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Greening Transport

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COMMISSION STAFF WORKING DOCUMENT

Greening Transport Inventory

1. GENERAL INTRODUCTION

Transport policy has been at the heart of EU policies since the founding of the then European Economic Community in 1957. Over the last 50 years it has become a key part of the European Union's policies, facilitating economic growth, encouraging mobility and improving quality of life for European citizens. Today EU transport policy faces new challenges posed by transport's very success: climate change, local pollution, noise, congestion and accidents.

The current transport policy – first set out in 2001[1] and revised in 2006[2] – aims for sustainable mobility, as did the previous transport white paper.[3] This means allowing greater mobility while reducing its negative impacts. The policy was developed – and will continue to be – in the framework of the EU's Sustainable Development[4] and Lisbon Strategies. Environment,[5] climate change and energy policies all play an important role in reducing these impacts, supported by EU policies on the Single Market, Research and Cohesion.

This inventory shows the large number and diverse measures that are already in place to reduce the negative impacts of transport. Knowing what already exists, what has been proposed, and what the Commission is planning to propose in the near future[6] will provide a solid base on which to move forward. This is essential as current trends in transport growth mean that its negative impacts are likely to worsen over the coming years, jeopardising meeting recent political commitments such as those of the European Council on climate change and energy.

The inventory begins by describing policies affecting several means of transport and then has a section for each main transport mode: air, maritime, inland waterway, rail and road. Each section is divided according to the main negative impacts: climate change; regional and local pollution, noise pollution, congestion and accidents. Where a measure could fit in more than one category, it is placed in the one that concerns its principle objective and a cross-reference is made to this in other

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1 White Paper - European transport policy for 2010: time to decide, COM (2001) 370

2 Communication from the Commission to the Council and the European Parliament Keep Europe moving - Sustainable mobility for our continent Mid-term review of the European Commission's 2001 Transport White Paper COM (2006) 314

3 Communication from the Commission: The future development of the common transport policy, a global approach to the construction of a Community framework for sustainable mobility, COM (92) 494

4 Council of the European Union: Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy adopted by the European Council on 15/16 June 2006, 10917/06

5 Decision 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme, OJ L 242, 10.9.2002, p. 1

6 The cut off date for inclusion is 31.3.2008.

sections. Where no measure is mentioned this means that none has been found with significant impacts.

2. GENERAL MEASURES

This section presents the general EU measures that affect several transport sectors.

2.1. Multiple-impact measures

This section presents measures which transcend some or all of the different impacts of mobility: climate change, local pollution, noise, congestion and accidents.

2.1.1. Economic Instruments

There are common EU rules[7] for taxing motor fuels. Minimum rates are set depending on the type of fuel, and some are being progressively raised up to 2012. Alternative fuels, such as LPG and natural gas, are treated favourably, as are biofuels. In 2007 the Commission proposed[8] amending the minimum tax rates and rules, including increasing the minimum tax rates for unleaded petrol and gas oil. Where sector-specific rules exist, more details on them are given in the respective chapters.

In general, the Commission encourages the use of market-based instruments both at Community and national levels and, in 2007, it launched a stakeholder consultation on further use of market-based instruments for environmental purposes, including on transport fuels, infrastructure and emissions.[9] One of the follow-up actions will be a review of the Energy Taxation Directive, currently planned for 2008, which will aim to bring it more closely into line with the EU's climate and energy policies.

State aids, such as subsidies, tax breaks or contracts, can be allowed for environmental purposes in some specific cases. These cases are defined in guidelines, which are either specific to a mode of transport or common for all environmental state aids.[10] These common guidelines state that the overall effect on the environment has to be positive and go beyond what is required by EU legislation. The guidelines do not cover environmental aid for transport infrastructure and aid for the design and manufacture of more fuel-efficient means of transport. They also stress the importance of encouraging the acquisition of all types of clean transport vehicles in order to fight global climate change and reduce local pollution.

In 2008, at the same time as the publication of this Inventory, the Commission presented a strategy on the internalisation of external costs in transport. This underlined the importance of ensuring that transport users pay the full costs of their environmental and social impacts and set out how EU action can contribute to this.

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7 Council Directive 2003/96/EC of 27 October 2003 restructuring the community framework for taxation of energy products and electricity, OJ L 283, 31.10.2003, p. 51, as amended.

8 Proposal for a Council Directive amending Directive 2003/96/EC as regards the adjustment of special tax arrangements for gas oil used as motor fuel for commercial purposes and the coordination of taxation of unleaded petrol and gas oil used as motor ful, COM (2007) 52

9 Green Paper on market-based instruments for environment and related policy purposes, COM (2007) 140

10 Community Guidelines on State Aid for Environmental Protection, (2008/C 82/01), OJ C 82, 1.4.2008, p. 1

The EU also provides a wide-range of funding through the Cohesion[11] and European Regional Development Funds.[12] Those Member States eligible for the Cohesion Fund can now use the fund to support transport projects (other than the Trans-European Networks) which have clear environmental benefits, including rail river and sea transport, inter-modal systems, traffic management, clean urban transport and public transport.

2.1.2. Regulatory instruments

EU rules[13] to encourage combined transport aim to improve road safety, reduce environmental impacts and reduce congestion by providing an alternative to road transport. They liberalise the sector and require reimbursement of road vehicle excise duties proportional to the distance that the vehicle is transported by rail, while allowing total exemption for road vehicles from vehicle excise duties if they are only used in combined transport. They also require load documentation to state where combined transport will be unloaded from and loaded onto road transport.

2.1.3. Infrastructure

EU rules on environmental assessment[14] require that before certain infrastructure projects begin their environmental impacts are assessed and environmental authorities and the public are consulted. These requirements cover projects over a certain size[15] in all transport modes. Member States are required to screen other projects[16] to determine whether such an assessment is required and conduct one if they consider it necessary.

A strategic environmental assessment is also required[17] for policy plans and programmes prepared for transport and which set the framework for future

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11 Council Regulation 1084/2006 of 11 July 2006 establishing a Cohesion Fund and repealing Regulation 1164/94, OJ L 412, 30.12.2006, p. 5

12 Council Regulation 1080/2006 of the European Parliament and of the Council of 5 July 2006 on the European Regional Development Fund and repealing Regulation 1783/1999, OJ L 210, 31.7.2006, p. 1

13 Council Directive 92/106/EEC of 7 December 1992 on the establishment of common rules for certain types of combined transport of goods between Member States, OJ L 368, 17.12.1992, p. 38

14 Council Directive 85/337/EEC of 27 June 1985 on the assessment of certain public and private projects on the environment, OJ L 175, 5.7.1985, p. 40, as amended.

15 The projects for which this is mandatory (Annex I to the directive) are, (i) construction of lines for long-distance railway traffic and of airports with a basic runway length of 2100m or more; (ii) construction of motorways and express roads; (iii) construction of new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road, or realigned and /or widened section of road would be 10 km or more in continuous length; (iv) inland waterways and ports for inland-waterway traffic which permit the passage of vessels of over 1 350 tonnes; (v) trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1 350 tonnes.

16 Including (Annex II to the directive) car parks, the construction of railways and inter-modal transhipment facilities, and of inter-modal terminals; the construction of airfields; construction of roads, harbours and port installations, including fishing harbours; inland waterway construction and canalisation; tramways, elevated underground railways, suspended lines or similar lines used exclusively or mainly for passenger transport; permanent racing and test tracks for motorised vehicles; marinas.

17 Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197, 21.7.2001, p. 30

infrastructure projects listed in the EU rules on environmental assessment. This assessment must result in the identification, description and evaluation of the likely significant environmental effects, as well as of the reasonable alternatives.

The Trans-European Networks for Transport (TEN-T) aim to promote the interconnection and interoperability of national networks and access to these networks. There are currently 97 600 km of rail (of which 10 680 km of High Speed Line), 98 500 km of roads (of which 48 200 km of motorways) and 15 550 km of inland waterways. The guidelines also define 30 priority projects, most of which promote rail, intermodal, maritime and inland waterway transport. Implementing these projects by 2020 has been estimated to reduce the increase in CO_2 emissions by four percentage points (34% increase instead of 38%), assuming that emissions continue to rise at the current rate.[18]

The EU guidelines[19] for the development of the TEN-T network require strategic environmental assessments and environmental impact assessments to be carried out for all projects, as well as all EU environmental legislation to be respected. Only under very restricted conditions can compensatory measures be taken to allow the project to go ahead.

The Commission recently selected 78 multi-annual TEN-T priority projects over the period 2007-2013, for an overall amount of €5.1 billion. Funding is focused on the rail (74.2%) and inland waterways (11.5%) sectors.

In preparation for the revision of the TEN-T guidelines to cover the period after 2010, the Commission will produce a Green Paper in autumn 2008. This will look at the policy's achievements and draw the lessons to be learnt, as well as how best to take forward this policy in the years to come. Given the Commission's desire to reinforce the sustainable development dimension of transport and to respond to the global challenge of climate change, the Green Paper will see how TEN-T policy can best contribute to these goals.

The Marco Polo II programme[20] aims to shift a substantial part of the expected increase in international road freight traffic to short-sea shipping, rail and inland waterways, or to a combination of modes of transport in which road journeys are as short as possible. It should hence reduce environmental impacts through a modal shift. The programme, which will run until the end of 2013, finances projects that stimulate modal shift or traffic avoidance, promote cooperation and know-how sharing, as well as innovative actions to improve synergies between modes, and "motorways of the sea" (see section 4.1.2.1).

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18 Communication from the Commission: Trans-European Networks: Towards and integrated approach, COM (2007) 374

19 Decision 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, OJ L 228, 9.9.1996, p. 1-104, as amended by Decision 884/2004/EC of the European Parliament and of the Council of 29 April 2004

20 Regulation 1692/2006 of the European Parliament and of the Council of 24 October 2006 establishing the second "Marco Polo" programme for the granting of Community financial assistance to improve the environmental performance of the freight transport system (Marco Polo II) and repealing Regulation 1382/2003, OJ L 328, 24.11.2006, p. 1

2.1.4. Urban transport

Urban road transport is estimated to account for 40% of all EU CO_2 emissions and around 70% of all other pollutant emissions. In the second half of 2008, the Commission will produce an action plan on urban mobility to address some of the issues surrounding urban mobility. This will build on its 2007 Green Paper[21] and the ensuing stakeholder consultations and also address the issue of urban transport plans, raised by the Commission in 2006 in its urban environment strategy.[22] The Commission has also underlined the importance of both public transport and cycling and walking for public health in terms of both reducing emissions and promoting physical activity.[23]

2.1.5. Research and Technology

EU research policy is currently being channelled through the 7th Framework Research Programme,[24] which covers the period up to the end of 2013. This contains actions on transport, the environment and energy, as well as information and communications technologies which have an impact on all of these areas. The relevant actions are covered in the individual chapters.

2.1.6. Global Navigation Satellite Systems

Accurate satellite navigation providing global positioning systems will stimulate the use of advanced technologies, which themselves should allow improved traffic flow management and avoid accidents that could cause environmental damage. The Commission is currently involved in two Global Navigation Satellite System (GNSS) projects: EGNOS and GALILEO. EGNOS (the European Geostationary Navigation Overlay Service) aims to add to the two military satellite navigation systems now operating, the American GPS and Russian GLONASS systems, and makes them suitable for uses where safety is critical. It is in its pre-operational phase. The GALILEO system will be more accurate than the current GPS, allowing detail of up to one metre for commercial applications. This will increase the potential for avoiding negative environmental impacts. It should be operational in 2013.[25]

2.2. Climate change

In 2002, the EU ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change. This committed the EU as a whole to an 8% reduction in greenhouse gas emissions by 2008-12 compared to 1990. More recently, in March 2007, the EU committed itself to achieving a 20% reduction in greenhouse

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21 Green Paper – Towards a new culture for urban mobility, COM (2007) 551

22 Communication from the Commission to the Council and the European parliament on thematic Strategy on the Urban Environment, COM (2005) 718

23 White Paper on a Strategy for Europe on Nutrition, Overweight and Obesity-related health issues, COM (2007) 279.

24 Decision 1982/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013), OJ L 412, 30.12.2006, p. 1

25 Communication from the Commission to the European Parliament and the Council – Progressing GALILEO: Re-Profiling the European GNSS Programmes, COM (2007) 534

gas[26] emissions by 2020 and a 30% reduction if this is part of an international agreement.

To meet the 20% target, the Commission proposed, in 2008, concrete targets for changes in greenhouse gas emissions between 2013 and 2020 for each Member State.[27] Some Member States are allowed to increase emissions, while others should decrease them. These targets cover the sectors – such as transport – that are not in the European Union's Emissions Trading System (ETS).[28] It will be for the Member States to decide how the changes are to be divided up between sectors; however, it is a general principle that all sectors of the economy should contribute to the overall reduction targets.

Increasing energy efficiency in transport will automatically lead to fewer emissions per kilometre and will hence contribute to reduced greenhouse gas and pollutant emissions, as well as to reducing dependency on oil imports. In 2007 the European Council agreed to a target of increasing energy efficiency by 20% by 2020 compared to the business-as-usual growth that would otherwise take place. The Energy Efficiency Action Plan[29] highlights the importance of improving energy efficiency in the transport sector because it is the sector that consumes the bulk of oil products and has the fastest growing emission profile. The plan contains many transport mode-specific actions; these are described in each of the chapters.

Cleaner fuels and fuels from renewable energy sources can reduce the environmental impact of transport. The European Council committed the EU to increase the use of renewable energy by 20% by 2020. The Commission recently proposed that 10% of petrol and diesel used for transport should come from sustainable biofuels by 2020. In the 2006 review of the Sustainable Development Strategy the Commission said it and Member States should develop a long term and coherent EU fuel-strategy.

2.2.1. Economic Instruments

The Commission has proposed that commercial aviation is included in the ETS (see section 3.1.1.2).

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[26] The greenhouse gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6)

[27] Proposal for a decision of the European Parliament and of the Council on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, COM (2008) 17

[28] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, OJ L 275, 25.10.2003, p. 32. Directive as amended by Directive 2004/101/EC OJ L 338, 13.11.2004, p. 18.

[29] Communication from the Commission: Action Plan for Energy Efficiency: Realising the Potential, COM (2006) 545

2.2.2. Regulatory Instruments

In 2007 the Commission proposed[30] that fuel suppliers will have to reduce the greenhouse gas emissions their fuels – including fuels for inland waterway transport - cause over their life-cycle (i.e. refining, transportation and use). Based on figures that would have to be reported by fuel suppliers from 1 January 2009, the suppliers would have to reduce their emissions by 1% a year from 2011 to 2020, resulting in a 10% reduction overall. This has been estimated to lead to a reduction in EU greenhouse gas emissions of 500 million tonnes of CO_2 by 2020.

2.2.3. Infrastructure

Transport infrastructure includes many thousands of airports, port terminals, stations and car parks. EU rules[31] require that minimum energy performance measures to be put in place when buildings with a useful floor area of more than 1 000 m² are renovated or constructed. This includes the performance of air-conditioning, boilers, lighting and heating.

2.2.4. Research and Technology

New energy technologies can make a significant contribution to both reducing energy use in transport, and reducing its environmental impacts. The Commission's Strategic Energy Technology plan[32] identified the main challenges for the next 10 years in order to meet the 2020 emissions targets for greenhouse gas reductions, as well as to meet the 2050 vision of a reduction of these emissions by 60-80%. These included the following transport-related challenges:

– making second generation biofuels competitive alternatives to fossil fuels, while respecting the sustainability of their production;

– bringing to mass market more efficient energy conversion and end-use devices and systems in transport, such as fuel cells;

– achieving a breakthrough in the cost-efficiency of energy storage technologies;

– developing the technologies and create the conditions to enable industry to commercialise hydrogen fuel cell vehicles.

The EU plan said that in 2008 the Commission will launch a "bio-energy Europe Initiative" focusing on 'next generation' biofuels within the context of an overall bio-energy strategy. This will be a European Industrial Initiative aiming to align the

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30 Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels and amending Council Directive 1999/32/EC, as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC, COM (2007) 18

31 Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings, OJ L 65, 4.1.2003, p. 65

32 Communication form the Commission to the council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: A European Strategic Energy Technology Plan (SET-Plan), COM (2007) 723

efforts of Member States, the Community and industry to achieve measurable objectives.

Commission initiatives in other sectors also have an influence on the energy efficiency of transport. For example, ongoing Commission work on the role of information and communication technologies[33] will also have an influence.

2.3. Local pollution

2.3.1. Air pollution

2.3.1.1. Regulatory Instruments

EU air quality rules[34] require Member States to limit the concentration of pollutants such as benzene, carbon monoxide, lead, nitrogen dioxide, particulates and sulphur dioxide in ambient air[35] and to draw up action plans when the concentrations risk being exceeded. The rules specifically state that these measures can include suspending motor vehicle traffic. If the concentrations are exceeded, Member States must draw up a plan or programme to meet the limit values. This plan has to include information on where the pollution comes from, such as transport or cross-border transport, its quantity and quality. New simplified rules were adopted in 2008 which added an additional category for fine particles ($PM_{2.5}$).[36]

EU air emissions rules[37] also require Member States to limit the total national emissions of sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia by 2010. The emissions limits ("ceilings") differ from country to country and pollutant to pollutant. Member States are required to draw up national programmes to achieve the reductions required. In 2008 the Commission will report on progress and propose new, reduced ceilings for the period 2010-2020.

Emissions from international maritime traffic and aircraft emissions beyond the landing and take-off cycle[38] are not included in these emissions ceilings. Nevertheless, the Commission and Member States are required to have bilateral and

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33 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Addressing the challenge of energy efficiency through information and communication technologies, COM (2008) 241

34 Council Directive 96/62/EC of 27 September 1996 on ambient air quality and management, OJ L 296, 21.11.1996, p. 55, Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, OJ L 163, 29.6.1999, p. 41, Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air, OJ L 313, 13.12.2000, p. 12; Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons in ambient air, OJ L 23, 26.1.2005, p. 3

35 The concentrations are given in Annex I

36 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe, OJ L 152, 11.6.2008, p. 1-44

37 Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants, OJ L 309, 27.11.2001, p. 22

38 This is defined in Article 3(g) of the directive as, a cycle represented by the following time in each operating mode: approach 4 minutes; taxi/ground idle 26 minutes, take-off 0.7 minutes; climb 2.2 minutes)

multilateral cooperation with third countries and relevant international organisations (including the International Maritime Organisation (IMO) and the International Civil Aviation Organisation (ICAO)), to improve the scientific basis for emissions reductions. By the end of 2002, the Commission was required to report to the Council and European Parliament on the extent to which emissions from international maritime traffic, and aircraft beyond the landing and take-off cycle contribute to acidification, eutrophication and the formation of ground-level ozone with the EU, including setting out a programme of actions which could be taken at international and Community level to reduce emissions from these sectors.

EU rules exist to limit the emissions of volatile organic compounds during the storage, loading, distribution and unloading of petrol (not LPG).[39] These consist of technical design requirements that apply to most cases[40] of storage, loading, transport and unloading. The Commission will present a proposal to revise these rules at the end of 2008.

2.3.1.2. Research and Technology

Air pollution has been an important element of past framework research programmes and will continue to be a key issue in the transport theme of the 7th "Cooperation" specific programme.

2.3.2. Water pollution and Flooding

Waterborne transport requires a minimum and a maximum amount of water in order to function; both drought and flooding have a negative influence. Waterborne transport also has potentially negative effects on water quality through emissions and spillages, both accidental and intentional.

In October 2007 the Commission proposed an integrated maritime policy for the EU,[41] including an action plan.[42] One important action is for the Member States to draw up integrated maritime policies. In 2008, the Commission will propose a set of guidelines for these policies and from 2009 it will report on their implementation. Other relevant actions in the action plan are presented separately in this inventory.

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39 European Parliament and Council Directive 94/63/EC of 20 December 1994 on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations, OJ L 365, 31.12.1994, p. 24

40 Directive 94/63/EC covers the loading and unloading of mobile containers at terminals built before 2006 with an annual throughput of greater than or equal to 10 000 tonnes per year, or of greater than or equal to 5 000 tonnes per year if the terminal was built after 2005; mobile containers (i.e. tankers), unless they were in service before 2006 and use dipsticks for measuring; and loading into storage at service stations with a throughput greater than or equal to 100m³/year, or greater than or equal to 500m³/year if the station is situated in an area or site where the vapour emissions are unlikely to contribute significantly to environmental or health problems.

41 Communication from the Commission to the European Parliament, the Council, The European economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union, COM(2007) 575 final

42 Commission staff working document - Accompanying document to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - An Integrated Maritime Policy for the European Union SEC (2007) 1278

2.3.2.1. Regulatory Instruments

EU rules[43] set objectives for all waters, which have to be achieved by 2015. These concern both water quality and quantity: for surface waters[44] good econological and chemical status and for groundwater good quantitative and chemical status.. There are exceptions – for example where the "water body" has been heavily modified for inland navigation, or where alternative means of transport or types of infrastructure would be technically impossible, prohibitively expensive or produce a worse overall environmental result. Member States have to put in place measures to achieve these goals, including in the transport sector if its emissions adversely affect water quality.

