, ERTMS, RIS) and market measures such as full development of an integrated European railway market, removal of restrictions on cabotage, abolition of barriers to short sea shipping, undistorted pricing etc.
18. Action cannot be delayed. Infrastructure takes many years to plan, build and equip – and trains, planes and ships last for decades – the choices we make today will determine transport in 2050. We need to act on a European level to ensure the transformation of transport is defined together with our partners rather than determined elsewhere in the world.
19. The challenge is to break the transport system’s dependence on oil without sacrificing its efficiency and compromising mobility. In line with the flagship initiative “Resource efficient Europe” set up in the Europe 2020 Strategy<sup>7</sup>, the

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<sup>6</sup> A description of how transport could evolve up to 2050 if new policies did not intervene to modify the trends (reference scenario) can be found in Annex 3: “Reference scenario (2010-2050)” of the Impact Assessment on the White Paper on Transport.

<sup>7</sup> COM(2010)2020 final.

paramount goal of European transport policy is to help establish a system that underpins European economic progress, enhances competitiveness and offers high quality mobility services while using resources more efficiently.

20. Solving the problems identified above means meeting very difficult goals by 2050 – and challenging ones by 2020/30 to ensure we are moving in the right direction. The scope for changing the way transport operates varies across transport segments, as the technological options for each segment are different. In the following, the Commission’s vision therefore considers three major transport segments: medium distances, long distances and urban transport. Delivery of this will rely on many actors – the EU, Member States, regions, cities, but also industry, social partners and citizens will have their part to play.

## **2.2. An efficient core network for multimodal intercity travel and transport**

21. In the intermediate distances, new technologies are less mature and modal choices are fewer than in the city. However, this is where EU action can have the most immediate impact (fewer constraints from subsidiarity or international agreements). More efficient vehicles and cleaner fuels are unlikely to achieve on their own the necessary cuts in emissions and they would not solve the problem of congestion. They need to be accompanied by the consolidation of large volumes for transfers over long distances. This implies greater use of buses and coaches, rail and air transport for passengers and, for freight, multimodal solutions relying on waterborne and rail modes for long-hauls.
22. Better modal choices will result from greater integration of the modal networks: airports, ports, railway, metro and bus stations, should increasingly be merged and transformed into multimodal connection platforms for passengers. Online information and electronic booking and payment systems integrating all means of transport should facilitate multimodal travel. An appropriate set of passengers’ rights has to accompany the wider use of collective modes.
23. Freight shipments over short and medium distances (below 300 km)<sup>8</sup> will largely remain on trucks. It is therefore important to improve their efficiency, via the development and the uptake of new engines and cleaner fuels, the use of intelligent transport systems and further measures to enhance the market.
24. Above 300 km, options for road decarbonisation are limited, and freight multimodality has to become economically attractive for shippers. Efficient co-modality is needed. The EU needs specially developed freight corridors optimised in terms of energy use and emissions, but also attractive for their reliability, limited congestion and low operating and administrative costs.
25. Rail is sometimes seen as an unattractive mode. But examples in some Member States prove that it can offer desirable alternatives. The challenge is to ensure structural change to enable rail to compete effectively and take a significantly greater proportion of medium and long distance freight (and also passengers – see below). Considerable investment will be needed to expand or to upgrade the

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<sup>8</sup> More than half of all goods (in terms of weight) in road transport are moved over distances below 50 km and more than three quarters over distances below 150 km.

capacity of the rail network. New rolling stock with silent brakes and automatic couplings should gradually be introduced.

26. On the coasts, more and efficient entry points into European markets are needed, avoiding unnecessary traffic crossing Europe. Seaports have a major role as logistics centres and require efficient hinterland connections. Their development is vital to handle increased volumes of freight both by short sea shipping within the EU and with the rest of the world. Inland waterways, especially considering their unused potential, have to play an increasing role in particular in moving goods to the hinterland and in linking the European seas.

### **2.3. A global level-playing field for long-distance travel and intercontinental freight**

27. The maritime and aviation sectors are inherently global. Improving the efficiency of aircraft and of traffic management operations has to be pursued in the air sector. It will secure a competitive advantage on top of reducing emissions; attention is needed however to avoid imposing excessive burdens on EU operations which could compromise the EU role as ‘global aviation hub’. Airport capacity needs to be increased to face growing demand for travel to and from third countries and areas of Europe otherwise poorly connected, which will result in a more than doubling of EU air transport activities by 2050. In other cases, (high speed) rail will absorb much medium distance traffic. The EU aviation industry should become a frontrunner in the use of sustainable alternative fuels to reach the 2050 target.
28. In maritime, the need for a global level-playing field is equally pronounced. The EU should strive for the universal application and enforcement of high standards of safety, security, environmental protection and working conditions, and for eliminating Piracy from the seas. The environmental record of shipping must be improved by both technology and better operation: overall, the CO<sub>2</sub> GHG emissions from maritime bunker fuels should be cut by 40% by 2050 compared to 2005 levels.

### **2.4. Clean urban transport and commuting**

29. In cities, switching to cleaner transport is facilitated by the lower requirements for vehicle range. Public transport choices are more widely available, as well as the option of walking and cycling. Cities suffer most from congestion, poor air quality and noise exposure. Urban transport is responsible for one quarter of CO<sub>2</sub> emissions from transport, and 69% of road accidents occur in cities. The gradual phasing out of ‘conventional’<sup>9</sup> vehicles from the urban environment is a major contribution to significant reduction of oil dependence and greenhouse gas emissions.
30. A higher share of travel by collective transport, combined with minimum service obligations, will allow increasing the density and frequency of service, thereby generating a virtuous circle for public transport modes. Demand management and land-use planning can lower traffic volumes. Facilitating walking and cycling should become an integral part of urban mobility and infrastructure design.

