

ROADMAP			
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ADDITIONAL INFORMATION			
This indicative roadmap is provided for information purposes only and can be subject to change. It does not prejudice the final decision of the Commission on whether this initiative will be pursued or on its final content and structure.			
A. Context, Subsidiarity Check and Objectives			
Context			
<ul style="list-style-type: none"> • <i>How does this new initiative relate to past and possible future initiatives, and to other EU policies?</i> <p>Building on the Commission Communication on the 2030 climate and energy framework¹, in October 2014 the European Council agreed on the climate and energy policy framework for the European Union. It was agreed, for 2030, to reduce greenhouse gas emissions by at least 40% domestically as well as on EU-wide renewable energy and energy efficiency targets. For transport (which represents more than 30% of final energy consumption and 24% of EU greenhouse gas emissions²) the Council asked for a comprehensive and technology neutral approach for the promotion of emissions reduction and energy efficiency, for electric transportation and for renewable energy sources also after 2020, in order to reduce greenhouse gas emissions and risks related to fossil fuel dependency.</p> <p>Subsequently, the Energy Union Package³ stated that the EU needs to speed up energy efficiency and decarbonisation in the transport sector, its progressive switch to alternative fuels and the integration of the energy and transport systems.</p> <p>The 2030 objectives are consistent with the EU's longer term vision for the transport sector. The February 2011 European Council agreed to reduce economy-wide greenhouse gas emissions by 80-95% in 2050 compared to 1990. In this context the 2011 Roadmap for moving to a low carbon economy in 2050⁴ set out high level greenhouse gas emission milestones for the transition towards a competitive and secure low carbon economy, the different sectoral contributions, and the feasibility of the trajectory. In parallel the 2011 Transport White Paper⁵ focussed on transforming the transport sector to support mobility and increase transport competitiveness. This was in the context of reducing transport greenhouse gas emissions by 60% by 2050 compared to 1990 and by around 20% by 2030 compared to emissions in 2008⁶.</p> <p>Transport greenhouse gas emissions covered by the 2030 Climate and Energy package fall into two categories: 1) CO₂ emissions covered by the Emission Trading System (aviation and electricity used by rail) 2) the non-ETS sectors (road, diesel rail, inland waterway). The non-ETS sector⁷ (which covers most transport emissions) is required to reduce its emissions by 30% compared to 2005. Bunker fuels for</p>			

¹ The 2030 Climate and Energy policy framework refers to the Communication on "A policy framework for climate and energy in the period from 2020 to 2030", adopted by the Commission in January 2014, and to the Communication on "Energy Efficiency and its contribution to energy security and the 2030 Framework for climate and energy policy", adopted in July 2014.

² Including international bunkers for greenhouse gas emissions; see EU transport in figures – Statistical Pocketbook 2014, available at: http://ec.europa.eu/transport/facts-fundings/statistics/index_en.htm

³ COM(2015)18

⁴ COM(2011)112

⁵ COM(2011)144

⁶ This is equivalent to about 19% emissions reduction relative to 2005. The White Paper goal for 2030 is not only inspired by greenhouse gas emissions reductions but also by other goals: technological leadership, security of supply, reduction of congestion, accidents, local pollution and noise.

⁷ Greenhouse gas emissions in the non-ETS sector can be divided in three categories of origin: almost one third of them come from the transport sector (around 900 Mt CO₂-eq); a slightly lower share of greenhouse gas emissions, under 800 Mt CO₂-eq, come from the buildings sector (this includes heating of farmhouses and greenhouses); finally, the rest are non-CO₂ emissions, about half of which comes from agriculture.

international maritime transport are not included in the 2030 emission reduction targets of the EU. Decarbonisation's implications for achieving the EU's air quality objectives also give substantial potential for synergies.

Risks related to fossil fuel dependency of the EU transport sector, in particular oil, as are analysed in 2013 Commission Communication "Clean Power for Transport: A European alternative fuels strategy"⁸ which supports a comprehensive mix of alternative fuels, thereby ensuring technological neutrality and diversification of energy supply. Because there is no single fuel solution, all main alternative fuel options are pursued, with a focus on the specific long-term needs of each transport mode and their potential for oil substitution.

- *Has existing policy been evaluated? Is it part of the REFIT agenda?*

A number of transport-related initiatives have been subject to evaluations recently. Where not yet available, such evaluations will be completed in 2016: The initiative will draw on lessons learned.

An evaluation has been completed for the car and light commercial vehicle CO₂ emission Regulations and published⁹.

The policy on the indirect land-use change impacts of biofuels has been reviewed recently, based on an earlier assessment¹⁰ which showed the need to amend the biofuel policy agreed in 2008¹¹, in order to enhance greenhouse gas benefits. Amending legislation, which incentivises the transition towards advanced biofuels, was adopted after difficult discussions on 9 September 2015 and entered into force on 5 October 2015. The discussion demonstrated the diverging interests in relation to conventional and advanced biofuels technologies. One of the conclusions drawn from the debate was that beyond 2020 the Commission should not propose targets for either renewable energy use or the greenhouse gas intensity of fuels used in the transport sector or any other sub-sector¹².