EU rules on marine water quality are similar, requiring, with some exception, good environmental status[45] by 2020. Member States have to take measures to achieve this.

EU rules on flood risk management[46] require Member States to assess the risks of flooding in their rivers and coastal zones by 2011, to develop hazard and risk maps by 2013 and to develop flood risk management plans by 2015. In all cases the type of economic activity has to be considered, which will include transport infrastructure and fuel storage. Navigation and port infrastructure are explicitly mentioned as the type of aspects that have to be taken into account.

2.3.2.2. Research and Technology

In mid-2008, the Commission will publish a European Maritime Research Strategy. This will include consideration of greening maritime transport.

2.3.3. Nature protection, soil pollution and waste

2.3.3.1. Regulatory Instruments

EU rules[47] limit the possibilities for undertaking any projects, including transport infrastructure projects, which could have a significant negative impact on sites important for biodiversity. They require an assessment of the potential impacts and only allow the project's approval if it will have no adverse effect, or if there is an overriding public interest and compensatory measures are taken by the Member State.

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43 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, OJ L 327, 22.12.2000, p. 1

44 Surface waters extend up to one nautical mile beyond the territorial waters of the EU Member States and include inland waterways, estuaries and coastal waters.

45 Defined as defined as "where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations".

46 Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, OJ L 288, 6.11.2007, p. 27

47 Council Directive 92/43/EC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992, p. 7

EU rules[48] place a general obligation on Member States to ensure that waste – including from transport – is disposed of without human health impacts and without using processes or methods which could harm the environment. These rules also require Member States to take all necessary measures to prohibit the abandonment, dumping or uncontrolled disposal of waste.

Specific EU rules exist[49] for the collection and disposal of waste oils, which means any mineral-based lubrication or industrial oils, in particular for combustion engines and gearboxes and oils for turbines and hydraulics. These include a specific ban on their discharge to waters and soil.

Other EU rules exist[50] that ban the disposal of used and shredded tyres in landfills. EU rules[51] ban the incineration or disposal in landfills of batteries and accumulators from automotive or industrial (which also includes electric vehicles) sources unless they have been properly treated. They also require Member States to ensure that a collection scheme is established for automotive batteries and accumulators and that they are labelled in a particular way.

The Commission has proposed EU rules[52] to protect soils and prevent their degradation that would cover sites where some transport activities take place. The rules would include both monitoring and assessment of existing and future impacts and obligations to limit soil sealing or remediate its effects

2.4. Noise

2.4.1. Regulatory Instruments

EU noise rules[53] require Member States to monitor and map noise, as well as draw up action plans to prevent and reduce noise and preserve it where its quality is good. It is for Member States to determine both the appropriate limit values, which may be different from both different sources in different locations, and the necessary measures. For major transport sources[54] noise mapping should have been carried out by 30 June 2007 and action plans drawn up by 18 July 2008. For other sources within urban areas with more than 100 000 inhabitants the dates are 30 June 2012 and 18 July 2013 respectively. Noise from ports has to be considered within the urban areas in which they belong.

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48 Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste, OJ L 114, 27.4.2006, p. 9

49 Council Directive of 16 June 1973 on the disposal of waste oils, OJ L 194, 25.7.1975, p. 23

50 Council Directive of 26 April 1999 on the landfill of waste, OJ L 182, 16.7.1999, p. 1

51 Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC, OJ L 266, 26.9.2006, p. 1

52 Proposal for a directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC, COM (2006) 232

53 Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise, OJ L 189, 18.7.2002, p. 12-25.

54 Sources with, annually, roads with more than 3 million vehicle passages, railways with more than 30 000 passages and airports with more than 50 000 movements excluding training purposes in light aircraft

In addition the directive requires the Commission to propose by 18 July 2006 appropriate legislation to reduce noise emitted by major sources and in particular road and rail vehicles and infrastructure and aircraft.[55]

2.4.2. Research and Technology

There are three projects of particular interest being financed by the 6th Research Framework Programme:

– QCITY which is developing an integrated technology infrastructure for the efficient control of road and rail ambient noise, thereby providing local authorities with the tools to create noise maps and action plans according to EU noise rules (see section 2.4.1), as well as giving them a broad range of validated technical solutions for problems they encounter with "hot spots" in particular cities;

– SILENCE which deals with the global modelling, perception, measureing systems and city planning of noise in urban areas, including road transport, as well as trams, metro systems, freight and suburban trains;

– IMAGINE (Improved Methods for the Assessment of the Generic Impact of Noise in the Environment).[56] Building on a previous EU project, "Harmonize" which developed harmonised computation methods for road and railway noise, the project extended this to aircraft and industrial noise sources, including taking exampes and databases to support the implementation of harmonised computation methods.

2.5. Congestion

2.5.1. Infrastructure

Improved freight logistics should result in less congestion, greater efficiency and less environmental impacts per unit transported. At the same time a more diverse distribution in the use of European ports would reduce inland transport needs. In 2007 the Commission produced a freight transport agenda[57] including initiatives on rail freight (see section 6) and on ports policy (see section 4), as well as a cross-cutting action plan on freight transport logistics.[58] Included within this is the idea of green transport corridors, which should allow more traffic on existing corridors between major hubs, while encouraging environmental sustainability and energy efficiency. In practical terms this concept should mean suitable transhipment facilities and supply points for biofuels with other alternative fuels possibly being covered later.

A further focus of the Commission's work is on freight transport in urban areas. In 2008 it will, in the context of the Urban Transport Action Plan (see section 2.1.4),

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55 The Commission has declared (OJ L 189, 18.7.2002, p. 26) that, in line with the Treaty provisions, it reserves the right to decide as and when it would be appropriate to present any such proposals.

56 www.imagine-project.org

57 Communication from the Commission – The EU's freight transport agenda: Boosting the efficiency, integration and sustainability of freight transport in Europe, COM (2007) 606

58 Communication from the Commission – Freight Transport Logistics Action Plan, COM (2007) 607

identify areas for further action on urban transport logistics and will reinforce the freight part of CIVITAS.[59] In 2011 it will make recommendations for benchmarks or indicators to measure the efficiency and sustainability of delivery and terminals.

[59] The CIVITAS Initiative helps cities to implement and test innovative and integrated strategies that address energy and transport objectives. More information is available here - http://www.civitas-initiative.eu/

3. AIR TRANSPORT

Air traffic in the EU tripled between 1980 and 2000 greatly increasing mobility and quality of life; and traffic is predicted to double again in the next 20 years. The opening of the EU's air transport market has radically changed the market for passenger transport, particularly for short-haul flights. Air cargo transport is also increasing, above all on inter-continental routes. It often consists of valuable, perishable or time-critical goods.

At the EU level, the 2006 Mid-Term Review of the Transport White Paper underlined the need for measures to reduce the negative environmental effects caused by rapid growth of traffic, whilst maintaining the competitiveness of the sector. More specifically, in 1999, the Commission produced a communication on air transport and the environment[60] which highlighted the increasing environmental and health impacts and the fact that these were likely to continue. The communication set a long-term goal of reducing the environmental impact of the sector and highlighted various initiatives to do this.

The international context is particularly important for air transport. The 1944 Chicago Convention on International Civil Aviation set up the International Civil Aviation Organisation (ICAO). ICAO's work forms the basis for the international civil aviation transport market and also for most environmental measures affecting the sector.[61] While the ICAO's requirements (detailed in annexes to the Convention) are not directly applicable in national law, Member States are required to transpose them, notify ICAO about how they have done this and where they have transposed them differently. Member States are full members of ICAO in their own right in matters that are not covered by Community law; the EU has observer status. The EU requires the European Aviation Safety Agency to develop European requirements that follow the ICAO requirements (see section 3.5.1).

3.1. Climate change

The Commission's approach to greenhouse gas emissions from aviation is to favour measures being taken at the international level,[62] but to take action at the EU level if this is not fruitful. In 2005 it adopted a detailed strategy for reducing the climate change impact of aviation,[63] setting the inclusion of the climate impact of the

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60 Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions: Air Transport and the Environment – Towards meeting the challenges of sustainable development. COM (1999) 640 final

61 Annex 16 to the Chicago Convention is on environmental protection and contains detailed rules on certification standards for aircraft noise and engine emissions. Annexes 8, 6 and 14 cover airworthiness, operations and aerodromes respectively.

62 Decision 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme, OJ L 242, 10.9.2002, p. 1, and Council of the European Union: Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy adopted by the European Council on 15/16 June 2006, 10917/06

63 Communication form the Commission to the Council, the European Parliament, the European Economic and social committee and the Committee of the Regions: Reducing the Climate Change Impact of Aviation, COM (2005) 459 final

aviation sector in the EU ETS (see section 3.1.1.2) as the way forward while also advocating strengthening some existing policies and actions, including:

– removing legal obstacles to the taxation of aviation fuel to facilitate more consistent transport energy taxation policy;

– giving research into 'greener' technology highest priority in the 7th Framework Programme for Research & Technical Development;

– working in ICAO on developing more stringent technical design standards to reduce aircraft emissions at source;

– improving the efficiency of European Air Traffic Management (ATM) through the Single European Sky SESAR initiative.

These are covered in more depth in the sections below.

3.1.1. Economic Instruments

3.1.1.1. Fuel taxes

ICAO rules allow the taxation of kerosene; however in practice aircraft fuel for international flights has been exempted from all taxes - a policy originally established to promote civil aviation during its infancy.

In addition to the general EU rules mentioned in section 2.1.1 EU rules on energy taxation[64] exempt, as a general principle, commercial aviation from taxation; however they do allow Member States to tax fuel for domestic flights and for flights between two Member States, where these Member State both agree. In practice only the Netherlands taxes for purely national use, and no Member State has entered into this type of bilateral agreement with another. One reason for this is because only the flights operated by EU carriers would be taxed, and not those based outside the EU, potentially giving the latter a significant competitive advantage.

More generally, the Commission's policy[65] is to remove all legal obstacles to taxing aviation fuel in order to keep all options for economic instruments open in the event that complementary measures are required alongside the inclusion of aviation in the ETS (see section 3.1.1.2).

3.1.1.2. Emissions Trading

In 2006, the Commission proposed[66] reducing the impact of emissions from aviation by including it in the EU's ETS. This proposal would apply to all domestic and

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64 Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L 283 31.10.2003, p. 51

65 As stated in the Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Reducing the Climate Change Impact of Aviation, COM (2005) 459 final

66 Proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community, COM (2006) 818 final. The proposal is made under Article 175 of the EC Treaty

international flights that arrive at or depart from an EU airport and would mean that aircraft operators will reduce their CO_2 emissions unless it is cheaper to buy allowances from other operators that can reduce their own emissions at lower cost. As such this represents the first step in the Commission strategy to internalise the external costs of transport (see section 2.1.1). The estimated effect of the proposal is to reduce CO_2 emissions by 183 million tonnes (46%) by 2020.[67] More information on its likely effects is in the proposal's impact assessment.[68]

The ICAO has recommended including international aviation in existing emissions trading schemes. Despite this, in 2007 the ICAO encouraged its members not to implement an ETS on other contracting states' aircraft operators unless it is based on mutual agreement between the states involved.[69] The Commission remains committed to including international aviation in the EU ETS in a way that is fair and non-discriminatory for all aircraft operators.

3.1.2. Regulatory Instruments

These are covered in section 3.2.2 for aircraft emissions.

3.1.3. Infrastructure

Shortest available routes are underused due to lack of real time and precise information, as well as the unavailability of certain parts of airspace (for example, those set-aside for military use). If these possibilities were used this would reduce CO_2 emissions by 4.8 million tonnes per annum.[70] The potential reduction in harmful emissions through optimised routing is estimated at 6 to 12% of total aviation emissions. The Single European Sky (see section 3.4.2) should contribute to this by reducing congestion. The Single European Sky ATM Research Programme (SESAR) (see section 3.4.4) should also reduce environmental impacts per flight by 10%.

3.1.4. Research and Technology

Past EU research programmes (see section 2.1.5) have supported a large number of relevant projects and this will continue in the 7th Research Framework Programme. In addition to the Clean Sky initiative (see below) approximately €1 billion will be dedicated to collaborative research in aeronautics and air transport, where the greening of air transport is an important component. It aims to contributing to achieving the following climate change related reductions:

– fuel consumption and hence CO_2 emissions by 50% per passenger kilometre;

– NOx emissions by 80% in landing and take-off according to ICAO standards and down to 5g/kg of fuel burnt in cruise.

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67 Cited in Proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community, COM (2006) 818 final.

68 Commission Staff Working Document: Impact Assessment of the inclusion of aviation activities in the scheme for greenhouse gas emission allowance trading within the Community, SEC(2006) 1684

69 Appendix L to Resolution A36-22

70 Communication from the Commission, First Report on the implementation of the Single Sky Legislation: achievements and the way forward COM (2007) 845

These objectives build on a vision to 2020 for the aeronautics sector[71] that was produced by a "Group of Personalities" and which was turned into a "Strategic Research Agenda" by the Advisory Council for Aeronautics Research in Europe (ACARE).[72]

The "Clean Sky" initiative will begin in 2008 and is designed to demonstrate and validate the technology breakthroughs necessary to make major steps towards the environmental goals of the research programme particularly through noise and emission reduction, as well as reduced fuel consumption. As such it should contribute to accelerating the introduction of green technologies in new generation aircraft. It will function as a Public Private Partnership with half of the €1.6 billion budget coming from EU funds and half from industry.

The Atlantic Interoperability Initiative to Reduce Emissions (AIRE) also aims to improve energy efficiency and reduce engine emissions. It will examine possibilities for improving air traffic management procedures with new measures such as continuous descent approaches. Currently most aircraft approaching an airport are asked by air-traffic control to descend in a series of steps, which is wasteful compared to descending continuously and smoothly. While continuous descents are estimated to save between 200 and 400 kg of fuel per flight they also pose challenges for the existing air-traffic control methods and technology.

3.2. Local Pollution

EU rules[73] require the Commission to report to the European Parliament and Council on the extent to which emissions from aircraft beyond the landing and take-off cycle contribute to acidification, eutrophication and the formation of ground-level ozone within the EU. The report should specify a programme of actions which could be taken at international and Community level to reduce emissions from the sector concerned, as a basis for further consideration by the European Parliament and Council.

3.2.1. Economic Instruments

The Commission's recent proposal on airport charges[74] did not explicitly cover environmental charges, thus leaving their application to particular types of aircraft or their emissions to the discretion of Member States. The ongoing negotiations in the Council and the European Parliament are likely to lead to this type of charges being explicitly allowed. Some Member States currently apply differentiated airport charges based on NOx and/ or unburned hydrocarbon emissions.

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71 The European Group of Personalities (2001), European Aeronautics: A Vision for 2020, meeting society's needs and winning global leadership, Office for Official Publications of the European Communities, Luxembourg

72 Advisory Council for Aeronautics Research in Europe (2004) Strategic Research Agenda, ACARE's members include the Commission, industry, Member States, airlines, airports, regulators and research and academia.

73 Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants, OJ L 309, 27.11.2001, p. 22

74 Proposal for a directive of the European Parliament and of the Council on airport charges, COM (2006) 820 final

3.2.2. Regulatory Instruments

ICAO sets standards for NOx, SOx, CO and smoke emissions,[75] which are applicable in the EU through the EASA basic regulation (see section 3.5.1) and are based on the thrust of the aircraft engines.[76] The Commission intends to propose the extension of EASA's tasks to allow the development of additional standards beyond the scope of Annex 16 of the ICAO Convention.

The emissions of NOx, SO_2 and VOCs during the take off and landing cycle are counted within the national emissions ceilings (see section 2.3.1.1), where Member States have to draw up national programmes to achieve the ceilings by 2010.

The proposal to include aviation in the European ETS stated that the Commission will present a proposal to limit aircraft emissions of NOx by the end of 2008.

3.2.3. Infrastructure

The measures described under 3.1.3 also apply here.

3.2.4. Research and Technology

The 7th Research Framework Programme (see section 2.1.5), aims to reduce unburnt hydrocarbons and CO emissions by 50% according to ICAO standards and NOx emissions by 80% in landing and take-off according to ICAO standards and down to 5g/kg of fuel burnt in cruise.

3.3. Noise

3.3.1. Economic Instruments

There are no EU economic instruments linked to aircraft noise emissions. In 2001 the Commission proposed a directive[77] establishing common criteria on the noise performance of aircraft to be used when calculating the level of noise charges at airports. The intention was to ensure that where noise charges are applied their calculation is according to consistent principles. The proposal was not discussed in Council. The Commission withdrew the proposal in 2004.[78]

3.3.2. Regulatory Instruments

For noise, the ICAO classes aircraft according to "Chapters" which are effectively minimum standards for new aircraft. The current standards in force for new aircraft

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75 Annex 16 to the Chicago Convention

76 According to Article 6(1) of Regulation (EC) No 1592/2002 of the European Parliament and of the Council of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, OJ L 240, 7.9.2002, p. 1

77 Proposal for a directive of the European Parliament and of the Council on the establishment of a Community framework for noise classification of civil subsonic aircraft for the purposes of calculating noise charges, COM (2001) 74

78 Communication from the Commission: withdrawal of Commission proposals which are no longer of topical interest, COM (2004) 542

are "Chapter 4". These are more advanced than previous chapters. No new standards are being developed.

EU rules require[79] that all subsonic jet aeroplanes with a take-off mass of 34 000 kg or more or which have more than 19 passenger seats have to comply with the standards of Chapter 3.

The directive on noise-related operating restrictions at Community airports[80] allows Member States to restrict the operation of the noisiest aircraft within those classified by ICAO as Chapter 3.[81] The directive sets out another category of airports – "city airports"[82] where Member States can insist on only aircraft classified as ICAO Chapter 4 being used.

Before imposing any restrictions, a Member State has to assess their likely impacts. Then they can, after a certain period of time, force aircraft operators to reduce the movements of the aircraft concerned by up to 20% every year, meaning that in five years the use of these aircraft can be phased out. Some aircraft registered in developing countries have longer phase-out times. So far the possibilities offered by this directive have been used at five EU airports: London Gatwick, London Heathrow, London Stansted, Paris Charles de Gaulle and Madrid.

The Commission reported on the application of the directive in February 2008[83] and is examining proposing its revision later this year.

3.3.3. Research and Technology

The 7th Research Framework Programme (see section 2.1.5), aims to reduce external noise by 10 EPNdB per operation of fixed-wing aircraft. For rotorcraft the objective is to reduce noise footprint area by 50% and external noise by 10 EPNdB.

The "Clean Sky" initiative (see section 3.1.4) also has a noise component.

3.4. Congestion

3.4.1. Economic Instruments

Charges for air navigation services, including air-traffic control, are based on a methodology set out in EU rules[84] which is compliant with ICAO recommendations.

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79 Directive 2006/93/EC of the European Parliament and of the Council of 12 December 2006 on the regulation of the operation of aeroplanes covered by Part II, Chapter 3 , Volume 1 of Annex 16 to the Convention on International Civil Aviation, second edition (1988) (codified version), OJ L 374, 27.12.2006, p. 1

80 Directive 2002/30/EC of the European Parliament and of the Council of 26 March 2002 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Community airports, OJ L 85 of 28.3.2002, p. 40

81 The aircraft concerned are those within 5 "Effective Perceived Noise in decibels" (EPNdB) of the maximum threshold.

82 Of which four are defined in the directive – Belfast City, Berlin Tempelhof, London City and Stockholm Bromma

83 Report from the Commission to the Council and the European Parliament: Noise Operation Restrictions at EU Airports (Report on the application of Directive 2002/30/EC), COM (2008) 66

The charge is made based on a formula which takes into account aircraft weight and flight distance, as well as a "unit cost", which reflects the full cost of the services and differs significantly from Member State to Member State. In 2008 the Commission will propose a framework for setting binding performance targets aimed at ensuring that only the most efficient route is flown.

3.4.2. Regulatory Instruments

EU rules on air-traffic management – the so-called, "Single European Sky" - came into force in 2004.[85] These aim to increase the overall efficiency of air-traffic management thereby relieving congestion, reducing fuel consumption and the environmental impact per flight.

The Commission reported on their implementation in 2007,[86] concluding that the EU rules had not significantly improved the overall efficiency of the design and use of the European route network, with consequently insufficient improvement in flight efficiency or environmental impact. It also stated that improvements in the network architecture, the more efficient use of routes and new operational procedures could significantly reduce flight times, fuel use and costs, with the consequent reduction in impact on the environment and climate change.

In 2008 the Commission proposed further measures to make the Single European Sky both more sustainable and better performing.[87] This includes measures to, on the basis of a continuous assessment of the air traffic management system by an independent body, regulate the system's performance, as well as accelerating the integration of service providers into functional airspace blocks and strengthening network management.