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<sup>9</sup> The term ‘conventional’ refers to vehicles using non-hybrid, internal combustion engines (ICE).

31. The use of smaller, lighter and more specialised road passenger vehicles must be encouraged. Large fleets of urban buses, taxis and delivery vans are particularly suitable for the introduction of alternative propulsion systems and fuels. These could make a substantial contribution in reducing the carbon intensity of urban transport while providing a test bed for new technologies and opportunity for early market deployment. Road pricing and removal of distortions in taxation can also assist in encouraging the use of public transport and the gradual introduction of alternative propulsion.
32. The interface between long distance and last-mile freight transport should be organised more efficiently. The aim is to limit individual deliveries, the most 'inefficient' part of the journey, to the shortest possible route. These could be performed with smaller and cleaner urban trucks. The use of new engines and fuels – electric, hydrogen and hybrids – would not only reduce air emissions and noise, allowing a greater portion of freight transport within the urban areas to take place at night time. This would ease the problem of road congestion during morning and afternoon peak hours.

**2.5. Ten Goals for a competitive and sustainable transport system that will achieve the -60% emission target**

**Ten goals for a competitive and sustainable transport system that will achieve the -60% emission target:**

- (1) Full deployment of the modernised air traffic management infrastructure (SESAR) in Europe by 2020 and completion of the European Common Aviation Area. Deployment of equivalent land and waterborne transport management systems (ERTMS, ITS, RIS).
- (2) By 2020, establish the framework for an integrated multimodal transport information, ticketing and payment system.
- (3) Halve the use of 'conventional'<sup>10</sup> cars in urban transport by 2030; phase them out by 2050; Achieve essentially CO<sub>2</sub>-free city logistics in major urban centres by 2030.
- (4) A fully functional and EU-wide intermodal TEN-T core network<sup>11</sup> by 2030, with a high quality and capacity network by 2050.
- (5) By 2050, complete a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030. By 2050 the majority of medium-distance passenger transport should go by rail.
- (6) 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050.
- (7) By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterway system.

<sup>10</sup> Cf. footnote 9.

<sup>11</sup> Cf. below, section 3.3.

- (8) Low carbon fuels in aviation to reach 40% by 2050; also by 2050 reduce emissions from maritime bunker fuels by 40%.
- (9) Move towards greater application of “user pays” and “polluter pays” principles and private sector engagement to eliminate distortions, generate revenues and ensure financing for future transport investments.
- (10) By 2050, move close to zero fatalities in road transport. In line with this goal, the EU aims at halving road casualties by 2020. Make sure that the EU is a world leader in safety and security of transport in aviation, rail and maritime transport.

### 3. THE STRATEGY – WHAT NEEDS TO BE DONE

33. Implementing the above vision requires an efficient framework for transport users and operators, an early deployment of new technologies and the development of adequate infrastructure:

- Obstacles to a smooth functioning of the internal market persist. The objective for the next decade is to create a genuine Single European Transport Area by eliminating all residual barriers between modes and national systems, easing the process of integration and facilitating the emergence of multinational and multimodal operators. A higher degree of convergence and enforcement of social, safety and security rules, minimum service standards and users’ rights must be an integral part of this strategy, in order to avoid tensions and distortions.
- Innovation is essential for this strategy. EU research needs to address the full cycle of research, innovation and deployment in an integrated way through focusing on the most promising technologies and bringing together all actors involved. Innovation can also play a role in promoting more sustainable behaviour.
- The efforts towards a more competitive and sustainable transport system need to include a reflection on the required characteristics of the network and must foresee adequate investments: EU transport infrastructure policy needs a common vision and sufficient resources. The costs of transport should be reflected in its price in an undistorted way.

34. A list of initiatives foreseen is provided in Annex I to this Communication. The Commission working document that accompanies the Communication provides further details.

#### 3.1. A Single European Transport Area

35. The **Single European Sky** needs to be implemented as foreseen, and already in 2011 the Commission will address the capacity and quality of airports. The area where bottlenecks are still most evident is the internal market for rail services, which must be completed as a priority in order to achieve a **Single European Railway Area**. This includes the abolishment of technical obstacles which still impede entry to national railway markets. A further integration of the road freight market will render road transport more efficient and competitive. For maritime

transport, a “**Blue Belt**” in the seas around Europe shall simplify the formalities for ships travelling between EU ports, and a suitable framework must be established to take care of European tasks for inland waterway transport. Market access to ports needs to be further improved.