The Commission has launched evaluations¹³ of both the Fuel Quality Directive and the Renewable Energy Directive, both of which impact on transport greenhouse gas emissions through their requirements relating to promotion of renewable energy and reduction in greenhouse gas intensity of fuels. The main findings of 2014 comprehensive evaluation study of the Renewable Energy Directive were included in the 2015 Renewable Energy Progress Report.

An evaluation of the implementation and effects of EU transport infrastructure charging policy was published in 2014¹⁴. Recommendations were made to consider measures for: further encouraging the shift from vignettes to electronic tolls¹⁵, removing soft barriers to uptake of time-varying charges, encouraging Member States to introduce interoperable systems, improving the consistency of pricing signals in order to reduce the negative environmental effects of transport¹⁶.

An evaluation on the functioning of the road haulage market¹⁷ has been launched in May 2014.

Two internal evaluations on the carriage of passengers by coach¹⁸ and on legislation related to European Electronic Toll Service¹⁹ have been launched in spring 2015.

An evaluation of the Combined Transport Directive has been launched.

The results of the REFIT evaluation of the Clean Vehicle Directive²⁰ were published at the end of 2015²¹.

Regarding measures in the field of transport taxation, the Commission proposed legislation on passenger car taxation, however this proposal never obtained the required unanimous support from the Member States and

⁸ COM (2013) 17

⁹ http://ec.europa.eu/clima/policies/transport/vehicles/docs/evaluation_ldv_co2_regs_en.pdf

¹⁰ http://ec.europa.eu/clima/policies/transport/fuel/docs/swd_2012_343_en.pdf

¹¹ The biofuel policy agreed in 2008 does not take indirect land-use change related emissions into account.

¹² COM(2014)15

¹³ http://ec.europa.eu/atwork/pdf/cwp_2015_refit_actions_en.pdf

¹⁴ <http://ec.europa.eu/smart-regulation/evaluation/search/download.do?documentId=10296156>

¹⁵ This shift would help to ensure better recovery of infrastructure costs and to improve consistency and compatibility of pricing systems across Europe.

¹⁶ The evaluation found a wide variation in the way Member States have chosen to vary road charges according to the emissions of the vehicle (Euro class), which creates inconsistent price signals for users.

¹⁷ Regulation (EC) No 1071/2009 and Regulation (EC) No 1072/2009

¹⁸ Regulations (EC) No 1073/2009

¹⁹ Directive 2004/52/EC and Commission Decision 2009/750/EC

²⁰ Directive 2009/33/EC

²¹ <http://ec.europa.eu/transport/facts-fundings/evaluations/doc/2015-09-21-ex-post-evaluation-directive-2009-33-ec.pdf>

was withdrawn by the Commission. The Commission also proposed a revision of the Energy Taxation Directive, however this was withdrawn²² after unsuccessful negotiations. This illustrates the difficulty of action at EU level in tax related areas.

- *Consider recently adopted initiatives whose effects will only materialize after their implementation and other initiatives under preparation (also of other policy fields) touching upon the same problem. Describe how policy coherence is ensured.*

Transport will need to contribute to the 2030 targets and, in particular, to the 30% reduction effort set for the non-ETS sectors. No sector-specific targets are set, but the reduction effort for the non-ETS sectors (transport, buildings, agriculture, small industry and waste) will be distributed between Member States through the revision of the Effort Sharing Decision. There are two different levels contributing to this reduction effort: the contribution secured by the EU legislation and policies and actions that Member States can take to reduce their own transport emissions.

Transport-related EU level actions that contribute to decarbonisation have been announced in various policy documents, e.g. the Roadmap for the Energy Union, reformed regional policy and the European Structural and Investment Funds 2014-2020, the Clean Air Policy Package, the Urban Mobility Package, the 2011 Transport White Paper, having different objectives and covering different time planning horizons.

The Roadmap for the Energy Union, sets out a number of transport actions to be carried out at EU level:

- Review of Regulations setting emission performance standards to establish post-2020 targets for cars and vans. As the largest source of road greenhouse gas emissions, car and light commercial vehicle efficiency measures will have the largest impact on overall energy consumption and emissions²³. Analytical work is underway and finished reports can be accessed on the Europa website²⁴. In this context World-harmonised Light-duty vehicle Test Procedure (WLTP) has been adopted under the UNECE framework in 2014 with a view to replace the existing test cycle (NEDC). Preparation of the legal act implementing the WLTP together with EU-specific provisions into the EU Acquis is currently under way. Upon its entry into force in 2017 it is expected to provide better information and comparison of fuel consumption and incentivise the development of the most efficient technologies to improve fuel consumption in real driving.
- Establishing a monitoring and reporting system for heavy duty vehicles (trucks and buses) with a view to improve purchaser information. Heavy duty vehicles represent the second largest source of road greenhouse gas emissions. The impact assessment for the strategy on heavy duty vehicles concluded that emission reductions from increased purchaser information would be modest²⁵. However, monitoring and reporting is a necessary first step for medium term policy options including the possibility of setting of mandatory CO₂ emission limits for newly registered HDVs.
- Revising the Directive relating to the availability of consumer information on fuel economy and CO₂ emissions in respect of the marketing of new passenger cars in respect of which an evaluation of existing legislation has just commenced.
- Action plan on alternative, sustainable fuels, including second and third generation biofuels. Promoting the uptake of alternative fuels (electricity, natural gas blended with biomethane, hydrogen, advanced biofuels) will have significant impacts on decreasing emissions and air pollutants, while also reducing the EU's oil dependence for transport. A study based on contributions of the stakeholder Expert Group on Future Transport Fuels provides an update of the latest developments in the field of alternative fuels and the market uptake of alternative fuel transport systems and related infrastructure at EU level²⁶.
- Fair and efficient pricing – revision of the Eurovignette Directive and framework to promote European electronic tolling. More systematic deployment of fair and efficient tolls based on the polluter/user pays principle will steer users to more sustainable transport choices with positive impacts on emissions.

