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Subject:	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a Directive of the European Parliament and of the Council amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles

Delegations will find attached document SWD(2017) 366 final - Part 2/4.

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EUROPEAN
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Brussels, 8.11.2017
SWD(2017) 366 final

PART 2/4

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Proposal for A Directive of the European Parliament and of the Council

amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles

{COM(2017) 653 final} - {SWD(2017) 367 final}

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9. ANNEX 1: PROCEDURAL INFORMATION CONCERNING THE PROCESS TO PREPARE THE IMPACT ASSESSMENT REPORT AND THE RELATED INITIATIVE

9.1. References

Lead: DG Mobility and Transport – DG MOVE

9.1.1. Organisation and timing

Inter-Service Group

- An Inter-Service Group (ISG) was set up in July 2016 with the participation of the following Directorates-General: Secretariat-General, Legal Services, Internal Market, Industry, Entrepreneurship and SMEs, Environment, Climate Action, Joint Research Centre, Competition, Energy. Directorate-General Regional and Urban Policy joined the Steering Group from the third meeting and Directorate-General Research and Innovation joined the Steering Group from the fourth meeting onwards.

The ISG met several times:

- On 04 July 2016 to discuss the Inception Impact Assessment, the Terms of Reference for the External Support Study and the draft consultation strategy.
- On 11 November 2016 to discuss the inception report of the External Support Study, the timing of the process and the draft questionnaire for the open public consultation.
- On 27 April 2017 to discuss the interim report of the External Support Study, the outcomes of the public consultation and the general orientation for the draft Impact Assessment Report.
- On 26 June 2017 to discuss the first draft Impact Assessment Report and the first draft External Support Study.
- On 06 July 2017 to discuss the draft Impact Assessment Report and the draft final External Support Study.
- On 13 July 2017 to discuss the draft final Impact Assessment Report.

Consultation activities

Consultation activities included the following elements. The stakeholder consultation synopsis report (Annex 2) provides a summary of the results:

- An Open Public Consultation was launched on 19 December 2016 and closed on 24 March 2017.
- Targeted interviews with key stakeholders were carried out in between December 2016 and March 2017.
- A meeting with stakeholders on the outcomes of the public consultation was organised on 28 April 2017.

Furthermore, a workshop with representatives of cities and regions on the territorial impacts of the initiative was organised on 11 May 2017. The findings of this workshop are summarised in the workshop report included in Annex 10.

Several informal meetings with representatives of Member States were organised:

- On 8 February 2017 with experts from Member States
- On 05 April 2017 with transport and environment attaches from Member States

- On 28 April 2017 with experts from Member States on the outcomes of the public consultation

The external study supporting the Impact Assessment started on 26 October 2016. The Inception Impact Assessment Report was approved on 09 February 2017. The interim report was approved on 24 May 2017. The draft final report was provided on 25 June 2017. The final report was approved on [add when approved] 2017.

Consultation of the Regulatory Scrutiny Board

The impact assessment was submitted to the Commission's Regulatory Scrutiny Board on 26 July 2017. The Regulatory Scrutiny Board issued a positive opinion with reservations on 15 September 2017. The Regulatory Scrutiny Board noted the transpared use of evaluation results and the particular effort to quantify the impacts in a well-structured and easy to read Impact Assessment. It furtermore considered that the final report should fully explain the value added of the initiative relative relative to other initiatives that affect road transport emissions, particularly the CO_2-emission performance standards. It should also consider the additional effects on private sector vehicle uptake. It noted that the Impact Assessment report should clearly explain the reasons for shifting focus from internalisation of external cost to procuring low- and zero-emission and other alternative fuels vehicles and its impact on technological neutrality. The opinion further noted the relevance of better distinguishing short-term and long-term net benefits and trade-offs of policy options, and to deliver greater detail on the content and implementation of policy options and their REFIT implications.

The final Impact Assessment report includes a comprehensive description of the value added of the initiative and its inter-linkages with other policy initiatives (particularly the CO2-emission performance standards) in sections 1.2, 3.3 and 3.4 as well as 4.3. Public procurement can incentivise private sector vehicle take-up, particularly when public infrastructure is accessible to private users and when public visibility increases confidence and trust of cosnumers into the readinness of the technologies. Individual purchase decisions are influenced by a variety of factors, which makes it very difficult to quantify those knock-on effects. Hence they have been qualitatively described in section 2.1.

The IA report describes the value added and need to change the apporach of the Directive in sections 3.3 and 3.4 and further in section 7: the current approach to internalisation of external cost has failed to trigger a market impact, because of the perceived complexity of the approach. With the expected increasing availability of low- and zero-emission and other alternative fuels vehicle as well as a number of corresponding policy initiatives at national and local levels, a focus on procuring a minimum share of these vehicles in a flexible implementation scheme has been found to deliver better results, while respecting the need for flexibility to adjust to local and regional cirucmstances. A comprehensive description of the rationale and the content of the policy options and their underlying logic has been included in section 5, building on the description of the process of pre-screening all possible measures in section 4.

Sections 5 and 7 further explain the implementation of the proposed approach and the role and relevance of reporting according to updated Common Procurement Vocabulary. The analysis of impacts and their description for the preferred policy option as well as all options has been substantiated and differentiated by the years 2025 and 2030, as shown for example in setion 6.2. Trade-offs are discussed to the extent possible in sections 6 and 7 of the Impact Assessment Report. Further information on the sensitivity of the baseline relative to other policy initiatives has been added

to section 2.4, which could not be quantified due to constraints imposed by the process of finalising the CO_2 emission-performance standards.