36. Market opening needs to go hand in hand with **quality jobs and working conditions**, as the human factor is a crucial component of any high quality transport system. It is also widely known that labour and skill shortages will become a serious concern for transport in the future. It will be important to align the competitiveness and the social agenda in order to prevent social conflicts, which have proved to cause significant economic losses in a number of sectors, most importantly aviation.
37. **Transport security** is high on the EU’s agenda. The EU’s comprehensive approach of policy, legislation and monitoring of air and maritime transport security should be further consolidated and strengthened through cooperation with major international partners. For passenger security, screening methods need to be improved in order to ensure high security levels with minimum hassle. A risk based approach to the security of cargo originating outside the EU should be considered. There is also a need to find an appropriate European approach to land transport security in those areas where EU action has an added value.
38. Setting the framework for **safe transport** is essential for the European citizen. A European Strategy for civil aviation safety will be developed, which includes adaptation to new technologies and, obviously, international cooperation with main partners. In maritime transport, passenger ship safety needs to be proactively addressed. The Vessel Traffic Monitoring and Information System SafeSeaNet will become the core of all relevant maritime information tools supporting maritime safety and security, as well as the protection of the environment. For rail transport, the harmonisation and supervision of safety certification are essential in a Single European Railway Area. In these three transport sectors, the European Aviation, Maritime and Rail safety Agencies which were set up in the last decade play an indispensable role.
39. Even though the number of road fatalities in the EU was almost halved in the past decade, 34,500 people were killed on EU roads in 2009. Initiatives in the area of technology, enforcement, education and particular attention to vulnerable road users will be key to drastically reduce these losses of lives even further.
40. The **quality and reliability of transport services** will gain increasing importance in the coming years, inter alia due to the ageing of the population and the need to promote public transport. Attractive frequencies, reliability and intermodal integration are the main characteristics of service quality. The availability of information over travelling time and routing alternatives is equally relevant to ensure seamless door-to-door mobility, both for passengers and for freight.
41. The EU has already established a comprehensive set of passengers’ rights which will be further consolidated. Following the ash cloud crisis in 2010, it has become evident that Mobility Continuity Plans may be required to preserve the mobility of passengers of goods in a crisis situation.

### 3.2. Innovating for the future – technology and behaviour

#### *A European Transport research, innovation and deployment strategy*

42. ‘Growing out of oil’ will not be possible relying on a single technological solution. It requires a new concept of mobility, supported by a cluster of new technologies as well as more sustainable behaviour.
43. Technological innovation can help the transition to a more efficient and sustainable European transport system by acting on three main factors: vehicles’ efficiency through new engines, materials and design; cleaner energy use through new fuels and propulsion systems; better use of network and safer and more secure operations through information and communication systems.
44. Until now, transport research and innovation policy did not support in a coherent way the development and deployment of the key technologies needed to develop the EU transport system into a modern, efficient and user-friendly system. A systems’ approach is required, taking care of infrastructure and regulatory requirements, coordination of multiple actors and large demonstration projects to encourage market take-up. The Commission will devise an innovation and deployment strategy identifying appropriate governance and financing instruments, in order to ensure a rapid deployment of research results.
45. This will particularly concern the deployment of smart mobility systems developed through EU-funded research, such as the air traffic management system of the future (SESAR), the European rail traffic management system (ERTMS) and rail information systems, maritime surveillance systems (SafeSeaNet), River Information Services (RIS), intelligent transport services (ITS), and interoperable interconnected solutions for the next generation of multimodal traffic management and information systems (including for charging). It will also require an investment plan for new navigation, traffic monitoring and communication services.
46. Innovation and deployment need to be supported by regulatory framework conditions through standardisation or regulation, including at international level, not only to interconnect the modal systems and to avoid technological fragmentation, but also to enable European businesses to fully benefit from the entire European transport market, and to create worldwide market opportunities.

#### *Innovative mobility patterns*

47. New mobility concepts cannot be imposed. To promote more sustainable behaviour better mobility planning, information on all modes of transport, both for travel and freight, on possibilities for their combined use and on their environmental impact, will need to be widely available. Smart inter-modal ticketing, with common EU standards is vital. This relates not only to passenger transport but also freight, where better electronic route planning across modes, adapted legal environment (inter-modal freight documentation, insurance, liability) and real time delivery information also for smaller consignments is needed.
48. In the urban context, a mixed strategy involving land planning, pricing schemes and efficient public transport services is needed to reduce congestion and emissions. Cities above a certain size should be encouraged to develop Urban Mobility Plans,

bringing all those elements together. An EU-wide framework will be needed in order to make urban road user charging schemes interoperable.

### **3.3. Modern infrastructure and smart funding**

#### *A European Mobility Network*

49. Europe needs a ‘core network’ of corridors, carrying large and consolidated volumes of freight and passengers traffic with high efficiency and low emissions, thanks to the extensive use of more efficient modes in multimodal combinations and the wide application of advanced technologies and supply infrastructure for clean fuels.
50. Despite EU enlargement, large divergences in terms of transport infrastructure remain between eastern and western parts of the EU, which need to be tackled. The European continent needs to be united also in terms of infrastructure.
51. Within this core network, information technology tools should be widely deployed to simplify administrative procedures, provide for cargo tracking and tracing, and optimise schedules and traffic flows (e-Freight). Their uptake should be encouraged by requiring their deployment on TEN-T infrastructure and a gradual integration of modal systems.
52. The core network must ensure efficient multi-modal links between the EU capitals and other main cities, ports, airports and key land border crossing, as well as other main economic centres. It should focus on the completion of missing links – mainly cross-border sections and bottlenecks/bypasses – on the upgrading of existing infrastructure and on the development of multimodal terminals at sea and river ports and on city logistic consolidation centres. Better rail/airport connections must be devised for long distance travel. The Motorways of the Sea will be the maritime dimension of the core network.
53. The selection of projects eligible for EU funding must reflect this vision and put greater emphasis on European added value. Co-funded projects should equally reflect the need for ‘green’ infrastructure that minimises the impact on the environment, that is resilient to the possible impact of climate change and that improves the safety and security of users.
54. A well-performing transport network requires substantial resources. The cost of EU infrastructure development to match the demand for transport has been estimated at € 1.8 trillion for 2010-2030, or € 90 billion per annum. The completion of the TEN-T network requires about € 500 billion, and the removal of the main bottlenecks some € 21.5 billion yearly.
55. Diversified sources of finance both from public and private sources are required. Better coordination of the Cohesion and Structural Funds with transport policy objectives is needed, and Member States need to ensure that sufficient national funding is available in their budgetary planning. Other sources of funding to be considered include revenues from schemes for the internalisation of external costs. Wider application of the ‘polluter-pays’ and ‘user-pays’ principle would also

generate revenues for the funding of public transport and transport infrastructure<sup>12</sup>. It would create revenue streams allowing private investors to charge the full cost of construction and maintenance, making infrastructure investments more attractive to private capital.