²² http://ec.europa.eu/atwork/pdf/cwp_2015_withdrawals_en.pdf

²³ However, the full effect takes time to be felt due to the average 15 year lifetime of vehicles and to the discrepancies between emissions measured with the current test procedure and those that are measured in real life, which deliver a smaller reduction than expected. Similar discrepancies, but of a much bigger magnitude, are found in NO_x emissions, and the proposed Real Driving Emissions test procedure should deal with it. The uncertainties on its actual deployment and stringency are driving some Member States and local authorities that face penalties for breaking air quality limits towards discouraging diesel. This might further undermine CO₂ reduction efforts if these vehicles were to be replaced with cheaper gasoline-powered ones.

²⁴ http://ec.europa.eu/clima/policies/transport/vehicles/studies_en.htm

²⁵ http://ec.europa.eu/clima/policies/transport/vehicles/heavy/docs/swd_2014_160_en.pdf

²⁶ <http://ec.europa.eu/transport/themes/sustainable/studies/doc/2015-07-alter-fuels-transport-syst-in-eu.pdf>

Parameters of vehicle emissions will be part of the performance/toll calculators to facilitate the "polluter pays" principle. Revenues of tolls should also finance infrastructure investments and maintenance. In addition, the revision of the European Electronic Toll Service legislation will create the necessary market and technical conditions to accelerate the achievement of the interoperability of electronic tolls in Europe on commercial conditions. Relevant preparatory and analytical work has started.

- Inclusion of road fuel use in the EU ETS has been proposed by some stakeholders as an option. However, studies show that, either alone or as a complementary measure, this would not achieve significant emissions reduction in the transport sector since it would not address specific market failures, it may lead to relatively high carbon prices and shift the emissions reduction effort to other ETS sectors. Therefore, this option has to be considered carefully to avoid negative effects.
- Review of market access rules for road transport. By clarifying and simplifying rules on access to the European road haulage market and by facilitating enforcement of market access rules, the initiative to revise Regulation 1072/2009 should contribute to further optimise road transport operations, notably by reducing the number of "empty runs", i.e. trucks returning to their Member State of establishment empty after an international operation, and in this way help reduce CO₂ emissions. Relevant preparatory and analytical work has started.
- Promoting collective bus/coach passenger transport. Progress of collective passenger transport by road is blocked today in some Member States by restrictive market access rules aimed at protecting from competition incumbents in the rail and road sectors. Bus and coach operators also suffer from discriminatory access to multimodal (road-rail and road-air) terminals, which prevent them from providing effective last mile services. Greater market opening for bus and coach services, supported by a non-discriminatory access to essential infrastructure such as strategically located coach terminals, would boost the use of this affordable and energy efficient transport mode instead of private cars, thereby contributing to the decarbonisation of transport. Relevant preparatory and analytical work has started.
- Master Plan for the deployment of Cooperative Intelligent Transport Systems. Cooperative Intelligent Transport Systems allow for communication and cooperation between vehicles and between vehicles and infrastructure. Next to safety benefits, Cooperative Intelligent Transport Systems improve the energy efficiency by optimizing traffic flows and thus lead to emissions reductions²⁷. A study on the deployment of Cooperative Intelligent Transport Systems in Europe is underway.
- Review of Directive on the Promotion of Clean and Energy Efficient Road Transport Vehicles. Public procurement is a powerful instrument for pushing the uptake of more energy efficient and clean, alternative fuels in captive fleets and kick-starting their large scale deployment. While the Clean Vehicles Directive 2009/33/EC already mandates Member States to take into account the environmental and climate impacts as well as the operational energy consumption in the purchase decisions, more can be done to create an innovation – friendly framework for public procurement by local authorities, with positive impacts on emissions.

The Roadmap for the Energy Union also sets out actions on Renewables, including a new Renewable Energy Directive and bioenergy sustainability policy for 2030 and announces a Strategic transport R&I agenda.

The Commission has also launched work on Smart Cities agenda and the Urban Mobility Package, contributing to transport decarbonisation by enhancing multi-modality and triggering the right mix between soft modes, collective transport and cleaner cars, and at making urban transport services more efficient, more reliable and easier to use with the help of advanced information and communication technologies. Actions within these areas of work are far-reaching and could touch on all aspects of transport: some will be at an EU level, others at a regional or local level. They could range from infrastructure and spatial planning issues to changing corporate and individual behaviour.

The Clean Air Policy Package will lead to reductions in air pollutant emissions from transport. This may benefit the decarbonisation of transport and is reflected in the 2030 energy and climate change package.