3.4.3. Infrastructure

Airports with capacity problems must follow EU rules on slot allocation, which are principally aimed at improving transparency.[88] Within this framework,

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84 Commission Regulation (EC) No 1794/2006 of 6 December 2006 laying down a common charging scheme for air navigation services, OJ L 341, 7.12.2006, p. 3–16

85 Regulation 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky, OJ L 96, 31.3.2004, p. 1, Regulation 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky, OJ L 96, 31.3.2004, p. 10-19, Regulation 551/2004 of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky, OJ L 96, 31.3.2004, p. 20-25, and Regulation 552/2004 of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network, OJ L 96, 31.3.2004, p. 26-42

86 Communication from the Commission, First Report on the implementation of the Single Sky Legislation: achievements and the way forward COM (2007) 845

87 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Single European Sky II – Towards more sustainable and better performing aviation, COM (2008) 389; Proposal for a Regulation of the European Parliament to the Council amending Regulation (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability fo the European aviation system, COM(2008) 388

88 Council Regulation 95/93/EEC on common rules for the allocation of slots at Community airports, OJ L 14 of 22.1.1993, p. 1, as amended by Regulations EC/894/2002 of 27.5.2002 (OJ L 142, 31.5.2002, p.

environmental criteria, including noise can be taken into account to allocate slots; such rules are called 'local rules' and can relate to any type of environmental problems.[89]

In 2007 the Commission adopted an action plan for airport capacity, efficiency and safety[90] with the aim of optimising the use of existing infrastructure, as well as promoting the use of technology and improving safety and efficiency. Environmental concerns will be addressed in part of a recommendation that the Commission is currently developing on best practice guidelines to improve airport plans and their land use.

3.4.4. Research and Technology

The Single European Sky ATM Research Programme (SESAR) runs from 2004 to 2020 and aims to improve safety ten-fold, triple capacity and halve the costs of air-traffic management. In 2008 its definition phase was completed with the endorsement of the SESAR Master Plan[91] and its development phase began. The deployment phase of technologies developed is expected to begin in 2013.

The AIRE initiative (see section 3.1.4) also has elements concerning air-traffic procedures and new technologies including a demonstration component on "Trajectory Based Operations on the ground", which will look at different ideas to minimise ground run time, i.e. when aircraft taxi to the runway waiting to take off, or taxi from the runway waiting for a stand. At this time aircraft consume considerable amounts of fuel not least because their engines are not designed to operate at optimal efficiency on the ground.

3.5. Accidents

3.5.1. Legal Instruments

Historically, most aviation safety rules were agreed between Member States outside the EU framework and were non-binding. With the growth in air-traffic a more harmonised system became necessary in order to guarantee a high level of safety. The EU's policy[92] is to focus its efforts via the European Aviation Safety Agency and

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3), EC/1554/2003 of 22.7.2003 (OJ L 221 of 4.9.2003, p. 1) and Regulation EC/793/2004, of 21.4.2004 (OJ L 138, 30.4.2004, p. 50)

89 Further information is given in Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the application of Regulation (EEC) No. 95/93 on common rules for the allocation of slots at Community airports, as amended, COM (2008) 227

90 Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: An action plan for airport capacity, efficiency and safety in Europe, COM (2007) 819

91 Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Single European Sky II: towards more sustainable and better performing aviation, The SESAR Master Plan for the development and implementation of the new generation European air traffic management system (SESAR – Single European Sky ATM Research) SEC (2008) 2082

92 Regulation EC/1592/2002 of the European Parliament and of the Council of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, OJ L 240, 7.9.2002, p. 1

progressively establish and maintain a high uniform level of civil aviation safety in Europe. After first taking on responsibilities for airworthiness of aircraft, it is now responsible for type certification for aircraft, engines and equipment,[93] as well as the approval of organisations and personnel involved in their maintenance.[94] In 2008 the Commission proposed extending the Agency's responsibilities further, this time to the safety aspects of aerodromes and air traffic management so that all parts of the aviation safety are covered by a consistent approach to safety (called the "total system approach).[95]

In addition, the Agency assists the Commission in developing common environmental and safety rules,[96] as well as monitoring their implementation through inspections in the Member States.

EU rules[97] allow the European Commission to ban or restrict the activities of unsafe airlines within the EU and its airspace. It does this by regularly publishing a "black list" of such airlines.

In order to prevent future accidents and feed into safety rules, EU rules[98] also require rapid investigations after an aviation accident or serious incident.

3.5.2. Research and Technology

Accidents have already been an important element of past framework research programmes and will continue to be a key issue in the transport theme of the 7th "Cooperation" specific programme

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93 Commission Regulation EC/1702/2003 of 24 September 2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations, OJ L 243, 27.9.2003, p. 6–79

94 Commission Regulation EC/2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks, OJ L 315, 28.11.2003, p. 1

95 Proposal for a Regulation of the European Parliament to the Council amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Council Directive 06/23/EEC, COM (2008) 390

96 There are several different Commission regulations, for example on the safety assessment of foreign aircraft and the working methods for inspections.

97 Regulation EC/2111/2005 of the European Parliament and of the Council of 14 December 2005 on the establishment of a Community list of air carriers subject to an operating ban within the Community and on informing air transport passengers of the identity of the operating air carrier, and repealing Article 9 of Directive 2004/36/EC, OJ L 344, 27.12.2005, p. 15

98 Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents, OJ L 319 , 12.12.1994, p. 14-19

4. MARITIME

The world fleet is composed of more than 50 000 merchant vessels of which ships owned by EU citizens or companies make up about one-third and EU flagged vessels roughly one quarter.[99] The average age of a European-flagged ship is currently 16 years.[100] Shipping accounts for more than a third of total intra-EU goods transport performance (measured in tonne-kilometres). Maritime transport systems rely on the interaction of vessels, sea-ports infrastructure and terminals, as well as ports' hinterland connections.

International seaborne trade increased by an estimated 4.3% in 2006 to reach a total volume of 7.4 billion tonnes. Total demand for shipping services reached about 30.6 billion tonne-miles in 2006, representing an increase of 5.6% compared to the year before. Europe remains a massive importer of crude oil and petroleum products with more than half a billion tonnes per year. Europe is also the largest dry cargo market with more than a billion tonnes of exports (22.7% of world total) and over 1.5 billion tonnes of imports (32.3%). Total container throughput in Europe accounts for some 18% of the world total. The top fifteen ports in Europe saw a container throughput of around 54 million twenty-foot equivalents in 2006.[101]

At the EU level the 2006 Mid-Term Review of the Transport White Paper underlined the importance of the maritime sector in providing an alternative to road transport. The Integrated Maritime Policy Action Plan[102] also places particular emphasis on maritime transport as a competitive, sustainable and environmentally-friendly mode of transport which is vital for Europe's growth, economic prosperity and environmental quality.

In general, EU measures apply to merchant ships operating commercially[103] or to recreational craft.[104] The application of International Conventions and some or all of

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99 Data from L.R. Fairplay, Bimco/ISF, Jan.2007

100 Ships of 500 GT and over, LR-Fairplay, Jan.2007

101 Source: Fearnleys (Oslo), Review 2006 and ESPO, Annual report 2006-2007 containing a market report on the European Seaport Industry prepared by the Institute of Transport and maritime Management Antwerp

102 Commission Staff Working Document accompanying document to the Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union, SEC (2007) 1278

103 Hence they do not apply to warships, naval auxiliary or other ships, owned or operated by a State and used, for the time being, only on government non-commercial service. Nevertheless the EU measures often have a phrase in them that requires Member States, as far as is reasonable and practicable, to endeavour to respect rules for these ships. certain other categories of vessels are also often excluded, such as wooden ships of primitive build; original and individual replicas of historical ships built predominantly with original materials, ships only used in port areas and pleasure yachts carrying 12 crew and passengers or less for non-commercial purposes.

104 Defined as, "any craft intended for sport or leisure purposes, regardless of the type or the means of propulsion, with a hull length of 2.5 to 24 meters, measured according to the appropriate harmonized standards" in Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft, OJ L 214 of 26.8.2003, p. 18. Certain craft are excluded - Racing craft, rowing boats, canoes, kayaks, gondolas, pedalos, sailing surfboards,

their requirements to recreational craft is set out in each Convention. Specific legislation also applies. For merchant shipping, the international legal context is particularly important, where the most important element is safety, although environmental issues are increasingly important.

The major international treaties are: the United Nations Convention on the Law of the Sea (UNCLOS); the International Maritime Organisation (IMO)'s International Convention for the Safety of Lives at Sea (SOLAS), which covers the safety at sea of merchant and passenger shipping; the IMO's International Convention for the Prevention of Pollution from ships (MARPOL 73/78).[105] A full list of international instruments on maritime affairs was produced by the Commission in 2006.[106]

4.1. Climate change

The Kyoto Protocol calls for parties to pursue the limitation or reduction of their greenhouse gas emissions from ships working through the IMO. The IMO is looking at ways to tackle the reduction of greenhouse gases from ships with the work scheduled to conclude in 2009.

The Commission's policy is have shipping included in the post-2012 agreement on the prevention of climate change a as a sector to be addressed and to have the IMO act to reduce greenhouse gas emissions in 2009. In the absence of sufficient progress the Commission will propose EU measures including tackling emissions from recreational craft.

4.1.1. Economic Instruments

In addition to the EU rules mentioned in section 2.1.1, EU taxation rules[107] contain the general principle that fuel for navigation within Community waters (including fishing, but not recreational craft) is not taxed; however, Member States can choose to tax fuel if it is for purely national transport (i.e. not international or intra-Community) or, if they have concluded a bilateral agreement with another Member State. For recreational craft the EU rules set different minimum tax rates (excluding VAT) for certain types of fuels.

The Commission has recently committed itself to making proposals to reduce the levels of air pollution from ships in ports by removing tax disadvantages for shore side electricity.[108]

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surfboards, historical craft and replicas thereof designed before 1950 and build predominantly with original material, experimental craft, home-made craft, craft designed to carry passengers for commercial purposes, submersibles, air cushion vehicles, hydrofoils and external combustion steam powered craft fuelled by coke, coal, wood, oil or gas.

105 International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)

106 Annex to the Green Paper on Towards a future Maritime Policy for the Union: A European vision for the oceans and seas COM (2006) 275

107 Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L 283, 31.10.2003, p. 51

108 Communication from the Commission to the European Parliament, the Council, The European economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for

The Commission has encouraged port charging to encourage less polluting ships.[109]

4.1.2. Infrastructure

4.1.2.1. Motorways of the Sea

The Commission proposed the development of motorways of the sea in 2001.[110] They aim to encourage a shift of goods transport towards a frequent and high quality system of short sea shipping. There are currently four motorways of the sea corridors: the Baltic Sea; Western-Europe, South-West Europe and South-East Europe and pilot projects should begin there in the near future. Funding is available through the TEN-T for infrastructure costs and Marco Polo II programmes for running costs, the Structural and Cohesion Funds, as well as through European Investment Bank support and is allowed to some extent from state aid. A European Co-ordinator was also appointed in 2007 and a consultation was launched in October 2007.[111]

Estimates have been made of the potential reduction in CO_2 emissions from implementing a "motorway" between the North Sea and the northern Iberian Peninsula. This calculated that a system with four vessels and six round trips per week would bring about a modal shift of close to 5 billion tonne kilometres over 3 years, saving the emission of 125 000 tonnes of CO_2.[112]

4.1.2.2. Shore-side electricity

In 2006 the Commission encouraged[113] the use of shore-side electricity by ships (and did not specifically exclude recreational craft) in ports and stated that switching to shore-side electricity would reduce CO_2 emissions by over 50%, carbon monoxide by about 99% and nitrous oxide emissions (N_2O) by over 50%, as well as eliminating vibrations and noise from auxiliary engines.

4.1.3. Research and Technology

In 2004 the Commission launched the idea of setting up "Technology Platforms" to bring together companies, research institutions, the financial world and the regulatory authorities at the European level to define a common research agenda in order to mobilise a critical mass of national and European resources from the private and public sectors. In 2005, such a platform called "WATER*BORNE"* was set up for

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the European Union, COM(2007) 575 final and Communication on a European Ports Policy, COM (2007) 616

109 Communication from the Commission: Communication on a European Ports Policy, COM (2007) 616

110 COM (2001) 370: European Transport Policy for 2010: time to decide

111 SEC (2007) 1367 Commission Staff Working Document: Report on Motorways of the Sea: State of Play and consultation

112 SEC (2007) 1367 Commission Staff Working Document: Report on Motorways of the Sea: State of Play and consultation

113 Commission Recommendation (2006/339/EC) of 8 May 2006 on the promotion of shore-side electricity for use by ships at berth in Community ports, OJ L 125 of 12.5.2006, p. 38

waterborne transport. This has produced a Vision 2020[114] document and a Strategic Research Agenda[115] to turn the vision into reality.

Through the "LIFE" programme the Commission has supported demonstration projects on technologies which allow ships to make an essential contribution to reducing their energy and fuel consumption and the emissions of climate-damaging gases. For example, the use of computer-controlled kite sails on commercial vessels was demonstrated through the WINTECC project[116] and resulted in energy consumption being reduced by up to 30%. Another example is the Zero Emissions Ships project (ZEMSHIPS)[117] which demonstrated the functioning of the first hydrogen and fuel cell powered ship (with a capacity of more than 100 persons).

In mid-2008, the Commission will produce a European Maritime Research Strategy, which will include a component on climate change and other societal impacts.

4.2. Local Pollution

The Commission is committed[118] to actively supporting international efforts to diminish air pollution caused by ships and make proposals at the European level in the absence of progress. Efforts to combat local pollution are a combination of measures to address the ships themselves, the fuels they use, and the ports they visit.

The LeaderSHIP 2015 initiative[119] looks at the shipbuilding industry as a whole and one of its aims is to promote safer and more environmentally friendly ships. In April 2007 the Commission produced a progress report,[120] which stressed the contribution that innovative European shipbuilding is making to delivering more environmentally friendly ships. The report also encourages the maritime industries, especially marine equipment suppliers, to continue taking the lead in clean shipping technology, including the application of technologies to reduce energy consumption, air emissions and the use of hazardous materials and more environmentally friendly antifouling protection.

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114 Waterborne Technology Platform (2005) Waterborne Transport & Operations: A Key Asset for Europe's Development and Future

115 Waterborne (2005) Waterborne transport and operations, "Key for Europe's development and future Strategic Research Agenda."

116 www.wintecc.de , www.skysails.info

117 http://ec.europa.eu/environment/life/themes/water/thematic/htm

118 Communication from the Commission to the European Parliament, the Council, The European economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union, COM(2007) 575 final

119 Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: LeaderSHIP 2015 – Defining the Future of the European Shipbuilding and Repair Industry – Competitiveness through Excellence, COM (2003) 717

120 Commission Working Document: LeaderSHIP 2015 Progress Report, COM (2007) 220 final

4.2.1. Economic Instruments

The Commission is required[121] to produce a report on the possible use of economic instruments, including mechanisms such as differentiated dues and kilometre charges, tradable emission permits and offsetting, to reduce sulphur emissions from ships (including recreational craft).

The action on shore-side electricity (see section 4.1.1) is also relevant here.

4.2.2. Regulatory Instruments

4.2.2.1. Sulphur emissions

International rules[122] establish a maximum worldwide level of sulphur in fuel of 4.5% for heavy fuel oil burned by ships. They also set up SOx Emission Control Areas (SECAs) where fuel burned by ships must contain less than 1.5% sulphur, or equivalent abatement technologies must be applied. The Baltic and North Seas (including the English Channel) are currently designated as SECAs. In April 2008 the 57th session of the IMO's Marine Environment Protection Committee (MEPC) agreed in principle to further reduce the sulphur content of fuel used both within SECAs and worldwide.[123] In SECAs, the agreement would mean that sulphur levels would be 1% from 1 January 2010 and 0.1% from 1 January 2015. The global limits would be reduced to 3.5% from 1 January 2012, with a further reduction to 0.5% from 1 January 2020 or 2025 if insufficient fuel is available. This agreement still needs to be adopted as a formal amendment to MARPOL, Annex VI; this is expected to happen in October 2008.

EU rules[124] state that, with certain exceptions,[125] Member States must ensure that marine fuels with more than 1.5% sulphur by mass can not be used in SECAs that are within their territorial seas, exclusive economic zones and pollution control zones. These rules also apply to fuel used by recreational craft. For passenger ships operating regular services to or from Community ports, such fuels must be used within these areas, irrespective of whether they are in a SECA or not. The same EU rules require Member States to ensure that marine gas oils with more than 0.10% sulphur by mass are not used,[126] and from 2010 are not sold, within their territory and

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121 According to Article 7(3) of Directive 2005/33/EC of the European Parliament and of the Council of 6 July 2005 amending Directive 1999/32/EC, OJ L 191, 22.7.2005, p. 59 the Commission has to report by 31.12.2005 to the European Parliament and to the Council

122 MARPOL's annex VI, which has now been ratified by 50 countries, but not yet by 7 EU Member States - Austria, Czech Republic, Hungary, Ireland, Malta, Portugal and Slovakia

123 The deal was done at the Committee's April meeting and will be put into effect by amending MARPOL's annex VI

124 Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC, (OJ L 121, 11.5.1999, p. 13) as amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003 (OJ L 284 of 31.10.2003, p. 1) and Directive 2005/33/EC of the European Parliament and of the Council of 6 July 2005 (OJ L 191 of 22.7.2005, p. 59)

125 Including being fitted with pollution abatement technology and monitoring equipment, as well as achieving emissions reductions equivalent to those in the directive and waste emissions in enclosed ports, harbours and estuaries having no environmental impact.

126 Certain derogations exist for the Canary Islands, the French Overseas Departments, Greece, Madeira and the Azores.

that ships at berth do not use fuel containing more than 0.1% sulphur. Marine diesel oils cannot be sold if they have more than 1.5% sulphur.

The Commission will come forward with a proposal in 2009 which will take into account the significant recent progress on the issue in the IMO.

4.2.2.2. NOx

International rules[127] limit the NOx emissions from new diesel engines[128] over a certain size constructed since 1 January 2000.[129] These also apply to recreational craft. The Commission has committed itself[130] to considering a proposal to tighten these requirements in line with the proposed Tier 2 standards put forward by the United States Environment Protection Agency if there is no IMO proposal. Discussions in the IMO's working group on air pollution are ongoing.

The Commission has also said[131] that once the feasibility of emissions trading regimes for shipping has been demonstrated, it would consider introducing some form of emission trading regime for NOx in EU territorial waters.

EU rules exist[132] setting the maximum levels of exhaust emissions of NOx for recreational craft. Levels are set depending on the type of engine and its size.

4.2.2.3. Carbon Monoxide, Hydrocarbons and Particulates

EU rules[133] set the maximum levels of these substances in exhaust emissions from recreational craft. Levels are set depending on the type of engine and its size.

4.2.2.4. Ozone-depleting substances

International rules[134] ban the deliberate emission of ozone-depleting substances from existing installations – essentially fire-safety equipment - and prohibits new installations on-board ships containing ozone-depleting substances.

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127 MARPOL's annex VI

128 Liquefied natural gas engines are not covered as they have a lower temperature and hence much lower NOx emissions.

129 This covers those with having power of more than 130 kW. The limits are 17.0 g/kWh when the rated engine speed is less than 130 rpm, 45*rpm(-0.2) g/kWh when the speed is 130 or more but less than 2000 rpm and 9.8 g/kWh when the rated engine speed is 2000 rpm or more. The rules also cover ships undergoing a major conversion.

130 Communication from the commission to the European Parliament and the Council: A European Union strategy to reduce atmospheric emissions from seagoing ships, COM (2002) 595, volume I

131 Communication from the commission to the European Parliament and the Council: A European Union strategy to reduce atmospheric emissions from seagoing ships, COM (2002) 595, volume I

132 Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft, OJ L 214 of 26.8.2003, p. 18.

133 Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft, OJ L 214 of 26.8.2003, p. 18.

134 MARPOL's annex VI

EU rules ban the use of such substances, including their use as fire-protection systems on ships;[135] however, continued use is permitted on ships that were constructed before 1 July 1994.

4.2.2.5. Organotin compounds

Organotin compounds used to be in biocides in anti-fouling systems. In 2001 the IMO adopted a convention[136] to ban their use; this was subsequently implemented in EU rules[137] for commercial ships over 24 metres in length and flying the flag of a Member State or under a Member State's control, as well as on recreational craft.[138] This led to the phasing out of seven such compounds on 1 September 2006. In addition, since the beginning of 2008 foreign vessels calling at EU ports have to comply with this prohibition.

4.2.2.6. Hazardous substances

Member States are required[139] to inspect ships that have been reported by port authorities, coastal authorities or other organisations given the task by Member States as being a threat to the environment. This includes ships where there is proof or presumptive evidence of deliberate discharges of oil or other infringements of the MARPOL convention in waters under the jurisdiction of a Member State.

4.2.2.7. Ballast water

International rules[140] on the discharge of ballast water have been adopted, but are not in force. These would aim to prevent and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments.

