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# *SUMMARY OF THE IMPACT ASSESSMENT*

*Accompanying document to the*

WHITE PAPER

Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system

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This document provides the executive summary of the Impact Assessment Report on the Commission's White Paper on Transport Policy, which lays down a long-term strategy that would allow the transport sector to meet its goals with a 2050 horizon.

## 1. PROBLEM DEFINITION

1. The transport system has provided Europe a high degree of mobility with an ever increasing performance in terms of speed, comfort, safety and convenience. However, an in-depth ex post evaluation undertaken by the Commission has shown that, while several features of the transport system have improved in the last decade - notably its efficiency, safety and security - there has been no structural change in the way the system operates. The inability of past policies to modify the current transport paradigm is one of the main causes of unsustainable trends: growing $CO_2$ emissions, persistent oil dependency[1] and mounting congestion.

2. The Commission has carried out an analysis of possible future developments of these problems at unchanged policies. This analysis indicates that the share of $CO_2$ emissions from transport would continue increasing to almost 50% of total emissions by 2050. Oil products would still represent 89% of the EU transport sector needs in 2050. Congestion would continue to pose a huge burden on the society.

3. On the basis of the conclusions of the ex post evaluation, the Commission has identified four main root causes that prevent EU transport system to develop into a sustainable system:

   - Inefficient pricing: Today, most of the external costs of transport are still not internalised. Where existent, internalisation schemes are not co-ordinated between modes and Member States. Moreover, many taxes and subsidies which have been designed without the internalisation goal in view have a distorting effect on behaviour.

   - Inadequate research policy: In spite of the substantial efforts dedicated to transport research policy and the promising results being obtained, a wide variety of market and regulatory failures hinder the fast development and deployment of key technologies for sustainable mobility.

   - Inefficiency of transport services: The achievement of a single, integrated and efficient transport system is delayed today by a number of remaining regulatory and market failures such as regulatory barriers to market entrance or burdensome administrative procedures which hamper the efficiency and the competitiveness of multimodal and cross-border transport. Besides, investments to modernise the rail network and the transhipment facilities have been insufficient to address the bottlenecks in multimodal transport. Modal networks continue to be poorly integrated. TEN-T policy has lacked financial resources and a true European and multimodal perspective.

   - Lack of integrated transport planning: When taking land-use planning or location decisions both at local level and at continental level, public authorities and

[1] for more than 95% of its needs worldwide and 96% in EU-27.

companies often do not properly take into account the consequences of their choices on the operation of the transport system as a whole, which typically generates inefficiencies.

## 2. ANALYSIS OF SUBSIDIARITY

4. Pursuant to Articles 90 and 91 of the TFEU, the Common Transport Policy should contribute to the broader objectives of the Treaties. The prime objectives of the Common Transport Policy are to complete the internal market for transport, ensure sustainable development, promote a better territorial cohesion and integrated spatial planning, improve safety and develop international cooperation.

5. The issues being addressed by the White Paper on Transport have transnational aspects which cannot be dealt with satisfactorily by Member States only. These aspects need to be coordinated at EU level. The identified problems have different spatial effects and strong variability meaning that impacts across the EU could vary considerably. There is a need to ensure that solidarity is enshrined in the future transport policies.

6. Due its scale, action at EU level can leverage greater results and magnify the efforts in many domains such as capacity building, research, information and data gathering, exchange of best practice, development and cooperation.

## 3. OBJECTIVES OF EU INITIATIVE

7. The general policy objective of this initiative is to define a long-term strategy that would transform the EU transport system into a sustainable system by 2050. This general objective can be translated into more specific objectives:

   (a) A reduction of GHG emissions that is consistent with the long-term requirements for limiting climate change to 2 °C[2] and with the overall target for the EU of reducing emissions by 80% by 2050 compared to 1990. Transport-related emissions of $CO_2$[3] should be reduced by around 60% by 2050 compared to 1990[4].

   (b) A drastic decrease in the oil dependency ratio of transport-related activities by 2050 as requested by the EU 2020 Strategy for transport calling for "*decarbonised transport*".

   (c) Limit the growth of congestion.

8. The first two objectives overlap to a large extent, and should be considered the absolute priority in line with the Resource Efficiency Flagship of the EU 2020

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2 The "Low-carbon economy 2050 roadmap" identifies a path for the reduction of the EU GHG emissions by 80% by 2050 with respect to 1990. In the "Effective and widely accepted technology" scenario it is foreseen that the transport sector reduces its emissions by around 60%, industry by around 80%, the residential sector and services by around 90%, and power generation by over 90%.

3 The references to transport-related $CO_2$ emissions relate only to tank-to-wheel emissions.

4 As most GHG emissions from transport are CO2 emissions, this target can be considered as equivalent to the target of reducing GHG emissions by 60%, as expressed in the Impact Assessment on "Low-carbon economy 2050 roadmap".