56. Unlocking the potential of private finances equally requires an improved regulatory framework and new financial instruments. Project assessment and authorisation must be carried out in an efficient and transparent manner that limits time, cost and uncertainty. New financing instruments, for example the EU project bonds<sup>13</sup> initiative, can support Private Public Partnerships (PPP) financing on a bigger scale.

#### *Getting prices right and avoiding distortions*

57. Price signals play a crucial role in many decisions that have long-lasting effects on the transport system. Transport charges and taxes must be restructured. They should underpin transport's role in promoting European competitiveness, while the overall burden for the sector should reflect the total costs of transport in terms of infrastructure and external costs. Wider socioeconomic benefits and positive externalities justify some level of public funding, but in the future, transport users are likely to pay for a higher proportion of the costs than today. It is important that correct and consistent monetary incentives are given to users, operators and investors.
58. The internalisation of externalities and the elimination of tax distortions and unjustified subsidies are therefore part of the effort to align market choices with sustainability needs (and to reflect the economic costs of 'non-sustainability'). They are also necessary to establish a level playing field between modes which are in direct competition.
59. As regards the cost of GHG emissions, two main instruments are being used: taxation and emission trading systems. Taxation is currently applied to fuels used in land transport, while the ETS applies to aviation and to the electricity used in rail. The revision of the Energy Taxation Directive will be an opportunity to ensure better coherence between the two instruments. At the same time, the EU urges a decision in IMO on a global instrument to be applied to maritime transport, where climate change costs are currently not internalised.
60. The cost of local externalities such as noise, air pollution and congestion could be internalised through charging for the use of infrastructure. The Commission's recent proposal to amend the so-called 'Eurovignette Directive' represents a first step towards a higher degree of internalisation of costs generated by heavy goods vehicles, but disparities in national road charging policies will remain. Further action will examine the gradual phasing in of a mandatory harmonised internalisation system for commercial vehicles on the entire inter-urban network, putting an end to the current situation whereby international hauliers need the

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<sup>12</sup> In its Communication on the Strategy for the internalisation of external costs (SEC(2008) 2207, accompanying COM(2008) 435) the Commission has laid down a common methodology to charge all external costs across the whole transport sector.

<sup>13</sup> Reference to project bonds initiative.

Eurovignette, 5 national vignettes and 8 different tags and tolling contracts to drive unhindered on Europe's tolled roads.

61. For passenger cars, road charges are increasingly considered as an alternative way to generate revenue and influence traffic and travel behaviour. The Commission will develop guidelines for the application of internalisation charges to all vehicles and for all main externalities. The long-term goal is to apply user charges to all vehicles and on the whole network to reflect at least the maintenance cost of infrastructure, congestion, air and noise pollution.
62. In parallel, and before 2020, the Commission will develop a common approach for the internalisation of noise and local pollution costs on the whole rail network.
63. Many branches of transport are treated favourably in terms of taxation, in comparison to the rest of the economy: tax treatment of company cars, VAT exemptions on international sea and air transport, etc. Some of these arrangements can provide conflicting incentives with respect to the efforts to improve the efficiency of the transport system and reduce its external costs. The Commission will examine proposals to achieve greater consistency between the various elements of transport taxation and to encourage the rapid introduction of clean vehicles.

#### **3.4. The external dimension**

64. Transport is fundamentally international. Because of this, most actions in the Road Map are linked to challenges related to the development of transport beyond the EU borders. Flexible strategies will be adopted to facilitate trade, remove obstacles, grant access to markets and ensure the EU's role as a standard setter in the transport field.
65. To that end, the Commission will focus on the following areas of actions:
  - Extend internal market rules through work in international organisations (WTO, ICAO, IMO, OTIF, OSJD, the international river commissions etc) and where relevant attain full EU membership. Promote European safety and security standards worldwide through bilateral and multilateral cooperation. Reinforce the transport dialogue with main partners.
  - Extend our transport and infrastructure policy to our immediate neighbours, including in the preparation of mobility continuity plans. Complete the European Common aviation area of 58 countries and 1 billion inhabitants. Promote SESAR, ERTMS and ITS technology deployment in the world, and establish research and innovation partnerships also at international level.
  - Promote our approach globally: opening up market transport markets to free and fair competition and environmentally sustainable solutions.

#### **4. CONCLUSION**

66. A transformation of the European transport system will only be possible through a combination of manifold initiatives at all levels. The various actions and measures indicated in this Road Map will be further elaborated. The Commission will prepare

appropriate legislative proposals and implement the necessary policy measures. Each of its proposals will be preceded by a thorough impact assessment, considering EU added value and subsidiarity aspects. The Commission will ensure its actions increase the competitiveness of transport while delivering the minimum 60% reduction of GHG emissions from transport needed by 2050.