4.2.2.8. Waste disposal

EU rules[141] aim to improve the availability and use of port reception facilities for ship-generated waste and cargo residues and thereby to reduce discharges of these substances (which include sewage and the remnants of any cargo material and any unloading or loading excesses or spillage) into the sea. Recreational craft are included within the scope of this directive; however, the requirements differ depending on whether they are authorised to carry no more than 12 passengers, or not. In practical terms these rule mean that all ports have to provide a way of

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135 Regulation EC/2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer, OJ L 244, 29.9.2000, p. 1

136 The convention will enter into force on 17.8.2008 after having been ratified by sufficient members.

137 Regulation (EC) No 782/2003 of the European Parliament and of the Council of 14 April 2003 on the prohibition of organotin compounds on ships, OJ L 115, 9.5.2003, p. 1-11

138 For all types of vessel these restrictions apply unless they are coated with a barrier preventing them from leaching

139 Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Directive 93/75/EEC, OJ L 208 of 5.8.2002, p. 10

140 International Convention for Control and Management of Ship's Ballast Water and Sediments (BWM)

141 Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues, OJ L 332, 28.12.2000, p. 81-90

receiving these waste and residues. For cargo residues, international rules[142] have to be followed and the fee has to be paid by the user.

For ship-generated waste, each port has to have a waste reception and handling plan, which has to be reviewed every three years. A ship (or recreational craft) calling at an EU port has to leave its waste unless it has sufficient storage room. Failure to leave the waste creating a risk that the waste will be discharged at sea means the Member State must take all necessary measures to ensure that it delivers its waste before leaving port. Sewage will also have to be included in this from 15 June 2009;[143] however, it can be discharged at sea if this is done in accordance with international rules.[144]

Fees for delivering ship-generated waste are not directly related to the waste disposed of in order not to provide an incentive to discharge at sea. A series of principles are laid down that apply to ships and recreational craft authorised to carry more than 12 passengers. Fees can be reduced if it can be demonstrated that the ship produces reduced quantities of ship-generated waste.

Inspections have to be carried out (including on recreational craft authorised to carry more than 12 passengers) to ensure that the restrictions on cargo residues and ship-generated waste are complied with and penalties that are effective, proportionate and dissuasive have to be fixed by Member States for breaches. For recreational craft which are not authorised to carry more than 12 passengers, Member States have to ensure compliance.

In 2005 a further directive[145] was adopted that requires Member States to put in place a system whereby the persons who intentionally, recklessly or through serious negligence cause ship-source pollution are subject to adequate penalties. In 2008, the Commission proposed amending this directive[146] following the annulment in 2007 of the Council framework[147] on which it was based.

The Commission will come forward with an appropriate proposal to improve the existing rules on port reception facilities.[148]

4.2.2.9. Ship end-of-life

Ships have an average life of between 20 and 30 years. Those now reaching the end of their life, something that is being accelerated by the ban on single-hulled tankers in EU waters, are often those constructed in the 1970s or 80s, which do not meet the

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142 MARPOL 73/78

143 Commission Directive 2007/71/EC of 13 December 2007 amending Annex II of Directive 2000/59/EC of the European Parliament and the Council on port reception facilities for ship-generated waste and cargo residues, OJ L 329, 14.12.2007, p. 33

144 MARPOL's annex IV regulations

145 Directive 2005/35/EC of the European Parliament and of the Council of 7 September 2005 on ship-source pollution and on the introduction of penalties for infringements, OJ L 255, 30.9.2005, p. 11

146 Proposal for a Directive of the European Parliament and of the Council amending Directive 2005/35/EC on ship source pollution and on the introduction of penalties for infringements, COM (2008) 134

147 Council Framework Decision 2005/667/JHA of 12 July 2005 to strengthen the criminal-law framework for the enforcement of the law against ship-source pollution, OJ L 255, 30.9.2005, p. 164

148 See Communication on a European Ports Policy, COM (2007) 616

same standards as modern ships. They contain large amounts of hazardous materials, such as asbestos (in particular if built before the 1980s), oils and oil sludge, PCBs (polychlorinated biphenyls), and heavy metals in paints and equipment.

The Waste Framework Directive[149] covers ship dismantling in the EU; however, most are dismantled abroad, usually in South Asia, complying with local environmental requirements.

The United Nations' Basel convention, to which the European Community and Member States are signatories, bans the export of hazardous waste from OECD to non-OECD countries. This was incorporated into EU law in 1997 through an amendment to the Waste Shipment Regulation.[150] In practice this means that all ships, irrespective of whether they are flagged or owned in the EU, must not be exported for dismantling without first having been stripped of their hazardous materials; in reality this export ban is difficult to enforce.[151]

As an alternative to the Basel Convention ban, Member States were encouraged to actively support the development of an effective IMO Convention for the Safe and Environmentally Sound Recycling of Ships. The International Ship Recycling Convention should be adopted in an IMO Diplomatic Conference in May 2009 in Hong Kong.

Meanwhile, the Commission is currently considering different options for making progress on the issue[152] and will produce a policy document in autumn 2008.

4.2.3. Infrastructure

The Commission is currently[153] developing a road map to facilitate the development of maritime spatial planning by Member States which will build upon existing work on integrated coastal zone management.[154] It is also planning to issue guidelines on the application of the relevant Community environmental legislation to port development before the end of 2008.

4.2.4. Research and Technology

The Commission has funded and continues to fund research projects on all issues mentioned in this section.

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149 Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste, OJ L 114, 27.4.2006, p. 9–21

150 Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, OJ L 190, 12.7.2006, p. 1–98

151 Commission Green Paper on better ship dismantling, COM (2007) 269

152 Commission Green Paper on better ship dismantling, COM (2007) 269

153 Communication from the Commission to the European Parliament, the Council, The European economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union, COM(2007) 575 final

154 Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe (2002/413/EC), OJ L 148, 6.6.2002, p. 24

4.3. Noise

4.3.1. Regulatory Instruments

EU rules exist[155] setting maximum noise emissions from recreational craft, depending on engine size. In 2007 the Commission reviewed[156] the legislation in force and concluded that further noise reduction would only be effective for low-power craft, which are best dealt with by local operating restrictions rather than EU rules.

EU rules will require noise emissions from ships and recreational craft to be considered when devising strategies to reach good environmental quality (see section 2.3.2.1).

4.4. Accidents

Ships flying the flag of a Member State have to be constructed and maintained in accordance with the hull, machinery and electrical and control installation requirements of a recognised organisation.[157] These requirements are set by these organisations.[158]

4.4.1. Regulatory Instruments

4.4.1.1. Ship design

International rules[159] require new oil tankers to meet "double hull or equivalent" design standards and the phasing out of single-hull tankers. These rules also prohibit the carriage of heavy fuel in single hull tankers.

These rules have also been put into in Community law[160] with the phasing out of single hull oil tankers being required on a similar timetable to the international rules and using single hull tankers to carry heavy grade of fuel being banned in EU waters and by vessels flying the flag of a Member State.

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155 Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft, OJ L 214 of 26.8.2003, p. 18.

156 Communication form the Commission to the Council and the European Parliament: Report on the possibilities of further improving the environmental characteristics of recreational craft engines, submitted pursuant to Article 2 of Directive 2003/44/EC amending Directive 94/25/EC relating to recreational craft, COM(2007) 313

157 Council Directive 94/57/EC of 22 November 1994 on common rules and standards for ship inspections and survey organisations and for the relevant activities of maritime administration, OJ L 319, 12.12.1994, p. 20, as amended by Commission Directive 97/58/EC of 26 September 1997 (OJ L 274, 7.10.1997, p. 8), Directive 2001/105/EC of the European Parliament and of the Council of !9 December 2001 (OJ L 19, 22.1.2002, p. 19), Directive 2002/84/EC of the European Parliament and of the Council of 5 November 2002 (OJ L 324, 29.11.2002, p. 53)

158 For example, Lloyd's Register, DNV, Bureau Veritas, Germanische Lloyd and Registro Italiano Navale

159 MARPOL 73/78 Annex I

160 Regulation (EC) No 417/2002 of the European Parliament and of the Council of 18 February 2002 on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers and repealing Council Regulation (EC) No 2978/94, OJ L 64, 7.3.2002, p. 64

EU rules[161] set rules for the design of passenger ships or high speed passenger craft when engaged on domestic voyages (i.e. not international traffic) and sets procedures for attempting to have these same rules adopted for international traffic through the IMO.

EU rules[162] also establish a type-approval system for various types of marine equipment with the aim of enhancing safety and preventing marine pollution, while facilitating their free movement in the EU. Proposals to revise or recast the directive are planned for late 2008.

EU rules on recreational craft[163] require them to be designed to prevent accidental discharges of pollutants, including having holding tanks for sewage and pipes that can be closed off.

4.4.1.2. Dangerous goods carriage

No dangerous or polluting goods can be taken on any ship in an EU port without a declaration having been made about its nature.[164] For most ships, this information then has to be notified to the ship's next port of call or anchorage. Exemptions are possible, but are subject to regular inspections. For all ships, inspections also have to check whether this requirement has been complied with.

4.4.1.3. Inspections

For port state controls, inspections have to be carried out[165] on a certain percentage of vessels[166] calling at Member State ports, as well as on certain high-risk ships. These are primarily concerned with safety, but also have a maritime pollution element. If the deficiencies are found Member States are required to detain a vessel or stop the activity. In most cases the absence of an appropriate international management code for the safe operation of ships and for pollution prevention (ISM code) certificate means that the vessel will also be detained for rectification. Under certain conditions the ship may leave port to go to an appropriate repair yard. If the ship leaves port without permission it should generally be refused entry to another EU port.

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161 Council Directive 98/18/EC of 17 March 1998 on safety rules and standards for passenger ships, OJ L 144, 15.5.98, p. 1

162 Council Directive 96/98/EC of 20 December 1996 on marine equipment, OJ L 46, 17/02/1997, p. 25-56

163 Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft, OJ L 214 of 26.8.2003, p. 18.

164 Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Directive 93/75/EEC, OJ L 208 of 5.8.2002, p. 10

165 Council Directive 95/21/EC of 19 June 1995 on port State control of shipping, OJ L 157, 7.7.1995, p. 1), as amended by Council Directive 98/25/EC of 27 April 1998 (OJ L 133, 7.5.1998, p. 19), Commission Directive 98/42/EC of 19 June 1998 (OJ L 184 27.6.1998, p. 40), Commission Directive 1999/97/EC of 13 December 1999 (OJ L 331, 23.12.1999, p. 67), Directive 2001/106/EC of the European Parliament and of the Council of 19 December 2001 (OJ L 19, 22.1.2002, p. 17), Directive 2002/84/EC of the European Parliament and of the Council of 5 November 2002 (OJ L 324, 29.11.2002, p. 53)

166 Fishing vessels, warships, naval auxiliaries, wooden ships of a primitive build, government ships used for non-commercial purposes and pleasure yachts not engaged in trade are excluded.

For flag states surveys, an organisation carrying out inspections and surveys of ships for a Member State for ships flying its flag, has to be "recognised" under EU rules.[167] If the pollution prevention performance of the organisation worsens, there are a number of steps leading to the "recognition" being withdrawn.

If a Member State (or its inspectors) finds that despite a ship visiting one of their ports or sailing through their waters having a valid safety certificate, there is a serious threat to the environment, then the flag state concerned, the Commission, other Member States and the recognised organisation have to be informed.

4.4.1.4. Places of refuge

EU rules[168] require Member States to draw up plans to accommodate ships in distress in their waters. Member States may also have arrangements for assistance, salvage and pollution response in place. If there is exceptionally bad weather and the competent authorities consider that there is a serious threat of pollution ships can also be prohibited from entering or leaving a port. In the event of exceptionally bad weather, Member States' competent authorities "shall" limit as much as possible the bunkering of ships in their territorial waters.

4.4.1.5. Reporting accidents at sea

Member States are required[169] to monitor and take measures to ensure that ships within their jurisdiction immediately report any situation liable to lead to pollution of the waters or shore of a Member State, such as the discharge of polluting products into the sea and any slick of polluting materials and containers or packages seen drifting at sea. If an incident or accident happens at sea, Member States are also required to take all appropriate measures to protect the marine environment. The operator, the master of the ship and the owner of the dangerous or polluting goods on the ship must cooperate fully with the competent national authorities in order to minimise the consequences of an incident or accident at sea.

4.4.1.6. Certificates of maritime excellence

In 2009, the Commission will come forward[170] with an action plan to improve the qualifications of seafarers by establishing a Certificate of Maritime excellence. The intention is to have this as a way of supplying highly knowledgeable personnel to the

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167 Council Directive 94/57/EC of 22 November 1994 on common rules and standards for ship inspections and survey organisations and for the relevant activities of maritime administration, OJ L 319, 12.12.1994, p. 20, as amended by Commission Directive 97/58/EC of 26 September 1997 (OJ L 274, 7.10.1997, p. 8), Directive 2001/105/EC of the European Parliament and of the Council of !9 December 2001 (OJ L 19, 22.1.2002, p. 19), Directive 2002/84/EC of the European Parliament and of the Council of 5 November 2002 (OJ L 324, 29.11.2002, p. 53)

168 Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Directive 93/75/EEC, OJ L 208 of 5.8.2002, p. 10

169 Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Directive 93/75/EEC, OJ L 208 of 5.8.2002, p. 10

170 Communication from the Commission to the European Parliament, the Council, The European economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union, COM(2007) 575 final

shipping industry and the maritime clusters, this knowledge will have safety and environmental components.

4.4.1.7. Vessel Traffic Monitoring Systems

By the end of 2008, Member States must have in place the equipment and measures to ensure that information about the automatic identification of ships can be fully used. There are various requirements laid down for monitoring ships and their entry into port.[171] These include the obligatory advance notification of dangerous or polluting goods as cargo.

The Commission is also committed[172] to promoting improved cross-border and cross-sectoral cooperation between Member States by setting up a network of ship tracking and e-navigation systems. This will be done by bringing together existing surveillance, monitoring and reporting systems currently operating in the EU.

4.4.1.8. Maintenance of recreational craft

EU rules state that information should be given to the owner on how the recreational craft should be maintained.[173]

4.4.2. Research and Technology

Maritime safety has been an important element of past framework research programmes and will continue to be a key issue in the transport theme of the 7th "Cooperation" specific programme. Both ship design and navigation systems have been covered, which have a positive impact on avoiding accidents.

171 Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Directive 93/75/EEC, OJ L 208 of 5.8.2002, p. 10

172 Communication from the Commission to the European Parliament, the Council, The European economic and Social Committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union, COM(2007) 575 final

173 Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft, OJ L 214 of 26.8.2003, p. 18.

5. INLAND WATERWAYS

Inland waterway transport plays an important role in European goods transport. More than 37 000 kilometres of waterways connect hundreds of cities and industrial regions. While 20 out of 27 Member States have inland waterways, 12 of which have an interconnected waterway network, the modal share of river transport accounts for 5.3% of the total inland transport in the European Union. In 2006, 138 billion tonne-kilometres and more than 500 million tonnes of freight were transported by inland waterways in the Union by an estimated 12 500 vessels.[174]

The 2006 Mid-Term Review of the Transport White Paper highlighted the importance of inland waterway transport on certain corridors, particularly in North West Europe. The NAIADES (Navigation And Inland waterway Action and Development in Europe) action plan is the EU strategy for promoting the use of inland waterways for transport.[175] This sets out actions for different actors, some of which are linked to reducing environmental impacts, for the period 2006 to 2013. The specific measures are covered in the appropriate sections below. Recreational craft also navigate on the EU's inland waterways; however they are covered in section 4.

There are two international river navigation commissions, for the Rhine and for the Danube, which set rules for the transport of goods and passengers in parts of their river basin. The Commission participates as an observer in both and the relevant Member States are full members. The Rhine Convention is particularly significant given its overall share of inland waterways traffic and the fact that its rules are binding. Two international river protection commissions – again for the Rhine and Danube - also exist and play an important role in implementing the EU water framework directive (see 2.3.2.1).

5.1. Climate change

5.1.1. Economic Instruments

The NAIADES action programme[176] suggests that infrastructure charging in the sector should be harmonised by 2013. The Commission is in favour of ports charging to encourage less polluting ships;[177] this would equally apply to inland waterways vessels.

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174 In EU law, inland waterway vessels are generally defined as "intended for use on inland waterways having a length of 20 metres or more or vessels for which the product of length, breadth an draught is 100m³ volume or more, or tugs or pusher craft having been built to tow or to push or to move alongside vessels of 20 metres or more. The definition does not include passenger transport vessels carrying less than 13 passengers.

175 Communication from the Commission on the promotion of inland waterway transport, "NAIADES": An integrated European action programme for inland waterways transport, COM (2006) 6

176 Communication from the Commission on the promotion of inland waterway transport, "NAIADES": An integrated European action programme for inland waterways transport, COM (2006) 6

177 Communication on a European Ports Policy, COM (2007) 616

In addition to the EU rules mentioned in section 2.1.1, EU taxation rules[178] require fuel used inland waterways to be taxed, although Member States can apply a zero or reduced rate of tax to all except, private pleasure craft.

5.1.2. Infrastructure

The use of shore-side electricity in inland ports could be envisaged in the same way as for the maritime sector (see section 4.1.2.2).

5.1.3. Research and Technology

The NAIADES action programme[179] states that research into commercially-viable non-carbon fuels e.g. hydrogen fuel cells and zero-emission engines should be pursued at national level, as should the identification of technologies to reduce fuel consumption. Within the NAIADES framework, the Commission is also considering ways to help finance fleet modernisation to, amongst other things, improve environmental performance.

5.2. Local Pollution

5.2.1. Regulatory Instruments

5.2.1.1. Water pollution

EU rules[180] require that emissions of carbon monoxide, hydrocarbons, oxides of nitrogen and particulates from new engines for inland waterway vessels sold in the EU comply with emission limit values. These are shown in Annex I. The Commission is currently assessing the impacts of tightening these emissions limits and of introducing "in-use compliance" mechanisms.

There are also EU rules[181] that give detailed requirements for new vessels on how to handle engine and lubricating oil, as well as oil used in hydraulic systems, in order to prevent emissions to water. There are EU rules on the equipment required for the transporting hazardous materials. Additionally passenger vessels must have waste water collecting tanks or appropriate on–board sewage treatment systems. The Commission is planning new rules on how engines should be maintained and the use of replacement parts and their characteristics.[182]

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178 Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L 283 31.10.2003, p. 51

179 Communication from the Commission on the promotion of inland waterway transport, "NAIADES": An integrated European action programme for inland waterways transport, COM (2006) 6

180 Directive 97/68/EC of the European Parliament and of the Council of 16 December 1997 on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery, OJ L 59, 27.2.1998, p. 1

181 Annex II, Article 8.05 – 8.09, 15.14 and 10.02 respectively of Directive 2006/87/EC of the European Parliament and of the Council of 12 December 2006 laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC, OJ L 389, 30.12.2006, p. 1

182 It will make a proposal to amend Annex II, chapter 8a of Directive 2006/87/EC.

EU rules on boatmasters' certificates[183] require candidates to have knowledge of the prevention of the pollution of waterways before obtaining the certificate.

The Commission said it would consider reinforcing the legal framework for waste disposal from vessels through a harmonisation proposal around 2009.[184]

5.2.1.2. Air pollution

EU rules[185] require the sulphur content of fuels used by inland waterway vessels' to have a maximum sulphur content of 1 000 mg/kg. In 2007 the Commission proposed[186] to reduce this level for inland waterway vessels to 300 mg/kg from 31 December 2009 and 10 mg/kg from 31 December 2011. Member States can set a lower limit.

EU rules[187] also set limits on the sulphur content of gas oil and marine gas oil, which are commonly used for inland navigation to 0.1%. They also require Member States to ensure that, from 1 January 2010 fuels used by inland waterway vessels on inland waterways do not use marine fuels (including marine gas oil and marine diesel oil) with a sulphur content exceeding 0.1% by mass. Vessels are exempt if they have a certificate proving conformity with the International Convention for the Safety of Life at Sea 1974 (as amended) or if they use an approved emission abatement technology which continuously achieves emission reductions which are at least equivalent to those which would be achieved through the limits on sulphur and the emissions are continuously monitored.

5.2.2. Infrastructure

As stated in section 4.2.3,[188] the Commission will issue guidelines on the application of Community environmental legislation to port development.

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183 Council Directive 96/50/EC of 23 July 1996 on the harmonization of the conditions for obtaining national boatmasters' certificates for the carriage of goods and passengers by inland waterway in the Community, OJ L 235, 17.9.1996, p. 31

184 Communication from the Commission on the promotion of inland waterway transport, "NAIADES": An integrated European action programme for inland waterways transport, COM (2006) 6

185 Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC, (OJ L 121, 11.5.1999, p. 13) as amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003 (OJ L 284 of 31.10.2003, p. 1) and Directive 2005/33/EC of the European Parliament and of the Council of 6 July 2005 (OJ L 191 of 22.7.2005, p. 59)

186 Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels and amending Council Directive 1999/32/EC, as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC, COM (2007) 18

187 Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC, (OJ L 121, 11.5.1999, p. 13) as amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003 (OJ L 284 of 31.10.2003, p. 1) and Directive 2005/33/EC of the European Parliament and of the Council of 6 July 2005 (OJ L 191 of 22.7.2005, p. 59)

188 Communication from the Commission on a European Ports Policy, COM (2007) 616

5.2.3. Research and Technology

Projects on electronic chart display information systems (ECDIS) have been financed by EU framework research programmes.