Cohesion policy supports efforts for resource efficiency and decarbonising transport²⁸. The transport sector also receives support for research and innovation, technical development, and entrepreneurship, under the

²⁷ This optimization of traffic flows can be realised by implementing "green waves" so that vehicles do not have to stop and re-accelerate at traffic lights; also thanks to Cooperative Intelligent Transport Systems so-called shockwave traffic jams can be avoided, again avoiding vehicles having to stop and re-accelerate. Truck platooning is another Cooperative Intelligent Transport Systems application in which trucks drive in platoons allowing them to save fuel.

²⁸ It is expected that close to 20% of the available cohesion policy envelope for 2014-2020 will go towards supporting transport investments, almost 70 billion euros. This includes an estimated 39 billion euros for supporting the move towards an energy-efficient, decarbonised transport sector, which in turn includes 12 billion euros that will go towards low-carbon, multi-modal, sustainable urban mobility.

<p>Smart Growth pillar of cohesion policy. The Programmes being adopted will be the basis for transport measures under shared management, i.e. involving EU, national, regional, and local authorities.</p> <p>As regards aviation covered by ETS and international emissions outside the EU 2030 targets, for aviation International Civil Aviation Organisation (ICAO) is developing a global market-based measure for addressing emissions from aviation including an approach to assess lifecycle emissions from alternative fuels and will decide on its implementation at the 39th Session of the ICAO Assembly in September 2016. In addition, ICAO is working on a CO₂ standard for aircraft due to be adopted in 2016. For shipping the EU has put in place a monitoring, reporting and verification regime. The development of a global monitoring, reporting and verification system under the International Maritime Organisation is being pursued, with the expectation that it could be adopted in 2016. In such a case, as specified in the EU Regulation, a revision would need to be considered.</p>
Issue
<ul style="list-style-type: none"> • <i>Describe the reasons behind the initiative. What is the issue/problem(s) it is expected to tackle?</i> <p>The EU has an overall target of 80% domestic reduction in EU greenhouse gas emissions compared to 1990 levels by 2050. For the 2030 climate and energy framework the overall domestic emission reduction effort has been divided in a cost-effective manner between an EU ETS-sector reduction of 43% and a non-ETS sector reduction of 30%.</p> <p>No sector-specific target has been set but transport will need to contribute significantly to the achievement of the non-ETS emissions reduction target, in the context of the Effort Sharing Decision (together with buildings, agriculture, small industry and waste). No individual measure will achieve the decarbonisation of the transport sector on its own. In addition, both measures at EU-level and at Member States level will be needed.</p> <p>No policy document presents in a coherent way the planned EU level actions and their contribution to transport decarbonisation in 2030, so as to give Member States and other stakeholders an idea of the scale of additional transport actions needed to achieve the non-ETS emissions reduction effort. This lack of clarity does not provide a stable policy framework needed for enabling a cost effective decarbonisation of transport.</p> <ul style="list-style-type: none"> • <i>Describe the size of the problem and its main drivers; explain why this is a problem at EU level and describe how it is likely to develop in the future in case no policy action is taken.</i> <p>Almost one third of greenhouse gas emissions in the non-ETS sector originate from transport²⁹. The impact assessment for the 2030 energy and climate change framework showed that a cost-effective contribution from transport to the achievement of the 2030 targets, drawing on measures to be adopted by 2020, requires transport emissions being reduced by 17%-20% below 2005 levels³⁰. Specifically for road transport, which represents around 95% of transport non-ETS emissions, the same model simulations show that substantial reductions are needed by 2030. The future range of road transport contribution will be provided by the modelling underpinning the future Effort Sharing Decision (ESD) that will be adopted at the same time as the communication.</p> <p>The 17%-20% range was based on policy assumptions e.g. tighter CO₂ standards for passenger cars and light commercial vehicles, measures leading to improvements in the fuel efficiency of heavy duty vehicles, internalisation of local externalities, wide deployment of intelligent transport systems, development of infrastructure for alternative powertrains, ambitious vehicle taxation reforms to shift to CO₂ based taxation, the proposal for a revised Energy Taxation Directive, and other soft measures. In addition, a series of enabling conditions were assumed like e.g. the accelerated innovation in biofuels enabling strong emission reduction in transport sectors for which electrification is not possible, substantial R&D in the decade 2020-2030 allowing for the cost of batteries to decrease and great progress to make electric vehicles competitive. In the scenarios, the measures were assumed to be adopted by 2020 but their effects would also be felt in the</p>

²⁹ Greenhouse gas emissions in the non-ETS sector can be divided in three categories of origin: almost one third of them come from the transport sector (around 900 Mt CO₂-eq); a slightly lower share of greenhouse gas emissions, under 800 Mt CO₂-eq, come from the buildings sector (this includes heating of farmhouses and greenhouses); finally, the rest are non-CO₂ emissions, about half of which comes from agriculture.

³⁰ Drawing on the impact assessments accompanying the 2030 Communication on the Climate and Energy framework and the Energy Efficiency Communication, the 17%-20% transport emissions reductions below 2005 level are consistent with economy-wide energy efficiency improvements in the range of 27% to 30%.

medium to long-term, e.g. by 2030-2050. The scenarios were assessed in relation to the Reference scenario 2013, showing projections for transport, energy and emissions under current trends and adopted policies³¹.