Strategy. There are, however, also significant synergies with the third objective that would typically call for a more extensive use of non-motorised and of public transport, which reduces both the use of space and the use of energy.

9. A the same time, the achievement of the specific policy objectives identified above should ensure that that "current and future generations have access to safe, secure, reliable and affordable mobility resources to meet their own needs and aspirations"[5].

## 4. POLICY OPTIONS

10. On the basis of the ex post evaluation and stakeholders' consultation, the Commission has identified seven policy areas in which concrete policy measures could have a key role in stimulating the expected shift of the transport system to another paradigm: pricing, taxation, research and innovation, efficiency standards and flanking measures, internal market, infrastructure and transport planning.

11. To determine appropriate EU policy action, the Commission has considered the possible application of isolated intervention in either one of the seven policy areas identified above. However, it appears that none of the categories of instruments alone or in combination would be capable of tackling at the same time and in a satisfactory way all the various problem drivers and all the elements of the specific policy objective.

12. Following the above considerations, in addition to the "no new policy" option – Policy Option 1, three policy options have been designed to reach the same 60% $CO_2$ emissions reduction target, and retained for detailed assessment. All three options envisage action in all seven policy areas and have in common a certain number of initiatives. What distinguishes them is the intensity of intervention that, depending on the option, is higher in some specific field and lower in others.

13. Policy Option 3 is designed to show the effect of policies that emphasise the rapid deployment of new powertrains, by imposing very stringent $CO_2$ standards on new vehicles and by accompanying them with appropriate innovation policies putting in place the necessary framework conditions. It is assumed that this approach would be the most effective in reducing the costs and the time of introduction of new technologies.

14. Policy Option 2 is designed to show the effect of policies that rely less on performance standards and on active technological deployment and more on managing mobility and on carbon pricing. It is assumed that the industry will not outperform the less stringent $CO_2$ standards for vehicles and that the necessary reduction in emission is achieved – in addition to the full pricing of externalities and to the elimination of tax distortions – by letting the carbon price rise by the necessary amount. This could be taken to represent the effect of high carbon taxation or of the introduction of a transport specific cap and trade system. In case of very high carbon price, the effect would be equivalent to restrictions in "fossil fuel" mobility and forced modal shift to clean modes.

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[5] SEC(2010) 1606 final (14 December 2010) Commission Staff Working Document, "A European Strategy for Clean and Energy Efficient Vehicles - Rolling Plan",

15. Policy Option 4 represents an intermediate approach. It has values for $CO_2$ standards and technology deployment in between those of Option 2 and 3. It has full pricing of externalities and elimination of tax distortions as in Option 2, but the additional carbon price element is only applied in the urban context in the form of a shadow price acting as a proxy for a wide-range of possible demand management measures.

## 5. ASSESSMENT OF IMPACTS

16. It is important to note that the assessment of impact of the policy options is surrounded by a significant degree of uncertainty, owing to the very long – 40-year – time horizon and to the influence of factors that are difficult to predict or quantify: the many synergies and trade-offs between policy measures; the long-term technological developments; and the role on welfare of mobility and environmental amenities.

17. The table below presents an synoptic presentation of the different impacts of the policy options considered in what concerns other economic, social and environmental impacts:

***Summary table of impacts***

| | ***Policy Option 2*** | ***Policy Option 3*** | ***Policy Option 4*** |
|---|---|---|---|
| *Economic impacts* | | | |
| Transport as a business | | | |
| Transport activity | -- | = | - |
| Modal shift | ++ | = | + |
| Unit costs per user | --- | = | -- |
| Of transport dynamics on: | | | |
| Economic growth | ++ | + | +++ |
| Efficiency of the transport system | ++ | + | +++ |
| Congestion | ++ | = | + |
| Household transport costs | -- | - | -- |
| Transport-related sectors | + | +++ | +++ |
| Innovation and Research | + | +++ | ++ |
| Reduction of administrative burden | + | = | + |
| EU budget | = | = | = |
| International relations | -- | - | - |
| *Social impacts* | | | |
| Mobility of citizens | | | |
| Degree of mobility | --- | = | - |
| Choice | ++ | = | ++ |
| Accessibility | ++ | = | ++ |
| Distributional impacts | = | - | + |
| Employment level and conditions | ++ | ++ | +++ |
| Safety | ++ | = | + |

| *Environmental impacts* | | | |
|---|---|---|---|
| Climate change | +++ | +++ | +++ |
| Air pollution | +++ | ++ | ++ |
| Noise pollution | +++ | ++ | + |
| Energy use/energy efficiency | +++ | ++ | +++ |
| Renewable energy use | + | +++ | ++ |
| Biodiversity | + | - | = |

Legend:
= baseline or equivalent to Policy Option 1
+ to +++low to high improvement compared to Policy Option 1
- to - - - low to high worsening compared to Policy Option 1

18. The table above shows that:

– From an economic point of view, Policy Option 4 seems to be overall preferable. In fact, while achieving the $CO_2$ target at higher costs than Policy Option 3, it has lower congestion costs and the overall benefits of a less distorted pricing system.