5.3. Noise

5.3.1. Regulatory Instruments

EU rules[189] require all non-passenger vessels with a dead weight of more than 350 tonnes which travel on inland waterways to not exceed 75 dB(A) when moving and 65 dB(A) when stationary. For passenger vessels these requirements will enter into force on 1 January 2015.

5.4. Accidents

5.4.1. Regulatory Instruments

EU rules[190] set detailed technical requirements for many aspects of inland waterways vessels which aim at a high level of safety.

There are EU rules setting the minimum examination requirements for safety advisers for the transport of dangerous goods on inland waterways,[191] as well as for their appointment and vocational qualifications.[192] Both of these sets of rules will be revised in 2009, when EU rules[193] for the transport of dangerous goods by inland waterways will also be introduced.

EU rules[194] exist setting out the conditions for obtaining a Community Boatmasters' Certificate in order to be able to navigate on EU waterways. These include a minimum age and professional experience, physical and mental fitness and a theoretical examination, which include having knowledge of water pollution. The requirements do not apply to vessels less than 20 metres long or to passenger vessels carrying less than 12 passengers.

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189 Directive 2006/87/EC of the European Parliament and of the Council of 12 December 2006 laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC, OJ L 389, 30.12.2006, p. 1

190 Directive 2006/87/EC of the European Parliament and of the Council of 12 December 2006 laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC, OJ L 389, 30.12.2006, p. 1

191 Directive 2000/18/EC of the European Parliament and of the Council of 17 April 2000 on minimum examination requirements for safety advisers for the transport of dangerous goods by road, rail or inland waterway, OJ L 118, 19.5.2000, p. 41

192 Council Directive 96/35/EC of 3 June 1996 on the appointment and vocational qualification of safety advisers for the transport of dangerous goods by road, rail and inland waterway, OJ L 145, 19.6.1996, p. 10

193 Proposal for a Directive of the European Parliament and of the Council on the inland transport of dangerous goods, COM(2006) 852 final

194 Council Directive 96/50/EC of 23 July 1996 on the harmonization of the conditions for obtaining national boatmasters' certificates for the carriage of goods and passengers by inland waterway in the Community, OJ L 235, 17.9.1996, p. 31

6. RAIL

The EU rail network is divided into high-speed and conventional track. 50% of the track is electrified and by distance 80% of the freight tonnage transported is on this network. There are between 15 000-18 000 diesel locomotives in Europe with an average age of 27.[195] Engines need to be replaced around every 20 years; around 500 new engines are bought every year. In comparison, there were an estimated 825 000 freight wagons in the EU in 2000. They have an average lifetime of 40 years and roughly 15 000-20 000 are bought annually. They travel an average of between 10 and 30 000 km/year.

At the EU level, the general policy approach has been one to favour the development of rail transport by increasing reliability, competition and capacity and hence its attractiveness relative to other modes of transport. The 2006 Mid-Term Review of the Transport White Paper underlined the need to tackle low levels of interoperability, the lack of mutual recognition of rolling stock and products, the weak coordination of infrastructure and interconnection of IT systems. Exploiting the potential of rail has been a key focus of recent Commission initiatives, including developing a rail network giving priority to freight.[196]

6.1. Climate change

6.1.1. Economic Instruments

In addition to the general EU rules mentioned in section 2.1.1 EU rules[197] set minimum taxation levels for both electricity and diesel fuels; however, tax exemption or reductions are allowed for all rail, metro and tram transport, partly as a result of their advantages over road transport.

EU rules[198] harmonise charging principles for the use of railway infrastructure. They allow infrastructure charges to take account of the cost of the environmental impact of train operations. The charges need to be proportional to the impact and must be revenue neutral for the infrastructure manager unless competing modes of transport are also subject to the charge. Member States can also compensate rail infrastructure for any competitive disadvantage it may suffer because other competing modes of transport have higher unpaid external environmental costs. This compensation can only be paid if external costs for other modes of transport are greater and then only for the difference; however, for as long as the legislation does not explicitly authorise charging heavy goods vehicles for external costs through tolls, Member States cannot introduce the reform of tax/charge structures required to better internalise external costs in rail transport.

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195 Halder, M. and Löchter, A. (2005) Rail Diesel Study, WP1 Final Report.

196 COM (2007) 608 final

197 Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L 283 31.10.2003, p. 51

198 Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification, OJ L 75, 15.03.2001, p. 29, and Council Directive 91/440/EC of 29 July 1991 on the development of the Community's railways, OJ L 237, 24.8.1991, p. 25

Opening this policy option is a key part of the Commission's strategy to internalise the external costs of transport (see section 2.1.1). This will be done through a combination of the Commission's proposal to revise the directive on infrastructure charging for heavy goods vehicles (see section 7.4.1) and revising the EU rules on rail infrastructure charging, which will be proposed in late 2008.

6.1.2. Research and Technology

The TRAINER project, part-financed by the EU's Intelligent Energy – Europe programme aims to encourage train drivers to drive trains in a more energy efficient way. The project, which began in 2006, targets 25 000 drivers in 5 EU countries and will result in 1 million tonnes of CO_2 emissions being avoided as well as significant amounts of other emissions. The project estimates that if the training programme were to be extended to all 150 000 EU train drivers, around 6.5 million tonnes of CO_2 would be saved annually.

The RAILENERGY project has also looked specifically at reducing CO2 emissions from the rail sector.

6.2. Local Pollution

6.2.1. Economic Instruments

EU rules on rail infrastructure charging (see section 6.1.1) can also cover local pollution.

6.2.2. Regulatory Instruments

EU rules limit[199] the emissions of CO, hydrocarbons and NOx combined, and particulates that can be emitted from new locomotive engines. From 2010 tighter values apply.

For high-speed rail the technical specifications[200] state that the materials selected for use on rolling stock shall minimise the emission of harmful and dangerous fumes or gases during use of the trains.

EU rules require gas oils intended for use by non-road mobile machinery (which includes locomotives engines) to have a maximum sulphur content of 1 000 mg/kg. In 2007 the Commission proposed[201] to reduce this to 10 mg/kg on 1 January 2009,

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199 Directive 2004/26/EC of the European Parliament and of the Council of 21 April 2004 amending Directive 97/68/EC on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery, OJ L 146 of 30.4.2004, p.1-107

200 Commission Decision 2002/735/EC of 30 May 2002 concerning the technical specification for interoperability relating to the rolling stock subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Directive 96/48/EC, OJ L 245 of 12.9.2002, p. 402

201 Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels and amending Council Directive 1999/32/EC, as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC, COM (2007) 18

unless this needs to be changed in order to ensure that there is no increase in greenhouse gas emissions.

6.2.3. Research and Technology

Research into cleaner and more efficient diesel locomotives is currently ongoing under the framework research programmes (see section 2.1.5).

For railway infrastructure the INFRAGUIDER project funded under the framework research programme is looking into the local environmental impacts of railway infrastructure construction and renovation.

6.3. Noise

6.3.1. Economic Instruments

EU rules on rail infrastructure charging (see section 6.1.1) can also cover local pollution.

6.3.2. Regulatory Instruments

EU rules limit noise emissions from both conventional[202] and high-speed rail.[203] For conventional rail, these apply to new or renewed rolling stock, including diesel[204] and electric engines, coaches, freight wagons and multiple units. In reality, new rolling stock for conventional rail have to have low-noise brake-blocks which reduce noise emissions by 50%.

There are particular requirements for conventional rail belonging to the Trans-European rail network system. These seek to ensure that noise levels do not increase after renewal or upgrading, and for freight wagons that if the braking system has been changed, they have either been equipped with composite blocks or meet the limits for new wagons. For high-speed rail the technical specifications limit noise emissions.[205]

Alongside this inventory, the Commission produced a Communication on abatement measures for rail noise in 2008, and will follow this with a legislative proposal towards the end of 2008 to ensure the retrofitting of low noise brake blocks on most existing rolling stock.

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202 Commission Decision 2006/66/EC of 23 December 2005 concerning the technical specification for interoperability relating to the subsystem "rolling stock – noise" of the trans-European Conventional rail system, OJ L 37, 8.2.2006, p. 1

203 Commission Decision 2002/735/EC of 30 May 2002 concerning the technical specification for interoperability relating to the rolling stock subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Directive 96/48/EC, OJ L 245 of 12.9.2002, p. 402

204 There are some exemptions both permanent and temporary. The permanent exemptions are for diesel locomotives on the British and Irish networks for starting and stationary noise.

205 The limits do not apply to parts of the system that have been renewed or subject to "maintenance-related replacement". Upgraded parts of the system apply the limits under certain circumstances. The limits are 65 dB(A) measured continuously or 70dB(A) intermittently when in stations or stabling track; and 87 dB(A) at a speed of 250 km/h, 91 dB(A) at a speed of 300 km/h and 92 dB(A) at a speed of 320 km/h (linear interpolation for other maximum speeds), when in service.

6.3.3. Infrastructure

EU technical specifications for high-speed rail[206] state that train noise can be reduced by installing "sound-attenuating measures" along the track in areas particularly sensitive to noise, however this is not compulsory. Infrastructure is not included in the noise technical specifications for conventional rail but this is planned and is part of a formal mandate to the European Railway Agency.

6.3.4. Research and Technology

The Strategies and Tools to Assess and Implement noise Reducing measures for Railway Systems (STAIRRS) project, financed under the 5th Research Framework Programme, brought together the results of several other research projects into a practical tool that calculates the costs of achieving different noise reduction targets for railways as well as what action needs to be taken. Under the 6th Research Framework Programme, several projects looked at railway noise in different railway environments (urban rail, conventional rail, shunting yards etc.). Further projects are likely to be financed under the 7th Research Framework Programme.

6.4. Congestion

6.4.1. Economic Instruments

EU rules on charging for the use of railway infrastructure (see section 6.1.1) explicitly aim to optimise its use. Where demand for train paths (i.e. the use of the track) exceeds capacity, the infrastructure is allowed to levy a scarcity charge in order to give priority to those potential users with the highest willingness to pay. In addition, penalties for those causing delays (be they infrastructure managers or network users) mean that there is an incentive to reduce delays – and hence to increase traffic flow and network capacity.

6.4.2. Infrastructure

Since March 2003, all new high speed lines must be equipped with ERTMS (the European Rail Traffic Monitoring System) and, since September 2006, all new sections for conventional priority projects.[207] ERTMS will have two positive effects. First it will allow increased capacity on the railways, thereby reducing overall emissions if it entails a modal shift from more-polluting modes of transport. Second it will allow train drivers to know the next three signals therefore allowing them to adjust their driving behaviour to minimise acceleration or braking, hence being more energy efficient.

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206 Commission Decision 2008/735/EC of 30 May 2002 concerning the technical specification for interoperability relating to the rolling stock subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Directive 96/48/EC, OJ L 245, 12.9.2002, p. 402

207 Decision No 884/2004/EC of the European Parliament and of the Council of 29 April 2004 amending Decision No 1692/96/EC on Community guidelines for the development of the trans-European transport network (Text with EEA relevance), OJ L 167, 30.4.2004, p. 1–38

6.4.3. Research and Technology

Several projects in the 6th and 7th Research Framework Programmes address the development of components for interlocking systems. There are also projects on sensor and monitoring systems to control rolling stock and railway infrastructure to reduce incidents and advise on the need for maintenance and renovation.

6.5. Accidents

Most safety measures are national, rather than European and there are often significant differences between the Member States. The EU's approach has been based on encouraging the interoperability of infrastructure and rolling stock, such as standards for freight wagons and for signalling systems. Following the entry into force of EU rules on rail safety, the European Railway Agency is tasked with preparing EU rules, which are then adopted at EU level.[208]

6.5.1. Regulatory Instruments

EU rules set out the principles for harmonised safety certification and licensing of railway undertakings[209] and set the framework conditions for a harmonised approach towards railway safety in the European Union.[210] The latter include requiring Member States to set up a national railway safety authority dealing with safety issues to monitor compliance with common and national safety rules. In addition the rules also require each Member State to create an independent accident investigation body. Other EU rules[211] establish the European Railway Agency, which deals with safety issues by preparing work on a series of interoperability and common safety rules which are then adopted by the Commission. An example of these is the common format for rail safety certificates.[212]

In 2006 the Commission proposed[213] the mutual recognition of safety authorisations and extending the Agency's powers to enable it to make an inventory of different national safety procedures and technical regulations in force and to develop a list of

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208 Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive), OJ L 164, 30.4.2004, p. 44

209 Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification, OJ L 75, 15.3.2001, p. 29

210 Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive), OJ L 164, 30.4.2004, p. 44

211 Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European railway agency (Agency Regulation), OJ L 164, 30.4.2004, p. 1

212 Commission Regulation EC/653/2007 of 13 June 2007 on the use of a common European format for safety certificates and application documents in accordance with Article 10 of Directive 2004/49/EC of the European Parliament and of the Council and on the validity of safety certificates delivered under Directive 2001/14/EC, OJ L 153, 14.6.2007, p. 9

213 Proposal for a Directive of the European Parliament and of the Council, amending Directive 2004/49/EC on safety on the Community's railways, COM(2006)784

requirements where compliance need only be checked once because they are in line with internationally accepted rules.

In 2007 new EU rules[214] introduced a European driver licence which will make it easier for train drivers to circulate on the entire European network. This includes requirements on the physical and occupational psychological fitness, professional experience and knowledge.

There are also EU rules[215] on the transport of dangerous goods by rail which aim to reduce accidents and their negative effects. EU rules also exist setting the minimum examination requirements for safety advisers,[216] as well as for their appointment and vocational qualifications.[217] All of these rules will be revised in 2009. In addition, there are EU rules on transportable pressure equipment[218] that can be used in rail transport in order to ensure that they are safe and can move freely within the internal market.

6.5.2. Research and Technology

Several projects, such as MODTRAIN, MODBRAKE and INNOTRACK, have been financed under the 6th Research Framework Programme to develop technical specifications to increase the modularisation of rolling stock design and the design of infrastructure components. These projects are linked to the common interoperability standards and safety rules being developed by the European Railways Agency.

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214 Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community, OJ L 315, 3.12.2007, p. 51

215 Council Directive 96/49/EC of 23 July 1996 on the approximation of the laws of the Member States with regard to the transport of dangerous goods by rail, OJ L 235, 17.9.1996, p. 25.

216 Directive 2000/18/EC of the European Parliament and of the Council of 17 April 2000 on minimum examination requirements for safety advisers for the transport of dangerous goods by road, rail or inland waterway, OJ L 118, 19.5.2000, p. 41

217 Council Directive 96/35/EC of 3 June 1996 on the appointment and vocational qualification of safety advisers for the transport of dangerous goods by road, rail and inland waterway, OJ L 145, 19.6.1996, p. 10

218 Council Directive 1999/36/EC of 29 April 1999 on transportable pressure equipment, OJ L 138, 1.6.1999, p. 20

7. ROAD TRANSPORT

In 2006 there were over 230 million passenger cars, 800 000 buses and coaches, 32 million goods vehicles (including 6 million heavy goods vehicles) and 31 million motorbikes and mopeds were registered in the EU27. The total number of vehicles on the EU's roads increases every year. In 2004 there were over 61 500 km of motorways in the EU25, a figure that is becoming denser. Road transport accounts for over 72% of tonne kilometres in inland freight transport,[219] a hare that is continually rising. A similar picture can be observed in passenger transport where road transport – mainly by passenger cars, but also by buses and coaches as well as powered two-wheelers dominates (interurban and urban) rail transport by 9:1, when measured in passenger kilometres. Deaths from road accidents in the EU have declined significantly from almost 76 000 in 1990 to around 43 000 in 2006. 83.5% of all CO_2 emissions come from road transport and noise from the sector has been estimated to affect 32% of the EU's population.

At the EU level, the general policy approach is to improve the efficiency of all modes of transport on their own on in combination, while seeking to reduce the external impacts of motorised transport in terms of accidents, congestion and the environment. The 2006 Mid-Term Review of the Transport White Paper stressed the importance of improving road safety and reducing congestion, including through the use of demand management, such as smart charging, and through intelligent transport systems. The key role of logistics and action in urban areas was also highlighted.

In 2006 the Commission launched the Intelligent Car Initiative[220] to provide a policy framework for EU action to make road transport safer, cleaner and smarter by using advanced information and communication technologies. This includes coordinating and supporting the work of relevant stakeholders, supporting research and development and facilitating the take-up and use of research results and creating user acceptance. The progress of this initiative is described in the First Intelligent Car yearly report.[221]

In 2007 the Commission set out[222] how it intended to steer automotive policy, using the results of the CARS 21 High-Level Group, which was set up by the Commission in 2005 and brought together all the main stakeholders to undertake a comprehensive automotive-related regulatory and policy review.

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219 Excluding short-sea shipping; 46% including short-sea shipping.

220 Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the Intelligent Car Initiative - "Raising Awareness of ICT for Smarter, Safer and Cleaner Vehicles", COM (2006) 59

221 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Towards Europe-wide Safer, Cleaner and Efficient Mobility: The First Intelligent Car Report, COM(2007) 541

222 Communication from the Commission to the European Parliament and Council: A Competitive Automotive Regulatory Framework for the 21st Century – Commission's position on the CARS 21 High Level Group Final Report, A contribution to the EU's Growth and Jobs Strategy, COM (2007) 22

Internationally, the Commission aims to use international standards, such as those developed by World Forum for the Harmonisation of Vehicle Regulations, as much as possible in order to facilitate the free movement of new vehicles and components.

All road vehicles with the exception of tractors and bicycles are subject to, or will become subject to over the coming years, the EU's whole-vehicle type-approval system. This system sets requirements for many different aspects of vehicle design which have to be met for them to be allowed to be marketed and sold on the EU market. More information on this is given in Annex III, table 1.

In the following sections it should be assumed that measures apply to all motor vehicles unless it is stated otherwise.

7.1. Climate change

The Commission has had a strategy to reduce the CO_2 emissions from light duty vehicles (i.e. cars and vans) since 2007.[223] This replaced a 1995 strategy which was only for cars[224] and was based on three pillars: voluntary commitments by the European, Japanese and Korean carmakers to reduce average emissions from new vehicles; consumer information, through the labelling of all new cars; and fiscal measures to promote fuel-efficient cars.

7.1.1. Economic Instruments

7.1.1.1. Fuel Tax

In addition to the general EU rules mentioned in section 2.1.1 EU rules on taxing motor fuels allow Member States to differentiate tax rates for certain uses[225] and between the commercial and non-commercial use of gas oil. [226]

7.1.1.2. Circulation and registration tax

In 2005 the Commission proposed[227] introducing differentiation to annual circulation taxes on the basis of the grams of CO_2/km per car and requiring 25% of total tax revenue to be CO_2 based by the end of 2008 and 50% by 2010. It also proposed the gradual abolition of car registration tax over a period of five to ten years with the

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223 Communication from the Commission to the Council and the European Parliament: Results of the review of the Community Strategy to reduce CO_2 emissions from passenger cars and light-commercial vehicles, COM (2007) 19

224 COM (95) 689, Communication from the Commission to the Council and the European Parliament - A community strategy to reduce CO_2 emissions from passenger cars and improve fuel economy

225 It is allowed for vehicles used by public administration and the armed forces. In addition, for cars it is allowed for taxis and vehicles used by disabled people; for vans and lorries, for waste collection and ambulances; for buses, those used for local public passenger transport; and for tractors, those used for waste collection.

226 For commercial and non-commercial gas oil, if the level is neither lower than the EU minimum rate nor the national rate on 1.1.2003. This will apply to lorries if their maximum permissible laden weight is 7.5 tonnes or more and to buses. If the lorry is subject to road user charges, the rate can only be lower than the national rate on 1.1.2003 if, on 1.1.2003, the rate was double the EU minimum rate on 1.1.2004, the overall level of taxation is broadly equivalent and the EU minimum rate is respected.

227 COM(2005) 261 Proposal for a Council directive on passenger car related taxes

taxes being differentiated on the basis of the number of grams of CO_2/km per car during the phase out period.

7.1.1.3. "Light-duty Environmentally-Enhanced Vehicle" (LEEV)

In order to allow fiscal incentives to focus on the cleanest light-duty vehicles on the market, the Commission has stated[228] that a "light-duty environmentally enhanced vehicle" (LEEV) should be defined at EU level. It stated that they should be vehicles that meet the next stage of pollutant emission limit values as laid down in the relevant legislation, and stay below 120g CO_2/km.