While transport greenhouse gas emissions rose to 2007 they have reduced since then as a result of past high oil prices, increased road vehicle efficiency and slower growth in activity as a result of the crisis. These factors are all uncertain, but oil prices are not expected to stay at current levels for a prolonged period, and there is some evidence that road passenger activity is gradually declining in Western European countries. The main effects of existing car and van efficiency requirements are yet to be felt. Therefore, under current trends and adopted policies, the declining trend in transport emissions is expected to continue leading to 12% lower emissions by 2030 compared to 2005^{32,33}. Further effort is therefore needed to reach the 2030 target. For the international modes, activity and emissions are likely to continue to increase and action at global level will be needed.

There is broad consensus that the EU's dependence on fossil fuels for transport (e.g. 94% oil dependence, out of which almost 90% is imported) needs to be reduced. In particular this is in view of the changing global energy market and the increasing demand for mobility.

Oil products would still represent about 88% of the EU transport sector needs by 2030 under current trends and adopted policies. Aviation and heavy duty vehicles would still be highly dependent on oil. Alternative sources such as electrification and hydrogen are not suitable for these two sectors, especially in the short term. However, advanced biofuels could contribute significantly in reducing the greenhouse gas emissions of aviation; they are the only low-CO₂ option for substituting kerosene. Liquefied Natural Gas (LNG) is an option for heavy duty vehicles and ships, due to its high energy density and low pollutant emissions. In addition, electricity, hydrogen, Compressed Natural Gas (CNG) blended with biomethane, and advanced biofuels are the main options for passenger cars and light duty vehicles for medium distances. In this context, the 2013 Clean Power for Transport³⁴ strategy supports a comprehensive mix of alternative fuels, ensuring technological neutrality and diversification of energy supply. The strategy identified four priority fields for further EU actions to promote alternative fuels, which are still relevant: 1) the lack of fuelling infrastructure; 2) the development of common technical specifications; 3) consumer acceptance; 4) the technological development, including fuel production and vehicles/vessels. Alternative fuels can make a useful contribution to transport decarbonisation provided they result in effectively lower greenhouse gas emissions overall, do not cause unacceptable air quality side effects and contribute to maintain the EU industry competitive.

Market failures and fragmented initiatives are currently preventing the market uptake of alternative fuels in the EU transport system. As a result, the EU is also missing out on the opportunity to benefit from its current status as a first-mover in this field and become a world leader in advanced sustainable fuel and vehicle technology³⁵, although the implementation of the Directive on the deployment of alternative fuels infrastructure³⁶ is expected to contribute to correct some of the above mentioned market failures.

Transport provides mobility and is a vital part of modern society and key for growth and competitiveness. While reducing its energy use and greenhouse gas emissions, transport needs to continue to meet society's needs, and reduce its other negative impacts. Given the scale of the negative effects from transport, co-benefits should be actively sought, to reduce air pollution, accidents, congestion and noise pollution. Measures shifting to active transport, such as walking and cycling, also result in substantial health co-benefits.

Tackling transport decarbonisation will take time. Therefore a strategy with specific policy elements needs to be established. Moderately rising CO₂ prices will not drive the necessary changes.

³¹ Reference scenario 2013 has been developed jointly by DG's ENER, CLIMA and MOVE in cooperation with JRC and extensively consulted with Member States. The assumptions and results of the Reference scenario 2013 are available at: <http://ec.europa.eu/transport/media/publications/doc/trends-to-2050-update-2013.pdf>. Work on an updated Reference scenario 2015 is ongoing.

³² Reference scenario 2013, available at: <http://ec.europa.eu/transport/media/publications/doc/trends-to-2050-update-2013.pdf>

³³ Sensitivity analysis assuming some 10% lower oil prices by 2030 would still result in 10% emissions reduction by 2030 compared to 2005.

³⁴ COM (2013) 17 final

³⁵ Massive investments in EU industry at R&D stage have enabled us to reach the commercialisation stage of several advanced biofuels and vehicle technologies. Although the EU is leading in the research and development of such technologies it is lagging behind at the deployment stage, as advanced alternative fuel technologies are still not competitive with fossil fuels. Cost-competitiveness could however be reached within 5-10 years provided that economies of scale for both fuels and vehicles is reached. Currently, such economies of scale are instead emerging outside the EU based on European technology and know-how.

³⁶ Directive 2014/94/EU

No individual measure will achieve transport decarbonisation on its own; thus the use of multiple policy instruments will result in more cost effective transport decarbonisation. The approach should cover all relevant areas. There are also interactions between different possible instruments and the possibility of ensuring that different measures act to reinforce each other.

- *How will the climate and energy goals be reconciled with competitive EU transport sectors?*

In relation to the setting of vehicle performance standards, there is no evidence that these disadvantage EU manufacturing. A recent study³⁷ for the European Commission looking at car and light commercial vehicle CO₂ legislation has concluded that setting standards which are somewhat more challenging than in other regions of the world can actually be beneficial for the competitiveness of EU based vehicle and components manufacturing. The study concludes that the oil refining sector will suffer negative economic impacts as a result of transport decarbonisation.

The car and light commercial vehicle CO₂ targets introduced in EU legislation apply equally to EU manufacturers and to imported vehicles. Similarly requirements which have been introduced in relation to biofuels and to greenhouse gas intensity of fuels have applied equally to all fuels placed on the market in the EU, making no distinction between imports and EU production.