67. The Commission invites the European Parliament and the Council to endorse this *Road Map to a Single European Transport Area - White Paper on Transport* and the attached list of actions.

## **Annex I: List of initiatives**

### **1. A true internal market for rail services**

- Open the domestic rail passengers market to competition, including award of public service contracts under competitive tendering.
- Achieve a single vehicle type authorisation and a single railway undertaking safety certification by reinforcing the role of the European Railway Agency (ERA).
- Develop an integrated approach to freight corridor management, including track access charges.
- Introduce structural separation between infrastructure management and service provision, ensuring non-discriminatory access to rail infrastructure.

### **2. Completion of the Single European Sky**

- Achieve a truly seamless Single European Sky and deploy the future air traffic management system (SESAR) in the agreed timeframe.
- Establish the appropriate legal and financial framework to support the Single European Sky policy, consolidate the relationship between the European Union and Eurocontrol.

### **3. Capacity and quality of airports**

- Revise the Slot Regulation to favour more efficient use of airport capacity.
- Clarify and improve conditions to enter and provide quality services, including groundhandling: ensure that all actors in an airport system meet minimum quality standards.
- Airport Capacity – develop an approach to deal with future capacity problems including better integration with the railway network

#### **4. A maritime “Blue Belt” and a suitable framework for inland navigation**

The European Maritime Transport Space without Barriers should be further developed into a “Blue Belt” of free maritime movement in and around Europe, and waterborne transport should be used to its full potential.

- Integrate the use of monitoring tools by all relevant authorities, ensure the full interoperability between ICT systems in the waterborne sectors, and set up appropriate port facilities (“Blue Lanes”).
- Establish a framework for the granting of Pilot Exemption Certificates in EU ports.
- Establish an appropriate framework to optimise the Internal Market for Inland waterway transport, and to remove barriers that prevent its increased use. Assess and define the necessary tasks and mechanisms for their execution, also with a view to the Pan-European context.

#### **5. Market access to ports**

- Review restrictions on provision for port services.
- Enhance the transparency on ports’ financing, clarifying the destination of public funding to the different port activities, with a view to avoid any distortion of competition.

#### **6. Road freight**

- Review the market situation of road freight transport as well as the degree of convergence on, among others, road user charges, social and safety legislation, and enforcement of legislation, with a view to further opening road transport markets. In particular, remaining restrictions on cabotage should be eliminated.
- Review the rules on the tachograph to make it more cost-effective, give access to the EU register on road transport undertakings to police and enforcement officers when they carry out roadside checks; harmonise sanctions for infringement to EU rules on professional transport; harmonise training of enforcement officers.
- Adapt the legislation on weight and dimension to new circumstances and rising needs (e.g. better aerodynamic performance) to make sure it encourages intermodal transport and the use of vehicles which reduce the overall energy consumption and emissions.

## **7. Multimodal transport of goods: e-Freight**

Create the appropriate framework to allow tracing goods in real time, ensure intermodal liability and promote clean freight transport:

- Put in practice the concepts of ‘single window’ and ‘one-stop administrative shop’; by creating and deploying a single transport document in electronic form (electronic waybill), and creating the appropriate framework for the deployment of tracking and tracing technologies, RFID etc.).
- Ensure that liability regimes promote rail, waterborne and intermodal transport.

## **8. Social code for mobile road transport workers**

- Encourage and support the dialogue between social partners in view of an agreement on a social code for mobile road transport workers.

## **9. A Social Agenda for maritime transport**

- Implement the measures identified for action in the Maritime Social Agenda.
- Enhance the enforcement of the Maritime Labour Convention (MLC) of the International Labour Organization (ILO) with regard to Flag States, Port States and labour supplying States.
- Update the seafarers training Directive (2008/106/EC) following a revision of the International Maritime Organization (IMO) Convention on the training and the certification of seafarers (STCW Convention). Establish a mutually recognisable framework on the training of port workers in different fields of port activities.

## **10. A socially responsible aviation sector**

- Establish a mechanism to analyse the impact of regulatory developments on working conditions in the air transport sector.
- Establish Europe-wide minimum service obligations and quality standards for workers in the whole aviation value chain (including ATM and ground handling).
- Enhance European Works Councils in transnational EU airlines.

### **11. An evaluation of the EU approach to jobs and working conditions across transport modes**

- Conduct an appraisal of the sectoral social dialogue processes taking place in the various segments of the transport sector.
- Address the ‘human element’ in all transport modes, with respect to, notably, training, certification, working conditions and career development, with a view to creating quality jobs, developing the necessary skills and strengthening the competitiveness of EU transport operators.

### **12. Cargo security**

- Implement the Action Plan on Strengthening Air Cargo Security, define new rules on Air Cargo screening as necessary and enhanced security of cargo in ports.
- Complete an EU-wide one-stop security system for air cargo.

### **13. High levels of passenger security with minimum hassle**

Promote improved screening methods; such methods should underpin development of a ‘Check point of the future’ – such as security corridors which would allow a high number of passengers being controlled with minimum hassle. They should also support security provision in other vulnerable areas such as major transport interchanges.

- Promote, also through funding, the development of new technologies (more performing scanners, detectors of new explosives, smart chips, etc).
- Define common detection performance standards and certifications procedures for detection equipment.

### **14. Land transport security**

- Work with Member States on the security of land transport, establishing as a first step a permanent expert group on land transport security and introducing further measures where EU action has added value. Special focus will be put on urban security issues.