– Also from a social point of view, Policy Option 4 would be the most desirable. Compared to Policy Option 2, it does not affect drastically the present lifestyles and organisation of society and is therefore expected to have lower social costs of adaptation to new circumstances.

– From an environmental point of view, Policy Option 2 is the most ambitious option since it covers the broadest range of environmental impacts.

## 6. COMPARISON OF OPTIONS

19. In terms of effectiveness, Policy Option 2 offers indeed the most appropriate pallet of actions to meet the defined objectives.

20. As regards the resource efficiency objective ($CO_2$ target and oil dependency), since all three Policy Options have been designed to reach the 60% target, they are all effective. However, it must be noted at this stage that Policy Option 3 is highly dependent on the successful uptake on large scale of alternative fuels whereas Policy Option 2 is the option which is the least exposed to technology risk, and hence can be considered more reliable in achieving the GHG emission target.

21. Policy Option 2 offers the best possibilities to limit the growth of congestion thanks to its strong focus on policy measures covering demand management and system improvement. In Policy Option 3, which has a strong technology focus, congestion still represents a high cost to the society.

22. In terms of efficiency, the model provides an indication of the total costs of transport of each Policy Option. These costs include: capital costs related to transport equipment, infrastructure costs for the charging and refuelling of electric propulsion

vehicles[6], fixed operation costs, variable operation costs (including fuel costs), users' disutility, and external costs of congestion, air pollution, noise and accidents.

23. The modelling results indicate that, compared to Policy Option 1, the total costs of transport so defined would be the highest in Policy Option 2, adding an additional 1,193 billion € by 2050. Policy Option 4 follows adding 1,012 billion € and Policy Option 3 about 640 billion €.

24. The calculation of total costs – and therefore the comparison between options – does not include research and development costs and infrastructure costs referred to the upgrade and possible extension of the network. Moreover, they exclude transfer payments to the budget (i.e. excise duties, value added taxes, registration taxes and other ownership taxes, charges, payments for $CO_2$ allowances in aviation under the EU Emission Trading Scheme, etc.), which are additional costs for the user, but a transfer from the point of view of society.

25. An estimation of network infrastructure costs will be established by the Commission as part of the revision of the TEN-T guidelines and therefore only a rough estimate can be offered at this stage. Investment in the network designed to serve the transport system up to 2050 would need to be put in place much earlier. The cost of EU infrastructure development to match the demand for transport has been estimated at over € 1.5 trillion for 2010-2030. The completion of the TEN-T network requires about € 550 billion until 2020 out of which some € 215 billion can be referred to the removal of the main bottlenecks.

26. In terms of coherence, Policy Option 4 offers a more balanced solution to the trade-offs across the economic, social, and environmental domains.

## 7. CONCLUSION

27. In general terms, the modelling exercise shows that several policy instruments need to be used to put the transport system on a sustainable path, lowering $CO_2$ emissions, oil dependency and congestion. It also shows that policy action has to be very ambitious to reach the objective.

28. In light of the above, Policy Option 3 is discarded, despite being the less expensive option to reach the 60% target. This is because it incorporates a high degree of uncertainty associated with the technological component. It also contemplates delayed or weak action on pricing, which would compromise the possibility of bringing about the structural change that undistorted price signals can determine. Finally, it is not sufficiently effective in reducing the cost of congestion to the society in comparison with Policy Options 2 and 4.

29. Modelling results do not point to huge differences in terms of additional costs between Policy Option 2 and Policy Option 4, and indeed the two options have many elements in common. The preference is given to Policy Option 4 since it offers the advantage of greater balance between system improvement and technological

[6] The investment required for developing the electric road transport infrastructure is estimated at roughly 140 billion € in Policy Option 3, followed by Policy Option 4 with about 120 billion and Policy Option 2 with about 80 billion.

development. Policy Option 4 would avoid the creation of a pervasive command and control approach to mobility, but it would not refrain from eliminating price distortions by internalising external cost of transport and by introducing smarter taxation.

30. However, Policy Option 2 is not formally discarded. Indeed, as said above, all Policy Options include a technology component that is low in Policy Option 2, moderate in Policy Option 4 and high in Policy Option 3. In this respect, if the technology does not deliver as it is projected in Policy Option 4, an approach closer to that in Policy Option 2 will be necessary in order to achieve the 60% target by 2050.

## 8. MONITORING AND EVALUATION

31. The Commission will properly evaluate and review the White Paper on transport policy in line with the evaluation and review of the EU 2020 strategy. In addition, the Commission will constantly monitor a set of core transport indicators.