- *Will barriers, subsidies and other incentives supporting the current status quo be abolished in view of creating a level playing field, e.g. by building on the internal market?*

The Commission has published guidelines on support for clean and energy efficient vehicles³⁸. The Commission has also indicated that food-based biofuels should not receive public support after 2020³⁹ and the State aid guidelines⁴⁰ stress the need to focus investment support on advanced biofuels. It stated in its 2030 climate and energy framework communication that "*first generation biofuels have a limited role in decarbonising the transport sector*".

- *How will the EU promote its approach at an international level?*

Sharing information on experiences with policy design and promoting good practice will accelerate and broaden global action. The EU will remain active in bilateral and multilateral initiatives and negotiations, for instance to ensure that International Civil Aviation Organisation and International Maritime Organisation act to effectively mitigate emissions from international aviation and shipping.

Fuel efficiency and CO₂ emissions standards are likely to be increasingly important for global vehicle markets (fuel economy or CO₂ standards currently apply to about 80% of the world car market). This will help retain jobs and innovation in the EU.

The Commission supports the Global Fuel Economy Initiative⁴¹ as well as the G20 work on vehicle fuel economy⁴².

- *Describe who is affected and how (stakeholder mapping)*

Decarbonisation of transport and in particular the implementation of the strategy through legislative or non-legislative initiatives will affect all Europeans and all sectors of the economy. Member States, including regions and local communities will also be affected. There is a Third Country dimension, particularly *vis-à-vis* energy supply as well as international transport.

Vehicle CO₂ emission regulations have been the EU's main technical instrument for reducing emissions from road transport. The 2011 Transport White Paper set out a much broader strategy, the effects of which are yet to be felt. Vehicle manufacturers are required to meet new fleet CO₂ targets and therefore face penalties for non-compliance. Set against this risk is the competitive benefit which manufacturers derive from developing and deploying fuel efficient technology. Component manufacturers are heavily impacted by the regulations since they have played a large role in developing the necessary technologies and making them available for vehicle manufacturers to deploy. This industry is global and therefore also benefits from the potential to sell the same technologies in other markets. Users primarily benefit from lower operating costs and may face higher purchase prices.

Measures related to fair and efficient pricing and the review of the market access rules for road transport could affect all stakeholders groups. While the wider application of the "polluter pays" and "user pays"

³⁷ http://ec.europa.eu/clima/policies/transport/vehicles/docs/competitiveness_ldv_regs_en.pdf

³⁸ [http://ec.europa.eu/transport/themes/urban/vehicles/directive/doc/swd\(2013\)27-financial-incentives.pdf](http://ec.europa.eu/transport/themes/urban/vehicles/directive/doc/swd(2013)27-financial-incentives.pdf)

³⁹ http://ec.europa.eu/clima/policies/transport/fuel/docs/com_2012_595_en.pdf

⁴⁰ Guidelines on State aid for environmental protection and energy 2014-2020 (2014/C 200/01)

⁴¹ <http://www.fiafoundation.org/our-work/global-fuel-economy-initiative>

⁴² https://g20.org/wp-content/uploads/2014/12/g20_energy_efficiency_action_plan.pdf

principles may to some extent increase the cost of transport operators, due to already very small margins in the field, they will have to pass on the costs to their customers. Nevertheless, this will not represent a significant increase in the price of products and services. In general, transport operators will face more competition.

The energy supply sector will be affected by transport decarbonisation. Traditional markets for fossil based fuels should reduce but new opportunities to supply low greenhouse gas energy to transport should open up.

Electrification of transport will create extra electricity demand and can also have implications for the electricity generation sector. However, decarbonisation is also needed in the electricity sector itself. There may also be implications for investment in transmission and distribution systems. Decarbonisation of transport may also present opportunities for storage and grid balancing (e.g. through use of batteries in vehicles).

Subsidiarity check

- *Indicate the legal basis giving the EU the right to act*

Transport is a common policy. Furthermore, both transport and climate change are areas with shared competence between the EU and Member States. Therefore coordination at EU level is necessary and action is justified on the grounds of subsidiarity as provided for in Articles 91 and 191 of the TFEU. The problem of climate change is one that has global impacts and therefore needs to primarily be addressed at a global level.

It is unlikely that the objective of reducing transport greenhouse gas emissions in line with the EU's long term objectives could be achieved sufficiently by Member States acting alone. There are three main elements that are relevant to this finding:

- There is a single market for road fuel
- There is a single market for road vehicles (although there are substantial barriers to this resulting from national vehicle taxation schemes)
- The ability to provide transport services throughout the EU is in principle assured (although there remain some restrictions on market access for road transport).

To support this, there are also guidelines on the provision of state aid for biofuels and for purchasing clean and energy efficient vehicles.

While refineries and other fuel production facilities are widely distributed throughout the EU, vehicle manufacturing is much more concentrated in about a third of EU Member States.

Were action to be taken by Member States alone, it could damage the single market in these three areas with consequent negative economic impacts. The existence of the single market in these areas largely prevents Member State specific actions.

However, a range of areas where Member States are able to take action relate for example to the ability to regulate traffic (e.g. access restrictions and speed limits) whether at national or local level as well as the granting of incentives to change behaviour (e.g. purchase subsidies or advantages for use or exemptions from night bans for quiet vehicles). Member States also retain possibilities to influence behaviour through taxation.