### **15. ‘End-to-end’ security**

- Increase the level of security along the supply chain without impeding the free flow of trade. ‘End-to-end’ security certificates should be considered.
- Joint Security Assessment covering all modes of transport.
- Integrate potential effects of terrorist and criminal attacks in the preparation of mobility continuity plans (cf. Initiative 23)
- Pursue international cooperation in the fight against terrorism and other criminal activities like piracy. The external dimension (cf. Initiative 40) is crucial.

### **16. Towards a ‘zero-vision’ on road safety**

- Harmonise and deploy road safety technology – such as driver assistance systems, (smart) speed limiters, seat-belt reminders, eCall and vehicle-infrastructure interfaces – as well as improved road worthiness tests including for alternative propulsion systems.
- Develop a comprehensive strategy of action on road injuries and emergency services, including common definitions and standard classifications of injuries and fatalities, in view of adopting an injuries reduction target.
- Focus on training and education of all users; promote the use of safety equipment (advanced braking systems, airbags, protective clothes, anti-tampering).
- Pay particular attention to vulnerable users such as pedestrians, cyclists and motorcyclists, including through safer infrastructure and vehicle technologies.

### **17. A European strategy for civil aviation safety**

European aviation safety is high but not the best in the world. Our aim should be to become the safest region for aviation. In order to do so, we will develop a comprehensive European aviation safety strategy, building on the work of the European Aviation Safety Agency (EASA), which includes the following aspects:

- Improve the collection, quality, exchange and analysis of data by reviewing legislation on occurrence reporting in civil aviation.
- Adapt the regulatory safety framework to the development of new technologies (SESAR).
- Ensure the implementation of the EU aviation safety strategy consistently

across all aviation domains.

- Promote transparency and exchange of safety information with ICAO and other international aviation partners, in particular in the framework of the Global Safety Information Exchange initiative; cooperate with non-EU countries, in particular the U.S., on safety matters on regulatory convergence, mutual recognition and technical assistance.
- Develop a Safety Management System at EU level that incorporates safety performance targets and measurements in order to identify the risks and to achieve continued improvement in safety levels.

### **18. Safer shipping**

- Work with the European Maritime Safety Agency (EMSA) to modernise passenger ship safety legislation.
- Develop SafeSeaNet into the core system for all relevant maritime information tools needed to support maritime safety and security and the protection of the marine environment.
- Assess the feasibility of the creation of an EU register and EU flag for maritime and inland waterway transport.
- Assess the feasibility of shared functions for coastguards in the EU to ensure maritime safety and security.

### **19. Rail safety**

- Progressively achieve a sector-wide approach to safety certification in the rail transport sector, building on existing approaches for infrastructure managers and railways undertakings and evaluating the possibility to rely on a European standard.
- Enhance the role of ERA in the field of rail safety, in particular its supervision on national safety measures taken by National Safety Authorities and their progressive harmonisation.
- Enhance the certification and maintenance process for safety critical components used to built rolling stocks and railway infrastructures.

### **20. Transport of dangerous goods**

- Streamline the rules for the intermodal transport of dangerous goods to ensure

interoperability between the different modes.

## **21. Passengers' rights**

- Develop a uniform interpretation of EU Law on passenger rights and a harmonised and effective enforcement, to ensure both a level playing field for the industry and a European standard of protection for the citizens.
- Assemble common principles applicable to passengers' rights in all transport modes (Charter of basic rights), notably the 'right to be informed', and further clarify existing rights. At a later stage, consider the adoption of a single EU framework Regulation covering passenger rights for all modes of transports (EU Codex).
- Improve the quality of transport for Passengers with Reduced Mobility and for disabled passengers, including better accessibility of infrastructure.
- Complete the established legislative framework on passenger rights with measures covering passengers on multimodal journeys with integrated tickets under a single purchase contract as well as in the event of transport operator's bankruptcy.
- Improve the level playing field at international level through the inclusion of care quality standards in bilateral and multilateral agreements for all modes of transport, with a view to further passengers' rights also in the international context.

## **22. Seamless door-to-door mobility**

- Define the measures necessary for further integrating different passenger transport modes to provide seamless multimodal door-to-door travel.
- Create the framework conditions to promote the development and use of intelligent systems for interoperable and multimodal scheduling, information, reservation systems and smart ticketing. This could include a legislative proposal to ensure access of private service providers to travel information.

## **23. Mobility Continuity Plans**

- Ensure the definition of mobility plans to ensure service continuity in case of disruptive events. The plans should address the issue of prioritisation in the use of working facilities, the cooperation of infrastructure managers, operators, national authorities and neighbouring countries, and the temporary adoption or relaxation of specific rules.

## **24. A technology roadmap**

Fragmentation of research and development efforts in Europe is most harmful, and joint European efforts will bring the greatest European added value in areas such as:

- Clean, safe and silent vehicles for all different modes of transport, from road vehicles to ships, barges, rolling stock in rail and aircraft (including new materials, new propulsion systems and the IT and management tools to manage and integrate complex transport systems).
- Technologies to improve transport security and safety.
- Potential new or unconventional transport systems and vehicles such as unmanned aircraft systems, unconventional systems for goods distribution,...
- A sustainable alternative fuels strategy including also the appropriate infrastructure.
- Integrated transport management and information systems, facilitating smart mobility services, traffic management for improved use of infrastructure and vehicles, and real-time information systems to track and trace freight and to manage freight flows; passenger/travel information, booking and payment systems.
- Intelligent infrastructure (both land and space-based) to ensure maximum monitoring and inter-operability of the different forms of transport and communication between infrastructure and vehicles.
- Innovations for sustainable urban mobility following up the CIVITAS programme and initiatives on urban road pricing and access restriction schemes.