7.1.1.4. Collective Procurement

In 2006, the Commission said it would strengthen efforts to develop markets for cleaner, smarter, more energy-efficient and safer vehicles.[229] This will entail facilitating co-operation between manufacturers, local and regional authorities, and other entities with large vehicle fleets and car-sharing organisations, with a view to encourage these buyers to collectively acquire less polluting and energy-efficient vehicles at lower cost through joint procurement actions and the exchange of information.[230]

7.1.2. Regulatory Instruments

7.1.2.1. CO_2 emissions from new vehicles

In 1998 and 1999 the European Commission entered a voluntary agreement with the European, Japanese and Korean car industry to reach average emissions of CO_2 from new cars of 140g/km by 2012. In 2007 the Commission concluded that, although there had been a reduction in these average emissions,[231] the target was unlikely to be met and made a legislative proposal[232] to ensure that, along with other technological improvements and an increased use of biofuels, the Community target of 120g/km would be met by 2012.

The legislative proposal would require that from 2012 the average of all new cars sold will not exceed the 130g/km limit. Different vehicles would have different reduction targets, even if they already meet the 130g/km level. These targets would be calculated using a formula that would have the effect of requiring heavier cars to decrease their emissions by more than lighter ones.

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228 Communication from the Commission to the Council and the European Parliament: Results of the review of the Community Strategy to reduce CO_2 emissions from passenger cars and light-commercial vehicles, COM (2007) 19

229 Communication from the Commission: Action Plan for Energy Efficiency: Realising the Potential, COM (2006) 545

230 Commission Staff Working Document: Analysis of the Action Plan for Energy Efficiency: Realising the Potential, SEC (2006) 1173

231 Between 1995 and 2004 the average emissions from new cars sold in the EU fell from 186g CO_2/km to 163g CO_2/km.

232 Proposal for a Regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles, COM (2007) 856

Manufacturers (selling over 10,000 units per year in the EU) would be able to continue selling cars that do not meet the targets if either:

– they (or other manufacturers they have agreed to pool their fleet with) sold enough other models that emitted less than the target that could compensate for those that exceeded the target; or

– they paid a fine based on the number of vehicles sold in the calendar year, the excess emissions (in grams per kilometre) and an "excess emissions premium" in Euros, which would increase from €20 in 2012 to €95 in 2015 and beyond.

In 2007[233] the Commission said it would propose measures to limit the CO_2 emissions from vans by mid-2008 to reach average emissions of 175g/km by 2012 and 160g/km by 2015.

7.1.2.2. CO_2 labelling and promotion of new vehicles

To help consumers make informed purchases of new passenger cars, EU rules[234] require, at the point of sale, a fuel economy label on each model and a poster (or a display) showing the official fuel consumption and CO_2 emission data of all models displayed for sale or lease. In addition a guide to fuel economy and CO_2 emissions has to be available and all promotional literature must contain the official fuel consumption and specific CO_2 emission data for the models to which it refers. Towards the end of 2008, the Commission will propose amending these requirements to make them more effective.

In 2007 the Commission proposed[235] that from 1 January 2010 the label, fuel economy guide and promotional literature for passenger cars must indicate the extent to which the car's specific emissions of CO_2 differ from its specific emissions target set (see section 7.1.2.1).

EU rules also require that from 3 January 2009, manufacturers of passenger cars, vans and buses up to 2 610 kg set out CO_2 emissions and fuel consumption figures in a document given to the purchaser of the vehicle at the time of purchase.[236]

The Commission has invited car manufacturers to sign up before mid-2007 to a voluntary agreement on an EU wide code of good practice regarding car marketing

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233 Communication from the Commission to the Council and the European Parliament: Results of the review of the Community Strategy to reduce CO2 emissions from passenger cars and light-commercial vehicles, COM (2007) 19

234 Directive 1999/94/EC of the European Parliament and of the Council of 13 December 1999 relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars, OJ L 12, 18.1.2000, p. 16.

235 Proposal for a Regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles, COM (2007) 856

236 Regulation 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, OJ L 171, 29.6.2007, p. 1

and advertising and at the promotion of sustainable consumption patterns.[237] Following this the manufacturers proposed a code which is now being negotiated with the Commission.

7.1.2.3. Public Procurement

Public procurement currently accounts for slightly below 1% of market share for cars, around 6% for vans, around 6% for lorries and around one third for buses.[238] In December 2007, the Commission adopted a revised proposal for a directive on the promotion of clean and energy efficient road transport vehicles[239], which covers cars, trucks, vans and buses. This proposal aims to promote the introduction of these vehicles through green public procurement. Initially Member States would be required to ensure that where the public sector wants to use operational life-time costs for energy consumption, CO_2 emissions, and pollutant emissions as criteria for purchasing vehicles or services they have to follow the methodology set out in the directive. From 2012 using the methodology will become mandatory for all such purchases.

7.1.2.4. Alternative Fuels

In 2001 the Commission set out a strategy[240] to achieve 20% substitution of conventional automotive fuel by 2020, identifying biofuels, natural gas, and hydrogen as the main possibilities. This was followed by Member States being required[241] to set national indicative targets for the use of biofuels and other renewable fuels and to ensure that a certain percentage of the overall petrol and diesel fuels sold for transport is from these fuels. The indicative targets are 2% by the end of 2005 and 5.75% by the end of 2010, although lower targets can be set on the basis of objective criteria. Achieving these targets could result in greenhouse gas savings of between 0.3 and 1% of EU CO_2 emissions.[242] Member States are also required to ensure that information is given to the public on the availability of these fuels, and to ensure that for certain blends[243] there is specific labelling at the point of sale.

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237 Communication from the Commission to the Council and the European Parliament: Results of the review of the Community Strategy to reduce CO2 emissions from passenger cars and light-commercial vehicles, COM (2007) 19

238 Revised proposal for a directive of the European Parliament and of the Council on the promotion of clean and energy efficient road transport vehicles, COM (2007) 817

239 Revised proposal for a directive of the European Parliament and of the Council on the promotion of clean and energy efficient road transport vehicles, COM (2007) 817

240 Communication form the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions on alternative fuels for road transportation and on a set of measures to promote the use of biofuels, COM (2001) 547

241 Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels and other renewable fuels for transport, OJ L 123, 17.5.2003, p. 42

242 Commission Staff Working Document: Impact Assessment of a Proposal for a directive of the European Parliament and of the Council modifying Directive 98/70/EC relating to the quality of petrol and diesel fuels, SEC(2007) 55, p. 112

243 Where there is more than 5% of fatty acid methyl ester (FAME) or 5% of bioethanol.

In early 2008 the Commission proposed a directive[244] that would require each Member State to have at least 10% of its petrol and diesel fuels for transport coming from alternative fuels by 2020. The proposal was accompanied by rules to ensure the "sustainability" of the biofuels. The proposal would also require Member States to ensure that information is given to the public on the availability of biofuels and other renewable transport fuels. If a transport fuel is blended with more than 10% biofuels this has to be indicated at the point of sale. In addition, at filling stations with more than 2 pumps, diesel with more than 7% biofuels has to be made available by 31 December 2010 and diesel with more than 10% has to be made available by 31 December 2014. In total this proposal has been estimated to result in greenhouse gas savings of 68 million tonnes of CO_2 equivalent.

In 2007 the Commission proposed extending the scope of the EU's type approval system (See annex III, table 3) for cars, vans, lorries and buses to include hydrogen as a fuel.[245] This should facilitate the introduction of this technology to the market.

7.1.2.5. Vehicle Equipment: Air-conditioning systems and Gear-shift indicators

EU rules[246] set minimum requirements for air conditioning systems in passenger cars and in vans weighing no more than 1 305 kg. These are shown in Annex III, table 2. The rules also require systems that have leaked an abnormal amount to not be refilled until they have been repaired.

The Commission is required to publish a report by 4 July 2011 on whether these provisions should be amended, including consideration of whether the legislation should be extended to buses and vans above 1 305 kg but below 3 500 kg and whether measures on the retrofitting and refilling of mobile air-conditioning systems are necessary.

In 2006[247] the Commission committed itself to working towards minimum efficiency requirements for automobile air-conditioning systems during 2007 and 2008. It will make a proposal for legislation before the end of 2008.

The Commission is currently working on proposals to legislate on gear-shift indicators as they are thought to improve fuel economy and has launched a public consultation.

7.1.2.6. Driving Tests

Since 2003 EU rules on driving licences (see section 7.5.1.11) have required theory tests to include environmental questions on vehicle use in relation to the environment

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244 Proposal for a directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, COM (2008) 19

245 Proposal for a regulation of the European Parliament and of the Council on type-approval of hydrogen powered motor vehicles and amending Directive 2007/46/EC, COM (2007) 593

246 Directive 2006/40/EC of the European Parliament and of the Council of 17 May 2006 relating to emissions from air-conditioning systems in motor vehicles and amending Council Directive 70/156/EEC, OJ L 161, 14.6.2002, p. 12

247 Communication from the Commission: Action Plan for Energy Efficiency: Realising the Potential, COM (2006) 545 and Commission Staff Working Document: Analysis of the Action Plan for Energy Efficiency: Realising the Potential, SEC (2006) 1173

for all driving licence candidates except for tractors.[248] These include questions on moderate fuel consumption and the limitation of pollutants, the precise nature of which is left to Member States. In addition for lorry and bus drivers, driving examiners must assess whether a licence applicant is "driving economically and environmentally friendly, taking into account the revolutions per minute, changing gears, braking and accelerating".

In 2007 the Commission said that it may consider the inclusion of eco-driving requirements in future revisions of the driving licence directive.[249] It also said that it will propose legislation to harmonise requirements to promote fuel efficiency in drivers' education curricula and support projects in 2008.

7.1.2.7. Tyre-related measures

The Commission is developing a scheme to grade and label tyres according to rolling resistance (this is of direct relevance for fuel consumption and hence CO_2 emissions) and is planning a proposal for the first half of 2009. The aim is to shift the market towards tyres that have low rolling resistance, but which also satisfy safety standards. The proposal is likely to cover tyres for passenger cars and vans and may those for lorry and bus tyres too.

In line with the Community strategy to reduce CO_2 emissions from cars, the Commission has proposed rules[250] on low rolling resistance and type pressure monitoring which will contribute to reducing CO_2 emissions from cars.

7.1.3. Research and Technology

The Commission is currently supporting a variety of research towards reaching the European Road Transport Research Advisory Council's research target of a 40% reduction in CO_2 for new passenger vehicles by 2020 (i.e. 95g CO_2/km)[251].

The ECODRIVEN project, financed by the Intelligent Energy – Europe programme, began in 2006 and will finish in 2008. It aims to involve around 500 000 car, van, lorry and bus drivers in nine EU countries (and reach a further 2 million through dissemination activities) to optimise their driving behaviour from a safety and energy-efficient perspective. In so doing it aims to save 500 000 tonnes of CO_2 and significant amounts of other emissions from road transport.

Biofuel production and its use in captive fleets has been supported in several Community funded projects in the framework of the "Biofuels Cities" initiative, which began in early 2006 and will run until the end of 2009.

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248 Commission Directive 2000/56/EC of 14 September 2000 amending Council Directive 91/439/EEC on driving licences, OJ L 237, 21.9.2000, p. 45

249 Communication from the Commission to the Council and the European Parliament: Results of the review of the Community Strategy to reduce CO2 emissions from passenger cars and light-commercial vehicles, COM (2007) 19

250 Insert reference

251 Communication from the Commission to the Council and the European Parliament: Results of the review of the Community Strategy to reduce CO2 emissions from passenger cars and light-commercial vehicles, COM (2007) 19

In addition, as part of the Intelligent Car Initiative[252] the Commission is developing a methodology for measuring the impact of these ICT technologies on CO_2. Once this is done it will develop an implementation plan for the most effective ICT technologies for vehicles. This could include promoting on-board technologies that provide drivers with real-time information about the road network and optimise a journey or the engine performance improving overall energy efficiency.

The CLEVER (Compact Low-Emission Vehicles for urban transport)[253] project has also led to the development of a three-wheeled gas-powered prototype vehicle that is less than one metre wide, carries two people in tandem, reaches almost 100 km/h and emits less than 60g/km of CO_2.

7.1.3.1. Intelligent Transport Systems

In addition to the ongoing work under the Intelligent Car Initiative (see section 7), an action plan on intelligent transport systems for road is being prepared for adoption in 2008. The plan is needed to encourage the uptake of existing technologies that can help to reduce congestion and increase road efficiency, thereby reducing pollutant emissions. Currently the large-scale deployment of research findings is not happening. Uptake of these research findings is difficult because there is no clear vision of what is desired by policy-makers and of what each stakeholder needs to do. As a result investors are wary of making the investments needed to ensure large-scale implementation.

7.1.3.2. Hydrogen and fuel cell technology development

In 2002, the Commission created a High-Level Group which developed a long-term vision for a possible hydrogen economy in Europe.[254] Based on its recommendations, the Commission then initiated a Technology Platform on Hydrogen and Fuel Cell Technologies, which aims to accelerate the development and deployment of these technologies in Europe by bringing together the major stakeholders to foster cooperation and develop awareness of market opportunities as well as structuring European-level research into the technologies. This Technology Platform has published an implementation plan[255] setting out priorities for research and demonstration in order to achieve commercialisation around 2020.

To implement this, the Commission has proposed an EU law to set up a Fuel Cell and Hydrogen Joint Technology Initiative as a public-private partnership.[256] For the automotive sector, the aim is to achieve breakthroughs in technology bottlenecks and to enable industry to take the large-scale commercialisation decisions necessary to achieve mass market growth in the time-frame 2015-2020. The proposed Community

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252 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Towards Europe-wide Safer, Cleaner and Efficient Mobility: The First Intelligent Car Report, COM (2007) 541

253 http://www.clever-project.net/

254 Hydrogen Energy and Fuel Cells - A vision of our future

255 Implementation Plan – Status 2006, European Hydrogen and Fuel Cell Technology Platform, March 2007

256 Proposal for a Council Regulation setting up the Fuel Cells and Hydrogen Joint Undertaking, COM (2007) 571

contribution of €470 million between 2007 and 2013 should be matched by contributions from industry.

Over the past 15 years, the Commission has supported the research, development and demonstration of hydrogen and fuel cell vehicles.[257] This includes basic and applied research, as well as the demonstration of buses, cars and other vehicles. A major hydrogen bus demonstration project (HyFleet:CUTE) will continue to demonstrate 27 hydrogen fuel cell buses and 14 new buses with hydrogen engines at seven locations in Europe and two in Australia and China. A new hydrogen fuel cell hybrid pre-commercial bus will be developed with much improved energy efficiency and emitting only water vapour.

7.2. Local Pollution

7.2.1. Economic Instruments

Member States can[258] offer financial incentives for the uptake of new cars and vans offered for sale which meet the Euro 5 or 6 standards and for buses and lorries which meet the Euro V standards[259] (see section 7.2.2.2). In both cases the incentives can only be offered before the emission limit values become legally binding; once they are legally-binding the incentives must cease. The incentives must also be no more than the actual cost of the technical solutions introduced to ensure compliance with the limit values and their installation. Member States can also grant financial incentives for the retrofitting of in-use vehicles and for scrapping vehicles which do not comply.

If Member States choose to grant tax incentives for buses and lorries, they have to be granted to all meeting the EU limit values for Environmentally-Enhanced Vehicle (EEV).[260] They also have to inform the Commission how they are implementing the incentives. The values are shown in Annex III, table 3.[261]

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257 Including €320 million in the 6th Framework Programme.

258 Regulation 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, OJ L 171, 29.6.2007, p. 1

259 The same would be true for 2 and 3 wheeled motor vehicles if additional provisions were scheduled to come into force.

260 Directive 2005/55/EC of the European Parliament and of the Council of 28 September 2005 on the approximation of the laws of the Member State relating to the measures to be taken against the emission of gaseous and particulate pollutants from compression ignition engines for use in vehicles, and the emission of gaseous pollutants from positive ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles, OJ L 275, 20.10.2005, p. 1

261 The proposal for Euro VI standards (proposal for a Regulation of the European Parliament and of the Council on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information, COM(2007) 851) would annul these EEV standards.

7.2.2. Regulatory Instruments

7.2.2.1. Fuel quality

EU rules on petrol[262] set maximum levels for hydrocarbons (olefins, aromatics, benzene), oxygen-containing additives (including methanol, ethanol, ethers and certain types of propyl and butyl alcohol), sulphur and lead. The same rules set maximum levels for sulphur in both diesel fuel and gas oil (for use by agricultural tractors) and for polycyclic aromatic hydrocarbons in diesel fuel. The EU maximum level for sulphur will decrease from 50 to 10 mg/kg on 1 January 2009[263].

In addition, the rules require that unleaded petrol with a maximum sulphur content of 10 mg/kg must be marketed and available on an appropriately balanced geographical basis within every Member State. In 2007 the Commission proposed[264] introducing a new, separate blend of petrol with higher maximum concentrations of oxygen-containing additives in order to allow a higher volume of biofuels to be used in petrol and reducing the maximum levels of polycyclic aromatic hydrocarbons from 11% m/m to 8% m/m.

7.2.2.2. Vehicle Emissions Standards

There are EU requirements[265] preventing the placing on the market and sale of new types of cars, two and three wheeled vehicles,[266] vans[267] and buses[268] that do not meet certain minimum emissions standards for various different pollutants including carbon monoxide, hydrocarbons, nitrogen oxides, particulates, smoke and ammonia. These are referred to as EURO emission standards. These requirements have been progressively tightened and, for cars and vans are different for diesel and petrol or gas driven engines. For buses the requirements are only for petrol-driven engines, with requirements for diesel buses coming into force in 2012. For vans and buses the requirements also depend on the mass of the vehicle. For tractors, the EU requirements[269] focus on the engines.[270]

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262 Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC, OJ L 350, 28.12.1998, p. 58, as amended by Directive 2003/17/EC.

263 With the exception of gas oil for agricultural tractors, which is currently 1,000 mg/kg and the Commission's 2007 proposal would bring this down to 10 mg/kg from the end of 2009.

264 Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels and amending Council Directive 1999/32/EC, as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC, COM (2007) 18

265 Council Directive 70/220/EEC of 20 March 1970 on the approximation of the laws of the Member States on measures to be taken against air pollution by emissions from motor vehicles, as amended, OJ L 76, 6.4.1970, p.1

266 Directive 97/24/EC of the European Parliament and of the Council of 17 June 1997 on certain components and characteristics of two or three-wheel motor vehicles, OJ L 226, 18.8.1997, p. 1, as amended

267 With a mass of up to 2 500 kg, and from 3.1.2009, 2 610 kg

268 With a mass of less than 2 610 kg

269 The levels are defined in Directive 97/68/EC of the European Parliament and of the Council of 16 December 1997 on the approximation of the laws of the Member States relating to measures against the

Other buses, including those fuelled by natural gas and LPG, as well as lorries powered by a diesel or gas (LPG or natural gas) engine are not subject to the same type of restrictions. For them, Member States are allowed, but not required, to ban registration, sale, entry into service and use or prohibit the sale of new diesel engines that do not meet certain requirements.[271] The standards differ for diesel and gas engines with diesel engines with catalytic converters being subject to the requirements for gas engines.

The current standards are shown in the tables 4-12 in Annex III along with the requirements that will come into force over the coming years.

In 2007 the Commission proposed[272] tightening some of these standards for buses and lorries as well as requiring manufacturers to take the technical measures necessary to ensure that exhaust emissions comply with these limits under normal conditions of use for the normal life of the vehicle. For passenger cars, the Commission is currently examining options to ensure that the emissions testing process takes better account of real-life emissions[273] and is also working towards the adoption of global technical regulations on heavy duty vehicles' emission test cycles, off-cycle emissions and on-board diagnostic systems so that real-life emissions conditions are better reflected.[274] For motorcycles, mopeds and quadricycles the Commission is currently undertaking preparatory work for a proposal that is scheduled for adoption in the first half of 2009 and which will consider pollutant emissions and their test cycles.

7.2.2.3. Roadworthiness testing

The EU requirements for roadworthiness testing (see section 7.5.1.6) include visual inspections of the exhaust system, any emission control equipment and emissions testing. The exhaust emissions have to be checked against the manufacturers original specifications or, if Member States choose not to use this or the information is not available, maximum permissible concentrations are set depending on the type of engine and on the date the vehicle was first put into service. The requirements are shown in Annex III, table 13.

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emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery, OJ L 59, 27.2.1998, p. 1

270 Directive 2000/25/EC of the European Parliament and of the Council of 22 May 2000 on action to be taken against the emission of gaseous and particulate pollutants by engines intended to power agricultural or forestry tractors and amending Council Directive 74/150/EEC, OJ L 173, 12.7.2000, p. 1

271 Directive 2005/55/EC of the European Parliament and of the Council of 28 September 2005 on the approximation of the laws of the Member State relating to the measures to be taken against the emission of gaseous and particulate pollutants from compression ignition engines for use in vehicles, and the emission of gaseous pollutants from positive ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles, OJ L 275, 20.10.2005, p. 1

272 Proposal for a Regulation of the European Parliament and of the Council on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information, COM(2007) 851

273 Communication from the Commission to the European Parliament and to the Council, A competitive automotive regulatory framework for the 21st century: Commission's position on the CARS 21 High Level Group Final Report, A contribution to the EU's Growth and Jobs Strategy, COM(2007) 22

274 Communication from the Commission to the European Parliament and to the Council, A competitive automotive regulatory framework for the 21st century: Commission's position on the CARS 21 High Level Group Final Report, A contribution to the EU's Growth and Jobs Strategy, COM(2007) 22

7.2.2.4. Vehicle composition and waste

From 15.12.2008 EU rules require[275] Member States to refuse type-approval to new cars and vans having less than 85% reusable and/or recyclable material; and 95% reusable and/or recoverable material by mass. Requirements are also laid down for which components can be considered recoverable.