In the case of vehicle CO₂ and efficiency standards, there is overwhelming support for these to be regulated at EU level to ensure that a single market exists for the technologies which results in economies of scale for vehicle and component manufacturing.

- *Necessity check & Added-value test*

EU action is necessary in view both of the cross-border impact of climate change and the need to safeguard single markets in fuel, vehicles and transport services.

With regard to EU added value the objectives of the proposed action can be better achieved at Union level in areas which are important to the single market. For example for fuels, vehicles and transport services, EU action produces clear benefits compared to action at Member State level by reason of its scale, effectiveness and efficiency. By ensuring equivalent legal rights for individuals and business, equity is ensured and distortions of competition will be avoided.

Main policy objectives

- *What is the initiative aiming at? What should be achieved?*

The objective of the initiative is to illustrate how transport will contribute to meet the agreed 2030 greenhouse

gas reduction targets.

- *What is the link to the problem (coherent intervention logic)?*
- The impact assessments for the 2030 Communication on the Climate and Energy framework and the Energy Efficiency Communication have illustrated the desirability of transport contributing to the 2030 climate framework. It is now necessary to specify in more integrated way the options available for EU and Member State actions and set out the EU contribution to the necessary reductions efforts.

B. Option Mapping

- *What are the various ways to achieve the policy objectives? What legislative and non-legislative instruments could be considered? Always consider 'no EU action resp. no change in EU action' (baseline).*

To achieve our long term climate goals, a substantial reduction in transport greenhouse gas emissions and of our dependence on fossil fuel imports are needed. In view of the time needed for fleet replacements and the necessary technology investments as well as other changes in e.g. fuel infrastructure or mobility patterns, early action is needed.

For the 2030 objectives, a 30% reduction compared to 2005 levels is agreed for the non-ETS sector. Since almost one third of greenhouse gas emissions in the non-ETS sector originate from transport, it is clear that substantial reductions are needed in this sector. The Communication and its supporting analytical document will provide an overview of the challenges related to decarbonisation of transport and the potential policy options to address it. The policy options will cover initiatives in three key areas which can directly or indirectly reduce greenhouse gas emissions from the transport sector: (1) switching towards carbon-free or less carbon intensive fuels, (2) improving vehicle efficiency and (3) managing transport demand. The option of no new action at EU level will also be considered.

Decisions on specific instruments and their design will be taken only subsequently on the basis of impact assessments carried out for specific initiatives, following up on this communication.

- *Who would be targeted by the different policy options? Could there be exemptions for micro-enterprises or lighter regimes for SMEs?*
 - *N/A To be determined for follow up actions*
- *Explain how the options compare to the baseline in terms of effectiveness and efficiency.*

The impact assessment work for the 2030 Communication on the Climate and Energy framework and for the Energy Efficiency Communication assessed packages of EU measures. Some of these measures have subsequently turned out to be difficult to achieve (e.g. car CO₂ taxation and energy tax Directive). It will therefore be necessary to assess the scale of transport contribution to the emissions reduction building on the modelling for the 2030 energy and climate change framework, but exploring different scenarios for the non-ETS sectors in terms of policy mix and their impacts.

Proportionality check

- *Even when the EU has exclusive competence or the subsidiarity test is positive, any EU action must be proportionate i.e. not go beyond what is necessary to solve the problem. Describe and substantiate the proportionality of the foreseen EU action.*

A Communication is the right instrument to set out a strategy covering several legislative and non-legislative initiatives which will subsequently be proposed. It therefore respects the proportionality principle.

C. Data collection and Better Regulation instruments

Data collection

- *What information and data are required? How and when will they be gathered?*

To enable a build-up of viable options for achieving the GHG reduction goals, data needs to be analysed on the potential CO₂ benefits and costs for the different scenarios in terms of policy mix in order to enable comparison and assessment of the lowest cost approach.

- *How far can available data be used (e.g.: available evaluations, impact assessment analysis or studies)?*

A large number of studies and impact assessment is available and will be used for the analysis supporting

this initiative. They are listed below. In addition, the existing sources will be complemented where appropriate by quantitative and qualitative analysis in the form of specific stylised scenarios on the basis of the new Reference scenario 2015. Preparatory work will be done internally, complemented by external modelling support.

Available existing studies and impacts assessments:

A thorough assessment of possible transport policy measures was carried out in the EU transport GHG: Routes to 2050 study⁴³ and the SULTAN illustrative scenarios tool assessed the GHG benefits of specific policy measures based on a Reference scenario from 2010.

For fuels, evidence on greenhouse gas emissions performance is provided by the most recent version 4 of the JEC Well to Wheel study⁴⁴. Earlier versions have provided some assessment of cost effectiveness.

For alternative fuels, a number of reports are available^{45,46,47}. The impact assessment accompanying the Directive 2014/94/EU on the deployment of alternative fuels infrastructure provides further analysis⁴⁸.

For urban transport evidence is available in the impact assessment accompanying the Urban Mobility Package⁴⁹.

For Heavy Duty Vehicles, a detailed assessment of the potential contribution was carried out in a study for the Commission⁵⁰. Cost curves for HDV measures have been developed in a further study⁵¹.