## **25. An innovation and deployment strategy**

Identify the necessary innovation strategies including the appropriate governance and the financing instruments in order to ensure a rapid deployment of results developed in the research process. Examples are:

- Deployment of smart mobility systems such as the air traffic management system of the future (SESAR), the European rail traffic management system (ERTMS) and rail information systems, maritime surveillance systems (SafeSeaNet), River Information Services (RIS), ITS, and the next generation of multimodal traffic management and information systems.
- Definition and deployment of an open standard electronic platform for vehicle on board units, performing various functions including road charging.
- Development of a plan for investment in new navigation, traffic monitoring

and communication services to allow for the integration of information flows, management systems and mobility services based on a European Integrated Multimodal Information and management Plan (EIMIP). Demonstration projects for electro mobility (and other alternative fuels) including recharging and refuelling infrastructure and intelligent transport systems.

- Smart mobility partnerships and demonstration projects for sustainable urban transport solutions (including demonstrators for road pricing schemes etc).

## **26. A regulatory framework for innovative transport**

Identify the necessary regulatory framework conditions through standardisation or regulation:

- Appropriate standards for CO<sub>2</sub> emissions of vehicles in all modes, where necessary and not yet developed. In a later stage these would be replaced by requirements on energy efficiency to address all types of propulsion systems;
- Vehicle standards for noise emission levels;
- Revised test cycles for road vehicles;
- Public procurement strategies to ensure rapid up take of new technologies;
- Rules on the interoperability of charging infrastructure;
- Guidelines and standards for refuelling infrastructures;
- Interface standards for infrastructure-to-infrastructure, vehicle-to-infrastructure, and vehicle-to-vehicle communications;
- Access conditions to transport data for safety and security purposes;
- Specifications and conditions for transport related smart charging and payment systems;
- Better implementation of existing rules and standards.

## **27: Travel information**

- Promote awareness of the availability of alternatives to individual conventional transport (drive less, walk and cycle, car sharing, park&drive, intelligent ticketing etc.)

## **28: Fuel and vehicle efficiency labelling**

- Render fuel efficiency labelling more effective. This would include the

extension of the scope of the labelling scheme to light commercial and L-category vehicles, the harmonisation of the label design, and the introduction of energy efficiency classes in order to better raise consumer awareness at the time of purchase.

### **29: Carbon footprint calculators**

- Encourage carbon certification schemes and develop common EU standards in order to allow estimating the environmental footprint of each passenger and freight journey with versions adapted to different users such as companies and individuals. This will allow better choices and easier marketing of cleaner transport solutions.

### **30: Eco-driving and Speed limits**

- Include eco-driving requirements in the future revisions of the driving licence directive and take steps to accelerate the deployment of ITS applications in support of eco-driving. Fuel saving techniques should also be developed and promoted in other modes – for example continuous descent for aircrafts.
- Examine approaches to limit the maximum speed of light commercial road vehicles, in order to decrease energy consumption, to enhance road safety and to ensure a level playing field.

### **31. Urban Mobility Plans**

- Establish procedures and support mechanisms for preparing Urban Mobility Audits, a certification system, as well as Urban Mobility Plans to promote alternatives to the use of conventional cars, such as walking and cycling, public transport, spatial planning or new technological solutions. Examine the possibility of a mandatory approach for cities of a certain size, according to national standards based on EU guidelines.
- Link regional development and cohesion funds to cities and regions that have submitted a current, and independently validated Urban Mobility Performance and Sustainability Audit certificate.
- Examine the possibility of a European framework for a progressive introduction of Urban Mobility Plans in European cities.
- Set up a European urban mobility scoreboard based on common targets.
- Integrated urban mobility in a possible Smart Cities Innovation Partnership.

- Encourage large employers to develop Corporate/Mobility Management Plans.

### **32. An EU framework for urban road user charging**

- Develop a validated framework for urban road user charging and access restriction schemes and their applications, including a legal and a validated operational and technical framework covering vehicle and infrastructure applications.

### **33. A strategy for near- ‘zero-carbon urban logistics’ 2030**

- Produce best practice guidelines to better monitor and manage urban freight flows (e.g. consolidation centres, size of vehicles in old centres, regulatory limitations, delivery windows, inefficient loading factors, unused potential of transport by river).
- Define a strategy for moving towards ‘zero-carbon urban logistics’, bringing together aspects of land planning, rail and river access, business practices and information, charging and vehicle technology standards.
- Promote joint public procurement for low emission vehicles in commercial fleets (delivery vans, taxis...).

### **34. A core network of strategic European infrastructure – A European Mobility Network**

- Define in new TEN-guidelines a core network of strategic European infrastructure integrating the eastern and western part of the European Union and shaping the Single European Transport Area.
- Concentrate European action on the components of the TEN-T network with the highest European added value (cross border missing links, intermodal connecting points and key bottlenecks).
- Deploy large scale intelligent and interoperable technologies (SESAR, ERTMS, RIS, ITS, etc.) to optimise the capacity and the use of infrastructure.
- Ensure that EU-funded transport infrastructure takes into account energy efficiency needs and climate change challenges (climate resilience of the overall infrastructure, refuelling stations for clean vehicles, choice of construction materials...).