EU rules[276] also set requirements for the collection and transfer of cars, vans and three-wheeled motor vehicles (excluding motor tricycles) to treatment systems and for the treatment systems themselves. For cars and vans Member States are also required to meet minimum (weight-based) targets for reuse and recovery of materials, with a minimum of 85% for the reuse and recovery and 80% for the reuse and recycling need to be achieved.[277] From 1 January 2015 these increase to 95% and 85% respectively. The rules also ban, with certain limited exceptions which should diminish as alternatives become available, the use of mercury, lead, cadmium and hexavalent chromium in passenger cars and vans and in their components.

EU requirements for tyre retreading for commercial vehicles[278] sets standards which should increase their use and hence decreasing raw material and energy use in the production process, as well as decreasing tyre waste.

7.2.3. Research and Technology

Local pollution has been an important element of past framework research programmes and will continue to be a key issue in the transport theme of the 7th "Cooperation" specific programme.

7.3. Noise

7.3.1. Economic Instruments

Member States are allowed[279] to offer financial incentives to vehicles that meet more advanced EU standards prior to their becoming legally-binding.

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275 Directive 2005/64/EC of the European Parliament and of the Council of 26 October 2005 on the type-approval of motor vehicles with regard to their reusability, recyclability and recoverability and amending Council Directive 70/156/EEC, OJ L 310, 25.11.2005, p. 10

276 Directive 2000/53/EC of the European Parliament and of the Council on end-of-life vehicles, OJ L 269, 21.10.2000, p. 34

277 With the exception of vehicles produced before 1.1.1980, for which the targets are 75% and 70% respectively.

278 Council Decision 2006/443/EC of 13 March 2006 amending Decisions 2001/507/EC and 2001/509/EC with a view to making United Nations Economic Commission for Europe (UN/ECE) Regulation Nos 109 and 108 on retreaded tyres compulsory, OJ L 181, 4.7.2006, p. 1

279 Directive 97/24/EC of the European Parliament and of the Council of 17 June 1997 on certain components and characteristics of two or three-wheel motor vehicles, OJ L 226, 18.8.1997, p. 1, as amended

7.3.2. Regulatory Instruments

7.3.2.1. Vehicle noise

EU rules[280][281] set the maximum permissible noise emission levels for all new motor vehicles except tractors. These are to be found in Annex III, table 14. In 2004 the Commission concluded that these standards are not a strong technical driver towards quieter vehicles and stated that efforts should be pursued to assess the possibility of introducing tighter limits.[282] For 2 and 3 wheeled vehicles the Commission is currently examining the possibilities of setting new noise limits and test cycles based on results from UNECE work.

EU rules require the Commission to propose a subsequent stage during which measures will be adopted to further reduce the sound level of these vehicles.

The Commission is committed to ways of removing noisier vehicles from existing fleets.[283]

7.3.2.2. Tyre noise

There are separate EU requirements for noise from passenger car tyres and from vans, buses and lorry tyre.[284] These cover both tyres on new vehicles and tyres sold separately, although requirements for the latter will come into force over the coming years. This information is shown in tables in Annex III, tables 15 and 16. In May 2008, the Commission proposed a EU rules[285] (see section 7.5.1.4), which will allow maximum levels of tyre noise to be set through committee procedure.

7.3.3. Research and Technology

Noise pollution has been an important element of past framework research programmes and will continue to be a key issue in the transport theme of the 7th "Cooperation" specific programme.

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280 Council Directive 70/157/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles, OJ L 42, 23.2.1970, p. 16, as amended, including the latest on 14 June 2007.

281 Directive 97/24/EC of the European Parliament and of the Council of 17 June 1997 on certain components and characteristics of two or three-wheel motor vehicles, OJ L 226, 18.8.1997, p. 1, as amended

282 Report from the Commission to the European Parliament and the Council concerning existing Community measures relating to sources of environmental noise, pursuant to article 10.1 of Directive 2002/49/EC relating to the assessment and management of environmental noise, COM (2004) 160.

283 Report from the Commission to the European Parliament and the Council concerning existing Community measures relating to sources of environmental noise, pursuant to article 10.1 of Directive 2002/49/EC relating to the assessment and management of environmental noise, COM (2004) 160

284 Council Directive 92/23/EEC of 31 March 1992 relating to tyres for motor vehicles and their trailers and to their fitting, OJ L 129, 14.5.1992, p. 95, as amended

285 Proposal for a regulation of the European Parliament and of the Council concerning type-approval requirements for the general safety of motor vehicles, COM (2008) 316

7.4. Congestion

7.4.1. Economic Instruments

The Eurovignette directive[286] sets requirements for toll and user charge systems, where Member States choose to implement these on the trans-European road network. From 10 June 2008, with certain limited exceptions, these requirements apply to lorries weighing 12 tonnes or more, and from 2012 will apply to all lorries weighing more than 3.5 tonnes.

Where user charges are used, maximum levels are set. There are no restrictions on how the revenue from charges or tolls should be spent, although the directive recommends that it is used to benefit the transport sector and optimise the transport system.

Where tolls are used these have to be related to recovering the costs of the infrastructure, including the costs of construction, maintenance, operating and network development. They can also be used for combating environmental damage and tackling congestion but, if so, they have to be proportionate, transparent and non-discriminatory; revenue-neutral; and, from 2010, or at the first subsequent renewal of a concession contract, based on the EURO emission classes (see section 7.2.2.2), but with no toll being more than 100% above that meeting the strictest emission classes.

In exceptional cases, for specific projects of high European interest, other types of variation are allowed.

In addition, an extra "mark-up" of the tolls is permitted in exceptional cases in mountainous regions where they suffer from acute congestion, or where lorry use causes significant environmental damage. The revenue from this mark-up has to be invested in TEN-T priority projects which contribute directly to the alleviation of the congestion or environmental damage in question and which are located in the same corridor as the road section on which the mark-up is applied. It is limited to an overall increase in the tolls levied of 15%, unless the investment is in cross-border sections of the priority projects, in which case it is limited to 25%.

The Commission proposed a revision of the Eurovignette directive at the same time as publishing this inventory. The proposal would give Member States a framework to better vary charges according to the local pollution (air and noise) and congestion that the particular vehicle causes at the time it is used. By reducing congestion it will also contribute significantly to reducing CO_2 emissions. It would require charges to be calculated using a transparent common method and ensure that the internal market continues to work properly. It would also allow Member States to put in place sufficient incentives for operators to modernise their fleet with cleaner vehicles and to adapt their route planning and logistics to make them more sustainable. At the same time, the directive would also insist that any revenues from the scheme are earmarked for reducing the environmental impacts of transport and congestion and that, after a transition period, charges are levied using electronic systems.

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[286] Directive 1999/62/EC of the European Parliament and of the Council of 17 June 1999 on the charging of heavy goods vehicles for the use of certain infrastructures, OJ L 187, 20.7.1999, p. 42, as amended, most recently by Directive 2006/38/EC, OJ L 157, 9.6.2006, p. 8

7.4.2. Infrastructure

Between 2007 and 2012 the Commission has committed itself to improving EU-wide real time traffic and travel information (RTTI) systems and traffic management. It gives financial support to the EasyWay project to deploy Europe-wide Intelligent Transport Systems on the trans-European road network.

7.4.3. Research and Technology

The ITS Action Plan (see section 7.1.3.1) will also aim to reduce congestion. The focus of research is in cooperative systems. These involve vehicle-to-vehicle and vehicle-to-infrastructure communications which also have potential to reduce congestion. Under the 7th research framework programme actions are ongoing to develop these systems and a task force has also been set up[287] to develop a pan-European Interoperable architecture for these systems.

7.5. Accidents

In 2003 the Commission proposed the European Road Safety Action Programme[288] with the aim of halving the number of road accident victims in the EU by 2010. This programme was reviewed in 2006.[289] The Intelligent Car Initiative (see section 7) will also contribute to achieving the Action Programme's objective, including through driver assistance systems.

7.5.1. Regulatory Instruments

7.5.1.1. Speed Limiters

All lorries[290] and buses must have speed limiters fitted to be used on the road;[291] they must be set at 90 km/h and 100 km/h respectively. Member States can require a slower speed for a lorry if it is used exclusively for the transport of dangerous goods.

7.5.1.2. Dimensions

EU rules[292] set out the maximum dimensions (height, width and length) and minimum turning circles for buses and lorries in international and national traffic.[293] The precise requirements depend on factors such as whether they have a trailer, are a

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287 www.comesafety.org – this has been set up under a specific support action.

288 Communication from the Commission European Road Safety Action Programme: Halving the number of road accident victims in the European Union by 2010: A shared responsibility, COM (2003) 311

289 Communication from the Commission: European Road Safety Action Programme: Mid-Term Review, COM (2006) 74

290 Lorries used by the armed forces, civil defence, fire and other emergency services and forces responsible for maintaining public order are not covered by these requirements and nor are vehicles that cannot, because of the way they are constructed, exceed 90 km/h.

291 Council Directive 92/6/EEC of 10 February 1992 on the installation and use of speed limitation devices for certain categories of motor vehicles in the Community, OJ L 57, 2.3.1992, p. 27), as amended

292 Council Directive 96/53/EC of 25 July 1996 laying down for certain road vehicles circulating within the Community the maximum authorised dimensions in national and international traffic and the maximum authorised weights in international traffic, OJ L 235, 17.9.1996, p. 59 as amended by Directive 2002/7/EC

293 With the exception of those with more than one articulated section

road train or how many axles they have. There are some exceptions requiring special permits and others that are allowed because they do not affect international competition in the transport sector (including operations linked to logging and the forestry industry).

Member States may impose local length restrictions on vehicles for specific roads or areas, such as city centres, small villages or places of special natural interest where the infrastructure is not suitable for long vehicles.

Buses that were registered or put into circulation before 17 September 1997 and which do not meet the dimensions requirements may continue to circulate in the Member State in which they were registered until 31 December 2020. Member States can have tighter requirements for buses registered on their territory, but cannot set tighter requirements for buses registered elsewhere.

7.5.1.3. Weight

EU rules[294] set out the maximum weights for lorries in international traffic. The precise requirements depend on factors such as whether they have a trailer or are a road train and how many axles they have. The same rules also set out the maximum weights for buses in international traffic that are articulated and have three axles.

For the above types of lorries and buses registered on their territory, Member States can set additional requirements on aspects not covered by the directive, but these requirements are not valid for lorries registered elsewhere which are being used on their territory.

Member States may impose local weight restrictions on vehicles for specific roads or areas, such as city centres, small villages or places of special natural interest where the infrastructure is not suitable for heavy vehicles.

7.5.1.4. Abnormal loads and Dangerous Goods

Abnormal loads that are inadequately secured have the potential to cause accidents. The Commission's services have produced, with the help of experts, a set of best practice guidelines on cargo securing for road transport.[295]

EU rules[296] exist which aim to improve safety of the transport of dangerous goods by road and EU rules setting uniform procedures for checks on their transport, for the minimum examination requirements for safety advisers,[297] as well as for their

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294 Council Directive 96/53/EC of 25 July 1996 laying down for certain road vehicles circulating within the Community the maximum authorised dimensions in national and international traffic and the maximum authorised weights in international traffic, OJ L 235, 17.9.1996, p. 59 as amended by Directive 2002/7/EC

295 Available at http://ec.europa.eu/transport/roadsafety_library/vehicles/cargo_securing_guidelines_en.doc

296 Council Directive 94/55/EC of 21 November 1994 on the approximation of the laws of the Member States with regard to the transport of dangerous goods by road, OJ L 319, 12.12.1994, p. 7

297 Directive 2000/18/EC of the European Parliament and of the Council of 17 April 2000 on minimum examination requirements for safety advisers for the transport of dangerous goods by road, rail or inland waterway, OJ L 118, 19.5.2000, p. 41

appointment and vocational qualifications.[298] All these rules will be revised in 2009. In addition EU rules set requirements for the type approval of lorries and vans for carrying dangerous goods[299] and other EU rules[300] exist on transportable pressure equipment that can be used in road transport in order to ensure that they are safe and can move freely within the internal market.

7.5.1.5. Blind Spot Mirrors

Many accidents occur each year because lorry drivers fail to notice other road users when turning towards the passenger side of the vehicle. EU rules require that, from 1 January 2007, all new lorries have to be equipped with a blind-spot mirror[301] and that, from 31 January 2009 all existing lorries have to be retrofitted with one.[302]

7.5.1.6. Roadworthiness Testing

There are EU requirements for the roadworthiness testing of cars, vans, lorries and buses.[303] With the exception of taxis, ambulances, lorries and buses, which must be checked annually, cars and vans must be tested at least every two years beginning four years after the date when the vehicle was first used.

The vehicle features which need to be checked are related to braking, steering, visibility, lamps, reflectors, electrical equipment, axles, wheels, tyres, suspension, the chassis and its attachments as well as equipment such as safety belts. For buses and lorries the functioning of the speedometer, tachograph and speed limitation device (if fitted) also have to be checked.

The Commission is evaluating whether other categories of vehicles, including motorcycles, should be included within the existing roadworthiness testing framework.

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298 Council Directive 96/35/EC of 3 June 1996 on the appointment and vocational qualification of safety advisers for the transport of dangerous goods by road, rail and inland waterway, OJ L 145, 19.6.1996, p. 10

299 Directive 98/91/EC of the European Parliament and of the Council of 14 December 1998 relating to motor vehicles and their trailers intended for the transport of dangerous goods by road and amending Directive 70/156/EEC relating to the type approval of motor vehicles and their trailers, OJ L 11, 16.1.1999, p. 25

300 Council Directive 1999/36/EC of 29 April 1999 on transportable pressure equipment, OJ L 138, 1.6.1999, p. 20

301 Directive 2003/97/EC of the European Parliament and of the Council of 10 November 2003 on the approximation of the laws of the Member States relating to the type-approval of devices for indirect vision and of vehicles equipped with these devices, amending Directive 70/156/EEC and repealing Directive 71/127/EEC, OJ L 25, 29.1.2004, p. 1

302 Directive 2007/38/EC of the European Parliament and of the Council of 11 July 2007 on the retrofitting of mirrors to heavy goods vehicles registered in the Community, OJ L 184, 14.7.2007, p. 25

303 Council Directive 96/96/EC of 20 December 1996 on the approximation of the laws of the Member States relating to roadworthiness tests for motor vehicles and their trailers, OJ L 46, 17.2.1997, p. 1, as amended

7.5.1.7. Daytime running lights

Daytime running lights have been found to have net positive benefits for road safety and are already required in 14 EU Member States. The Commission supports[304] the introduction of specific requirements for daytime running lights on new vehicles and will make a proposal in 2008 using the standard recently agreed in the UN Economic Commission for Europe.

7.5.1.8. Tyres

In May 2008, the Commission adopted a proposal[305] for EU rules setting minimum requirements for rolling resistance and tyre pressure monitoring through committee procedures, making use of work within the World Forum for the Harmonisation of Vehicle Regulations.

7.5.1.9. Intelligent Vehicle Safety Systems

Intelligent vehicle safety systems have significant potential to reduce road fatalities by both preventing accidents from taking place and mitigating their impacts. In May 2008 the Commission adopted a proposal[306] that will make:

– Electronic Stability Control (ESC) systems mandatory for all new cars from 2014. These systems act on the braking or power systems of a vehicle to assist the driver in maintaining control of the vehicle in a critical situation (caused, for example, by poor road conditions or excessive speed during cornering). As well as potentially saving 4 000 casualties annually in the EU, the widespread use of ESC in vehicles could significantly reduce the traffic congestion caused by accidents involving large vehicles;

– Advance Emergency Braking (AEBS) mandatory on large vehicles from 2013. These systems use sensors to alert the driver when a vehicle is too close to the vehicle in front and, in certain situations, apply emergency braking to prevent or reduce the consequences of a collision;

– Lane Departure Warning (LDW) Systems mandatory on large vehicles from 2013. These assist drivers by warning them when their vehicle is in danger of leaving the lane unintentionally, mainly due to lack of driver attention.

7.5.1.10. Fitness to drive

Driving under the influence of alcohol or drugs increases the risk of accidents. Consistent with its more general work on alcohol-related harm,[307] the Commission

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304 Communication from the Commission to the European Parliament and to the Council, A competitive automotive regulatory framework for the 21st century: Commission's position on the CARS 21 High Level Group Final Report, A contribution to the EU's Growth and Jobs Strategy, COM(2007) 22

305 Proposal for a regulation of the European Parliament and of the Council concerning type-approval requirements for the general safety of motor vehicles, COM (2008) 316

306 Proposal for a regulation of the European Parliament and of the Council concerning type-approval requirements for the general safety of motor vehicles, COM (2008) 316

307 Communication on an EU strategy to support Member States in reducing alcohol-related harm, COM (2006) 625

has published a recommendation on blood alcohol concentrations for drivers.[308] The Council has also agreed a resolution on combating the impact of psychoactive substances on road accidents.[309] In addition, the Commission initiated work by medical experts on the influence of eyesight, epilepsy and diabetes on fitness to drive. These produced reports and recommendations.[310]

7.5.1.11. Driving licences and training

EU rules[311] set out the standards that need to be met to obtain a driving licence, hence reducing accidents. These include the need to pass both a theoretical and practical test, meet minimum standards of physical and mental health and be of a minimum age. New rules[312] coming into force in 2013 will reduce fraud, harmonise the regularity of medical checks and introduce requirements for driving examiners.

EU rules[313] for professional – i.e. bus and lorry – drivers aim to give drivers a solid basic and continuous training, thereby helping to improve road safety. The requirements come into force on 10.9.2008 for passenger vehicle drivers and 10.9.2009 for goods vehicle drivers.

7.5.1.12. Enforcement

Drivers committing a traffic offence in any country other than where their car is registered usually evade prosecution. Changing this situation should make an appreciable difference to road safety by bringing about a positive change of behaviour in both non-resident and resident drivers. To this end, in 2003, the Commission adopted a Recommendation dealing with best practice on enforcement in the field of road safety.[314] As this was found to have had little effect, the Commission proposed new rules[315] in March 2008 to facilitate an effective system of cross-border prosecution of traffic offences. These would set up a European network for the electronic exchange of data to send notices of offences to other countries. It would cover the four leading causes of accidents and road deaths: speeding, drink-driving, not wearing a seat belt and failing to stop at a red light.

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308 Commission recommendation 2001/115/EC of 17 January 2001 on the maximum permitted blood alcohol content (BAC) for drivers of motorised vehicles, OJ L 43, 14.2.2001, p. 31

309 Council Resolution 2004/C 97/01 of 27 November 2003 on combating the impact of psychoactive substances use on road accidents, OJ C 97, 22.4.2001, p. 1

310 These are available here - http://ec.europa.eu/transport/roadsafety/behavior/fitness_to_drive_en.htm

311 Commission Directive 2000/56/EC of 14 September 2000 amending Council Directive 91/439/EEC on driving licences, OJ L 237, 21.9.2000, p. 45

312 Directive 2006/126/EC of the European Parliament and of the Council of 20 December 2006 on driving licences (Recast), OJ L 403, 30.12.2006, p. 18

313 Directive 2003/59/EC of the European Parliament and of the Council of 15 July 2003 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers, amending Council Regulation (EEC) No 3820/85 and Council Directive 91/439/EEC and repealing Council Directive 76/914/EEC, OJ L 226, 10.9.2003, p. 4

314 Commission Recommendation 2004/345/EC of 6 April 2004 on enforcement in the field of road safety, OJ L 111, 17.4.2004, p. 75

315 Proposal for a Directive of the European Parliament and of the Council facilitating cross-border enforcement in the field of road safety, COM (2008) 151

7.5.2. Infrastructure

EU rules on tunnel safety[316] require all tunnels longer than 500 meters and belonging to the Trans European Road Network to meet minimum safety requirements. This covers more than 500 tunnels in operation, under construction or at the design stage. It defines standards for the organisation, roles and responsibilities for safety, as well as technical standards for tunnel infrastructure, operation, traffic rules and user information.

In order to raise the safety level of EU road infrastructure, the Commission has also proposed tools[317] for road infrastructure safety management, namely road safety impact assessments, audits, network safety management and safety inspections. It estimates that this could save 600 lives and 7 000 accidents every year if the measures were applied to the Trans-European road network.

7.5.3. Research and Technology

The Commission has financed a variety of road safety related projects[318] and also supports annual European Road Safety Days[319] to raise awareness, give visibility to best local practices and European policies.