For cars and light commercial vehicles, information on the available technologies and their costs is being updated. Previous studies provided background information of the Regulations for 2020 and looked separately at passenger cars⁵² and light commercial vehicles⁵³. A wide range of external studies have also been produced exploring the impacts of transport fuel inclusion in the EU Emission Trading Scheme as well as assessments of technology costs.

The impact assessments accompanying the Roadmap for moving to a low carbon economy in 2050, the Transport White Paper and the 2050 Energy Roadmap provide a long term decarbonisation perspective. The impact assessments supporting the 2030 Communication on the Climate and Energy framework and the Communication on Energy Efficiency provide an overview of costs and benefits. The impact assessment of the Air Quality Package⁵⁴ addresses the air quality impacts of transport in the period to 2030.

Several recent evaluations and impact assessments on initiatives included in the Transport White Paper can provide additional data to be used in the process. Also the results of the 2015 public consultation of the Transport White Paper can be used.

For renewable energy in transport the most recent is the EU Renewable Energy Progress Report 2015, For alternative fuels a number of reports are already available⁵⁵. The impact assessment accompanying the Directive 2014/94/EU on the deployment of alternative fuels infrastructure provides further analysis⁵⁶.

Consultation approach

- *Describe the key elements of the proposed consultation strategy. Which stakeholders and information gaps will be targeted (consistency with "who is affected" - part A) and over which time frame?*
- Broad public consultation will not be carried out specifically for this initiative, but will be carried out in the context of the impact assessments for each of the transport-related initiatives announced in the Roadmap to the Energy Union.

⁴³ <http://eutransportghg2050.eu/cms/>

⁴⁴ <http://iet.jrc.ec.europa.eu/about-jec/jec-well-wheels-analyses-wtw>

⁴⁵ http://ec.europa.eu/transport/themes/sustainable/studies/sustainable_en.htm

⁴⁶ <http://ec.europa.eu/transport/themes/urban/studies/doc/2011-11-clean-transport-systems.pdf>

⁴⁷ <http://ec.europa.eu/transport/themes/urban/studies/doc/2012-08-cts-implementation-study.pdf>

⁴⁸ SWD(2013) 5 final

⁴⁹ http://ec.europa.eu/transport/themes/urban/urban_mobility/ump_en.htm

⁵⁰ http://ec.europa.eu/clima/policies/transport/vehicles/docs/ec_hdv_ghg_strategy_en.pdf

⁵¹ http://ec.europa.eu/clima/policies/transport/vehicles/heavy/docs/hdv_2012_co2_abatement_cost_curves_en.pdf

⁵² http://ec.europa.eu/clima/policies/transport/vehicles/cars/docs/study_car_2011_en.pdf

⁵³ http://ec.europa.eu/clima/policies/transport/vehicles/vans/docs/report_co2_lcv_en.pdf

⁵⁴ http://ec.europa.eu/environment/archives/air/pdf/Impact_assessment_en.pdf

⁵⁵ http://ec.europa.eu/transport/themes/sustainable/studies/sustainable_en.htm and

<http://ec.europa.eu/transport/themes/urban/studies/doc/2011-11-clean-transport-systems.pdf> and

<http://ec.europa.eu/transport/themes/urban/studies/doc/2012-08-cts-implementation-study.pdf>.

⁵⁶ SWD(2013) 5 final

- The following specific consultation activities will contribute directly to the work on the communication on decarbonisation of transport:
 - A high-level stakeholder conference on road transport decarbonisation was held on 18 June 2015. The main message was that that the Commission will take further action on the decarbonisation of transport but this could be done only based on an integrated approach, while keeping technology neutrality. In general industry supports such approach since it gives a clear vision for investments. All transport modes should contribute even if road transport provides a significant share of transport CO₂ emissions.
 - The Commission ran an open consultation from 10 March until 2 June 2015 in relation to the 2011 White Paper on transport "Roadmap to a Single European Transport Area – towards a competitive and resource-efficient transport system". In total 271 replies were submitted via the 'Your Voice in Europe' website, with over 100 replies accompanied by supplementary position papers⁵⁷
 - In connection to alternative fuels, stakeholders are also consulted within the framework of the Sustainable Transport Forum launched by the Commission on 23 April 2015.
 - High Level Group on Automotive Industry GEAR 2030 launched by the Commission on 19 October 2015.

Will an Implementation plan be established?

Yes No

- *If no implementation plan will be established substantiate why.*

No implementation plan will be established, as it concerns an act, which does not require transposition measures.

Will an impact assessment be carried out for this initiative and/or possible follow-up initiatives?

- *IAs are required for all initiatives likely to have significant economic, environmental and/or social impact.*
- *If you plan an IA, please use the template 'Inception Impact Assessment' instead of this roadmap template.*
- *If no impact assessment is foreseen - substantiate why you assume that no significant impacts are likely.*
- *If you plan to carry out IA work for related later initiatives, please indicate this and explain the envisaged approach.*

An Impact Assessment will not be carried out specifically for this Communication. The Communication and its supporting analytical document will provide an overview of the challenges related to decarbonisation of transport and the potential policy options to address it. Decisions on specific instruments and their design will be taken on the basis of impact assessments carried out for the individual initiatives.

⁵⁷ <http://ec.europa.eu/transport/media/consultations/doc/2015-white-paper-2011-midterm-review/analysis.pdf>