### **35. Multimodal freight corridors for sustainable transport networks**

- Create in the context of the ‘core network’ multimodal freight corridor structures to synchronise investments and infrastructure works and support efficient, innovative and multimodal transport services, including rail services over medium and long distances.
- Support multimodal transport and single wagon load business, stimulate the integration of inland waterways into the transport system and promote eco-innovation in freight transport. Support the deployment of new vehicles and vessels and retrofitting.

### **36. Ex-ante project evaluation criteria**

- Introduce ex-ante project evaluation criteria ensuring that projects duly demonstrate the EU added value or are based on ‘services rendered’ and generate sufficient revenue.
- Streamline procedures for projects of overriding European interest, in order to ensure (i) reasonable time limits for completing the whole cycle of procedures and (ii) a communication framework that is in line with the project implementation.
- Introduce PPP-screening to the ex-ante evaluation process to ensure that the option of PPP has been carefully analysed before a request for EU funding is being asked.

### **37. A new funding framework for transport infrastructure**

Develop an infrastructure funding framework with sufficient conditionality to provide support for the completion of the TEN-T core network as well as other infrastructure programmes.

- Design an integrated programming framework, encompassing the investment strategies of both the transport infrastructure instrument and the Cohesion and Structural Funds, and considering revenues from transport activities.
- Provide EU support for developing technologies that improve infrastructure use efficiency and decarbonisation (new road network pricing and tolling systems, ITS and capacity improvement programs).
- Make EU transport funding conditional on transport policy requirements.
- Link TEN-T funding to progress towards the completion of the TEN-T core

network and on the pooling of national resources along corridors.

- Convince Member States to prioritise funding for ensuring the proper maintenance of the transport infrastructure.

### **38. Private sector engagement**

- Help to create enabling framework for the development of PPPs: (i) introduce a formal screening of TEN-T projects to identify those with PPP potential, (ii) create a standardized and predictable PPP procurement process for TEN-Ts over time; and (iii) revise TEN-T regulations accordingly as to accommodate the PPP procurement process and payment mechanisms.
- In cooperation with EPEC, encourage MS to use more PPPs, while acknowledging that not all projects are suitable for this mechanism, and provide relevant expertise to Member States.
- Participate in designing the new financing instruments for transport sector, particularly the project bonds initiative.

### **39. Smart pricing and taxation**

#### **Phase I**

Transport charges and taxes should be restructured. They should underpin transport's role in promoting European competitiveness, while the overall burden for the sector should reflect the total costs of transport in terms of infrastructure and external costs.

- Revise motor fuel taxation with clear identification of the energy component, and possibly the CO<sub>2</sub> component, and repeal of exemptions.
- Phase in a mandatory infrastructure charge for heavy-duty vehicles. The scheme would introduce a common tariff structure and cost components such as the recovery of wear and tear, noise and local pollution costs to replace the existing user charges.
- Evaluate existing car road charging schemes and their compatibility with the EU Treaties. Develop guidelines for the application of internalisation charges to road vehicles, covering the social costs of congestion, CO<sub>2</sub> – if not included in fuel tax – local pollution, noise and accidents. Incentives to Member States who launch pilot projects for the implementation of schemes along such guidelines.
- Proceed with the internalisation of external costs for all modes of transport applying common principles while taking into account the specificity of each mode.

- Create a framework for earmarking revenues from transport for the development of an integrated and efficient transport system.
- Issue guidelines providing clarification and uniform treatment of public funding to all modes of transport and to all types of transport infrastructure.
- Reassess transport taxation where necessary, namely by linking vehicles' tax to environmental performance, introducing harmonised VAT levels on EU cross-border passenger transport, and revising company car taxation to eliminate distortions and favour the deployment of clean vehicles.

#### **Phase II**

- If necessary, proceed to the full and mandatory internalisation of external costs (including noise, local pollution and congestion on top of the mandatory recovery of wear and tear costs) for road and rail transport. Internalise costs for local pollution and noise in ports and airports, as well as for air pollution at sea, and examine mandatory application of internalisation charges on all inland waterways on EU territory. Develop market based measures to further reduce GHG emissions.

#### **40. Transport in the World: The external dimension**

Transport is fundamentally international. Because of this, most actions in this White Paper are linked to challenges related to the development of transport beyond the EU borders. Flexible strategies will be adopted to facilitate trade, remove obstacles, grant access to markets and ensure the EU's role as a standard setter in the transport field. To that end, the Commission will focus on the following areas of actions:

- Extend internal market rules through work in international organisations (WTO, ICAO, IMO, OTIF, OSJD, the international river commissions etc) and where relevant attain full EU membership. Promote European safety and security standards worldwide. Reinforce the transport dialogue with main partners.
- Complete the European Common aviation area of 58 countries and 1 billion inhabitants. Conclude comprehensive air services agreement with key economic partners (Brazil, China, India, Russia, South Korea etc.) and eliminate air transport investment restrictions in 3rd countries. Promote SESAR technology deployment in the world.
- Take action in multilateral forums to promote policy targeted at the energy efficiency and climate change goals of this White Paper.
- Continuously use multilateral (in ICAO, IMO) and bilateral layers to tackle the issue of terrorism, envisaging international agreements and enhanced security dialogues with strategic partners, starting with the US. Cooperate on

joint threat assessments, training of third countries officers, joint inspections, piracy prevention, etc. Ensure recognition of the EU concept of 'one stop security' system internationally.

- Extend our transport and infrastructure policy to our immediate neighbours, including in the preparation of mobility continuity plans.
- Establish research and innovation partnerships to find common answers to the challenges related to interoperability of transport management systems, alternative fuels, security and safety.