The Commission also runs the "eSafety",[320] which is a key part of the Intelligent Car Initiative.[321] This aims to accelerate the development, deployment and use of safety

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316 Directive 2004/54/EC of the European Parliament and of the Council of 29 April 2004 on minimum safety requirements for tunnels in the trans-European road network, OJ L 167, 30.4.2004, p. 39

317 Proposal for a Directive of the European Parliament and of the Council on road infrastructure safety management, COM (2006) 569

318 More information is at http://ec.europa.eu/transport/roadsafety/vehicles/projects_en.htm, http://ec.europa.eu/transport/roadsafety/behavior/projects_en.htm and http://ec.europa.eu/transport/roadsafety/infrastructure/projects_en.htm

319 The first of which took place in April 2007; the second, focusing on road safety in cities, will take place in October 2008.

320 More information is available at http://www.esafetysupport.org/ or http://europa.eu.int/information_society/activities/esafety/index_en.htm

systems that use information and communication technologies in order to improve road safety and reduce accidents.

The Commission is promoting the implementation of eCall,[322] a system designed to promote rapid assistance in case of accidents through an automatic accident notification and location system. As accidents create congestion, this should reduce delays , thereby reducing congestion and emissions.Road safety has been an important element of past framework research programmes and will continue to be a key issue in the transport theme of the 7th "Cooperation" specific programme.

The ITS Action Plan (see section 7.1.3.1) will also contribute to improving road safety.

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321 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Towards Europe-wide Safer, Cleaner and Efficient Mobility: The First Intelligent Car Report, COM (2007) 541

322 More information is available at http://www.esafetysupport.org/en/ecall_toolbox and http://ec.europa.eu/information_society/activities/esafety/forum/ecall/index_en.htm and

Annex I: General Measures

Table 1: Ambient Air Quality Directive Values (see section 2.3.1.1)

Pollutant	Concentration	Averaging period	Value type[323]	Into Force	Permitted exceedances each year
Arsenic (As)	6 ng/m^3	1 year	Target	1.1.2012	n/a
Benzene	5 µg/m^3	1 year	Limit	1.1.2010	n/a
Cadmium (Cd)	5 ng/m^3	1 year	Target	1.1.2012	n/a
Carbon monoxide (CO)	10 mg/m^3	Maximum daily 8 hour mean	Limit	In force	n/a
Lead (Pb)	0.5 µg/m^3	1 year	Limit	In force[324]	n/a
Nickel (Ni)	20 ng/m^3	1 year	Target	1.1.2012	n/a
Nitrogen dioxide (NO_2)	200 µg/m^3	1 hour	Limit	1.1.2010	18
	40 µg/m^3	1 year	Limit	1.1.2010	n/a
Ozone	120 µg/m^3	Maximum daily 8 hour mean	Target	1.1.2010	25 days averaged over 3 years
PM_{10}	50 µg/m^3	24 hours	Limit	In force	35
	40 µg/m^3	1 year	Limit	In force	n/a
Polycyclic Aromatic Hydrocarbons	1 ng/m^3[325]	1 year	Target	1.1.2012	n/a
Sulphur dioxide (SO_2)	350 µg/m^3	1 hour	Limit	In force	24
	125 µg/m^3	24 hours	Limit	In force	3

323 Target values should be achieved "where possible", while limit values must be achieved.

324 Or 1.1.2010 in the immediate vicinity of specific, notified industrial sources; and a 1.0 µg/m^3 limit value applies from 1.1.2005 to 31.12.2009

325 Expressed as concentration of Benzo(a)pyrene

Annex II: Inland Waterways

Table 2: Air emissions requirements for new inland waterways engines

Engine power output (kW)	Swept volume per cylinder (litres)	In force, or date of entry into forces	Carbon Monoxide g/kWh	Sum of hydrocarbons and oxides of nitrogen (HC+NOx) (g/kWh)	Particulates (g/kWh)
>37	<0.9	In force	5	7.5	0.4
	0.9 ≤ x < 1.2	In force	5	7.2	0.3
	1.2 ≤ x < 2.5	In force	5	7.2	0.2
	2.5 ≤ x < 5	31.12.2008	5	7.2	0.2
	5 ≤ x < 15	31.12.2008	5	7.8	0.27
37 ≤ x < 75	15 ≤ x < 20	31.12.2008	5	8.7	0.5
	15 ≤ x < 20	31.12.2008	5	9.8	0.5
	20 ≤ x < 25	31.12.2008	5	9.8	0.5
	25 ≤ x < 30	31.12.2008	5	11	0.5

Annex III: Road Transport

Table 1: The type-approval system and road vehicles (see section 6)

Vehicle	Definition	Covered or when it will be
Cars	Motor vehicles with at least four wheels designed and constructed for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat. With a maximum mass of up to 2,500 kg, and from 3.1.2009, 2610 kg reference mass.	Yes
Van	Vehicles, designed and constructed for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes	Between 29.4.2009 and 29.4.2013, with the date depending on whether the vehicle is subject to one or more construction stages
Lorry	Vehicles, designed and constructed for the carriage of goods and having a maximum mass of more than 3.5 tonnes	Between 29.4.2009 and 29.10. 2014, with the date depending on whether the vehicle is subject to one or more construction stages.
Bus	Motor vehicles with at least four wheels designed and constructed for the carriage of passengers and comprising more than eight seats in addition to the driver's seat and having a maximum mass exceeding 5 tonnes. In some cases, the level can be 2610 kg or 2500 kg.	Optional for new vehicle types from 29.4. 2009 and obligatory for existing types of vehicles between 29.10.2010 and 29.10. 2011, with the date depending on whether the vehicle is subject to one or more construction stages.
2&3 wheeled motor vehicles and quadricycles	All two or three-wheel motor vehicles whether twin-wheeled or otherwise, intended to travel on the road, and to the components or separate technical units of such vehicles. (this includes mopeds, motorcycles, three-wheeled motor tricycles). Quadricycles are either treated as three-wheeled mopeds or as motor tricycles, depending on their characteristics.	Yes
Tractors	Any motorised, wheeled or tracked agricultural or forestry tract having at least tow axles and a maximum design speed of not less than 6 km/h, the main function of which lies in its tractive power and which has been especially designed to pull, push, carry and actuate certain interchangeable equipment designed to perform agricultural or forestry work, or to tow agricultural or forestry trailers; it may be adopted to carry a load in the context of agricultural or forestry work and/or may be equipped with passenger seats.	Covered by type approval, but not for the whole vehicle.
Bicycles	-	No

Cars, vans, lorries and buses are covered by one directive,[326] two and three-wheeled vehicles and quadricycles by another,[327] and tractors by another.[328]

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326 Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers, OJ L 42, 23.2.1970, p. 1. This will be repealed on 29 April 2009 and replaced by Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, OJ L 263, 9.10.2007, p. 1

327 Directive 2002/24/EC of the European Parliament and of the Council of 18 March 2002 relating to the type-approval of two or three-wheel motor vehicles and repealing Council Directive 92/61/EEC, OJ L 124, 9.5.2002, p. 1

Table 2: Requirements for the prohibition of certain types of mobile air-conditioning systems (see section 7.1.2.5)

Date	Type of vehicle
21.6.2008	All new such vehicles placed on the market with air-conditioning containing fluorinated greenhouse gases with a global warming potential greater than 150 and which do not have leakage rates of more than 40 grams per year for a single evaporator system or 60 grams for a dual evaporator system.
21.6.2009	As above, but for all new vehicles, including those type-approved in the past.
1.1.2011	New air-conditioning systems placed on the market which have a global warming potential higher than 150.
1.1.2017	New vehicles fitted with the above air-conditioning systems

Table 3: Emission Limit Values for Environmentally-Enhanced Vehicles (EEV) (see section 7.2.1)

		Engine Type	
		Diesel	Gas or diesel with catalytic converter
Pollutant	Carbon monoxide (g/kWh)	1.5	3.0
	Hydrocarbons (g/kWh)	0.25	-
	Non-methane hydrocarbons (g/kWh)	-	0.4
	Mass of methane (g/kWh) (only for natural gas engines)	-	0.65
	Nitrogen oxides (g/kWh)	2.0	2.0
	Particulates (g/kWh) (not applicable to gas-fuelled engines)	0.02	0.02
	Smoke (m^{-1})	0.15	-

328 Directive 2003/37/EC of the European Parliament and of the Council of 26 May 2003 on type-approval of agricultural or forestry tractors, their trailers and interchangeable towed machinery, together with their systems, components and separate technical units and repealing Directive 74/150/EEC, OJ L 171, 9.7.2003, p. 1

Table 4: Emission Limit Values for Passenger Cars with Petrol and Gas or Diesel Engines (see section 7.2.2.2)[329]

		Engine Type					
		Petrol and Gas			Diesel		
		Euro 4 (Current)	Euro 5 (from 1.1.2011)	Euro 6 (from 1.9.2015)	Euro 4 (Current)	Euro 5 (from 1.1.2011)	Euro 6 (from 1.9.2015)
Pollutant (g/km)	Carbon Monoxide	1.0	1.0	1.0	0.5	0.5	0.5
	Hydrocarbons (total)	0.1	0.1	0.1	-	-	-
	Hydrocarbons (Total) and Oxides of Nitrogen (Total) (combined mass)	-	-	-	0.3	0.23	0.17
	Non-methane hydrocarbons	-	0.068	0.068	-	-	-
	Oxides of Nitrogen	0.08	0.06	0.06	0.25	0.18	0.08
	Particulates (mass)	0.025	0.0045	0.0045	0.025	0.0045	0.0045
	Particulates (number)	-	-	-	-	$6x10^{11}$	$6x10^{11}$

Table 5: Emission Limit Values for Vans with Petrol Engines (see section 7.2.2.2)[330]

		Vehicle Mass								
		≤ 1,305 kg			1,305 kg < x ≤ 1760 kg			1,760 kg < x ≤ 3,500 kg	1,760 kg < x ≤ 2610 kg (reference mass)	
		Euro 4 (Current)	Euro 5 (from 1.1.2012)	Euro 6 (from 1.9.2016)	Euro 4 (Current)	Euro 5 (from 1.9.2012)	Euro 6 (from 1.9.2017)	Euro 4 (Current)	Euro 5 (from 1.9.2012)	Euro 6 (from 1.9.2017)
Pollutant (g/km)	Carbon Monoxide	1.0	1.0	1.0	1.81	1.81	1.81	2.27	2.27	2.27
	Hydrocarbons (total)	0.1	0.1	0.1	0.13	0.13	0.13	0.16	0.16	0.16
	Oxides of Nitrogen	0.08	0.06	0.06	0.1	0.075	0.075	0.11	0.082	0.082
	Particulates	-	0.0045	0.0045	-	0.005	0.005	-	0.005	0.005

329 Restrictions on placing on the market are around one year earlier than these dates.

330 Restrictions on placing on the market are around one year earlier than these dates.

	(mass)									
	Non-methane hydrocarbons	-	0.068	0.068	-	0.09	0.09	-	0.108	0.108

Table 6: Emission Limit Values for Vans with Diesel Engines (see section 7.2.2.2)[331]

		Vehicle Mass								
		≤ 1,305 kg			1,305 kg < x ≤ 1760 kg			1,760 kg < x ≤ 3,500 kg	1,760 kg < x ≤ 2610 kg	
		Euro 4 (Current)	Euro 5 (from 1.9.2011)	Euro 6 (from 1.9.2016)	Euro 4 (Current)	Euro 5 (from 1.9.2012)	Euro 6 (from 1.9.2017)	Euro 4 (Current)	Euro 5 (from 1.9.2012)	Euro 6 (from 1.9.2017)
Pollutant (g/km)	Carbon Monoxide	0.63	0.5	0.5	0.63	0.63	0.63	0.74	0.74	0.74
	Hydrocarbons (Total) and Oxides of Nitrogen (Total) (combined mass)	0.13	0.23	0.17	0.3	0.23	0.195	0.46	0.35	0.215
	Oxides of Nitrogen	0.33	0.18	0.08	0.25	0.235	0.105	0.39	0.28	0.125
	Particulates (mass)	0.025	0.0045	0.0045	0.04	0.005	0.005	0.06	0.005	0.005
	Particulates (number)	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$	$6x10^{11}$

331 Restrictions on placing on the market are around one year earlier than these dates.

Table 7: Emission Limit Values for Lorries (see section 7.2.2.2)

		Engine Type					
		Diesel			Gas or diesel with catalytic converter		
		2005	2008 (Euro V)	1.10.2014 (proposed Euro VI)	2005	2008 (Euro V)	1.10.2014 (proposed Euro VI)
Pollutant	Carbon monoxide (g/kWh)	1.5	1.5	1.5	4.0	4.0	4.0
	Hydrocarbons (g/kWh)	0.46	0.46	0.13	-	-	-
	Non-methane hydrocarbons (g/kWh)	-	-	-	0.55	0.55	0.16
	Mass of methane (g/kWh) (only for natural gas engines)	-	-	-	1.1	1.1	0.5
	Nitrogen oxides (g/kWh)	3.5	2	0.4	3.5	2	0.4
	Particulates (g/kWh) (not applicable to gas-fuelled engines)	0.02	0.02	0.01	0.03	0.03	0.01
	Smoke (m^{-1})	0.5	0.5	-	-	-	-
	Ammonia (ppm)			10			10

Table 8: Emission Limit Values for Buses with petrol engines (see section 7.2.2.2)[332]

		Weight (reference mass)			
		< 2.5 tonnes	>2.5 tonnes	<2.61 tonnes	<2.61 tonnes
		Euro 4 (Current)		Euro 5 (from 1.9.2012)	Euro 6 (from 1.9.2017)
Pollutant (g/km)	Carbon Monoxide	1	2.27	1	1
	Hydrocarbons (total)	0.1	0.16	0.1	0.1
	Oxides of Nitrogen	0.08	0.11	0.06	0.06
	Particulates (mass)	0.025	0.06	0.005	0.005
	Non-methane hydrocarbons	-	-	0.068	0.068

[332] Restrictions on placing on the market are two years earlier than these dates.

Table 9: Emission Limit Values for Buses weighing less than 2.61 tonnes with diesel engines (see section 7.2.2.2)[333]

		Euro 4 (Current)	Euro 5 (from 1.9.2012)	Euro 6 (from 1.9.2017)
Pollutant (g/km)	Carbon Monoxide	-	0.5	0.5
	Hydrocarbons (Total) and Oxides of Nitrogen (Total) (combined mass)	-	0.23	0.17
	Oxides of Nitrogen	-	0.18	0.08
	Particulates (mass)	-	0.005	0.005

Table 10: Emission Limit Values for Buses with gas engines and Buses with diesel engines weighing more than 2.61 tonnes (see section 7.2.2.2)[334]

		Engine Type					
		Diesel			Gas or diesel with catalytic converter		
		2005	2008	1.10.2014 (proposed)	2005	2008	1.10.2014 (proposed)
Pollutant	Carbon monoxide (g/kWh)	1.5	1.5	1.5	4.0	4.0	4.0
	Hydrocarbons (g/kWh)	0.46	0.46	0.13	-	-	-
	Non-methane hydrocarbons (g/kWh)	-	-	-	0.55	0.55	0.16
	Mass of methane (g/kWh) (only for natural gas engines)	-	-	-	1.1	1.1	0.5
	Nitrogen oxides (g/kWh)	3.5	2	0.4	3.5	2	0.4
	Particulates (g/kWh) (not applicable to gas-fuelled engines)	0.02	0.02	0.01	0.03	0.03	0.01
	Smoke (m^{-1})	0.5	0.5	-	-	-	-
	Ammonia (ppm)			10			10

333 Restrictions on placing on the market are two years earlier than these dates.

334 Restrictions on placing on the market are two years earlier than these dates.

Table 11: Emission Limit Values for Motorcycles, Tricycles and Quadricycles (see section 7.2.2.2)

		Vehicle type					
		Motorcycles				Tricycles and Quadricycles	
		<150 cm³	≥150 cm³	Max speed < 130 km/h	Max speed ≥ 130 km/h	Petrol engine	Diesel engine
Pollutant	Mass of carbon monoxide (g/km)	2	2	2.62	2.62	7	2
	Mass of hydrocarbons (g/km)	0.8	0.3	0.75	0.33	1.5	1
	Mass of oxides of nitrogen (NO)	0.15	0.15	0.17	0.22	0.4	0.65

Table 12: Emission Limit Values for Tractor engines (see section 7.2.2.2)

	18 kW≤ P < 37 kW	37 kW≤ P < 56 kW		56 kW≤ P < 75 kW			75 kW≤ P < 130 kW			130 kW≤ P < 560		
g/kWh/ date after	31.12.2006	31.12.2007	31.12.2011	31.12.2007	31.12.2011	30.9.2014	31.12.2006	31.12.2011	30.9.2014	31.12.2005	31.12.2010	31.12.2013
Carbon Monoxide	5.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5
Hydrocarbons					0.19	0.19		0.19	0.19		0.19	0.19
Hydrocarbons + Oxides of nitrogen	7.5	4.7	4.7	4.7			4.0			4.0		
Oxides of Nitrogen					3.3	0.4		3.3	0.4		2.0	0.4
Particulates	0.6	0.4	0.025	0.4	0.025	0.025	0.3	0.025	0.025	0.2	0.025	0.025

Table 13: Roadworthiness Testing requirements for cars, vans, lorries and buses (see section 7.2.2.3)

Engine type	With advanced emission control system?	When	Maximum level
Petrol driven, positive ignition	No	Type approved up to and including 1.10.1986	Carbon Monoxide 4.5% vol
	No	Type approved after 1.10.1986	Carbon Monoxide 3.5% vol
	Yes	Not meeting Euro 4 standards or put into service before 1.7.2002	Carbon Monoxide 0.5% vol at idling speed (can also be measured using on-board diagnostic systems) 0.3% vol at high idling speed
	Yes	Type meets Euro 4 standards or put into service after 1.7.2002	Carbon Monoxide 0.3% vol at idling speed (can also be measured using on-board diagnostic systems) 0.2% vol at high idling speed
Diesel engines put into service after 1.1.1980	-	Defined according to plate.[335]	Large range of values depending on different factors
	-	Not defined according to plate	Naturally aspirated diesel engines - 2.5 m^{-1}
	-	Not defined according to plate	Turbo-charged diesel engines 3.0 m^{-1}
		Type meets Euro 4, 5 or EEV standards	1.5 m^{-1}

335 Council directive 72/306/EEC of 2 August 1972 on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in vehicles, OJ L 190, 20.8.1972, p. 1, as amended

Table 14: Maximum Noise Emissions from New Vehicles (see section 7.3.2.1)

Vehicle	Characteristics	Maximum Noise Level (dB(A))
Passenger Car		74
	Direct injection diesel	75
Vans	Mass less than 2 tonnes	76
	Mass less than 2 tonnes, with direct injection diesel	77
	Mass more than 2 and not more than 3.5 tonnes	77
	Mass more than 2 and not more than 3.5 tonnes with direct injection diesel	78
Lorries	More than 3.5 tonnes with an engine power of less than 75 kW	77
	More than 3.5 tonnes with an engine power of less than 75 kW with direct injection diesel	78
	More than 3.5 tonnes with an engine power of not less than 75 kW but less than 150 kW	78
	More than 3.5 tonnes with an engine power of not less than 75 kW but less than 150 kW with direct injection diesel	79
	More than 3.5 tonnes with an engine power of not less than 150 kW	80
	More than 3.5 tonnes with an engine power of not less than 150 kW with direct injection diesel	81
Buses	Maximum permissible mass of no more than 2 tonnes	76
	More than 2 and not more than 3.5 tonnes	77
	Maximum permissible mass of more than 3.5 tonnes and an engine power less than 150 kW	78
	Maximum permissible mass of more than 3.5 tonnes and an engine power not less than 150 kW.	80
Mopeds	Speed - 25 km/h or less	66
	Speed – more than 25 km/h	71
	Three wheels	76
Motor cycles	Engine capacity - 80 cm^3 or less	75
	Engine capacity - more than 80 cm^3, less than or equal to 175 cm^3	77
	Engine capacity - more than 175 cm^3	80
	Three wheels	80

Table 15: Passenger Car Tyre Noise (see section 7.3.2.2)

Tyre width (mm)	Limit value dB (A)	Entry into force for new vehicles	Entry into force for new tyres sold separately from the vehicle
≤145	72	4.2.2005	1.10.2009
>145 ≤ 165	73	4.2.2005	1.10.2009
>165 ≤ 185	74	4.2.2005	1.10.2009
>185 ≤ 215	75	4.2.2005	1.10.2010
>215	76	4.2.2005	1.10.2011

Table 16: Van, Bus and Lorry tyre Noise requirements (see section 7.3.2.2)

Speed category (km/h)	Load capacity in single formation	Limit value Normal (dB(A))	Limit value Snow (dB(A))	Limit value Special (dB(A))	Entry into force for new vehicles	Entry into force for new tyres sold separately from the vehicle
>140	≤121	75	77	78	4.2.2005	1.10.2009
≤ 140	≤121	76	78	79	4.2.2005	1.10.2009
	≥121	76	78	79	4.2.2005	1.10.2009