Evidence used and external expertise

The starting point to the drafting of the Impact Assessment report was the ex-post evaluation from 2015. Information provided by the stakeholders through the stakeholder consultation activities were a main source of information (see Annex 2). It was completed by information provided ad hoc by different stakeholders to the Commission.

Another source of information has been the work of the expert group on alternative fuels in cities in DG MOVE's Sustainable Transport Forum. Information has also been provided through the process of revising the Green Public Procurement Criteria of the EU.

In the context of the Commission's approach to Territorial Impact Assessment of this proposal, a meeting with experts of cities and regions was organised on 11 May 2017.

Finally, the Impact Assessment relies to a considerable extent on an accompanying study performed by Ricardo AEA, which is available in the annex to the Impact Assessment Report. Overall, the sources used for the drafting of the Impact Assessment report are numerous, largely exhaustive and representative of the different stakeholder groups.

10. ANNEX 2: STAKEHOLDER CONSULTATION SYNOPSIS REPORT

10.1. Introduction

In the context of the preparation of the Impact Assessment, stakeholders were consulted on the problem definition, policy measures and likely impacts and relevance of action at European level. Consultation activities sought both qualitative (opinions, views, suggestions) and quantitative (data, statistics) information. The consultation process engaged main target groups through different methods, combining an Open Public Consultation (OPC) with targeted consultations with key stakeholders. Targeted consultations included exploratory and in-depth interviews and a short questionnaire for public procurement authorities. Expert interviews were also conducted for the preparation of case studies. Targeted consultations were carried out by the external consultant.

The consultation strategy had identified the following key target groups: public authorities at national, regional and local level in charge of transport and public procurement policy, contracting authorities at national, regional and local level[1], transport operators (if they are not contracting authorities); vehicle and equipment manufacturers/ suppliers, fuel producers and retailers; interest organisations representing societal interests and the general public.

All stakeholder groups were reached during the consultation: stakeholders affected by the policy, those who have to implement it and those with a stated interest in the policy. The participation to all consultation activities was overall balanced. Public and contracting authorities were less represented in the OPC compared to industry stakeholders and interest organisations. To compensate, targeted consultations mainly concentrated on public and contacting authorities.

The stakeholders' views do not represent the official position of the Commission and its services and thus does not bind the Commission. The input gathered corresponds to the objective of the consultation in both assessing the performance of the regulatory framework to date, providing insights into possible challenges and likely impacts of measures.

10.2. Methodology

10.2.1. Open Public Consultation

The Open Public Consultation (OPC) was conducted between 19 December and 24 March 2017 on the 'Your voice in Europe' website. It invited stakeholders' opinions on the key elements of the Impact Assessment: the main problem, its drivers and root causes, possible policy measures and their likely impacts and the relevance of EU level action. The questionnaire for the 12-week public consultation was prepared by DG MOVE, together with the members of the steering group. The external consultant summarised the submissions.

The OPC gathered a total of 130 contributions, including 115 replies from professional stakeholders operating in 20 Member States and 15 replies from citizens. The largest proportion of respondents was replying on behalf of a company, followed by non-governmental organisations (NGOs) and public authorities (e.g. ministry, agency, or other form of public administration).

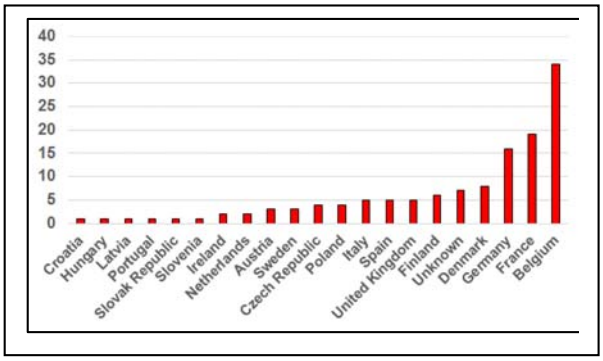
Public and contracting authorities submitted fewer contributions than companies and non-governmental organisations. This is important to note as they have to implement the provisions of the Directive. However, the contributions of several large city networks are representative of the opinion

[1] Depending on the organisational model, a contracting authority can either be a public authority (ministry, agency, other form of public administration), a pure public procuring authority or a public or private company procuring on behalf of or for a public authority. This category was introduced to capture those actors who are primarily concerned with the procurement, not so much with the policy.

of their member cities and regions. They were acknowledged with a particular importance.[2] Participants from EU-13 Member States were underrepresented in the sample. This was compensated through additional interviews and a case study as part of the targeted consultations.

Figure 10.1 Overview of participants to the OPC according to type of organisation (left) and main country of operation (right) as declared by participants

Type of Organisation	
Public authorities	23
Contracting entities	4
Companies	33
NGOs	29
Individuals	16
Others	25
Total	130



Explainer: It is important to note that also 40% of the public authorities and 40% of the companies responding declared themselves to be also contracting entities

10.2.2. Targeted consultations

The external consultant collected information and opinions of key stakeholders through exploratory interviews in the beginning and in-depth interviews later on in the process. Interviews were carried out by phone, or face-to-face. They were based on questionnaires agreed with the Commission beforehand. In addition a short questionnaire on public procurement aspects was circulated among a sample of procurement authorities to collect further information on public procurement activities.

In total, 8 exploratory interviews were carried out. Participants represented public authorities, transport operators, manufacturers and interest organisations (see annex of this report). The interviews verified the problem analysis and collected initial feedback on the long list of policy measures.

In-depth interviews were carried out with 13 stakeholders. Participants represented procurement authorities, contractors operating on behalf of public authorities and European interest organisations (see annex of this report). Interviews collected detailed stakeholder feedback on principal policy measures. Information obtained helped to check completeness and principal feasibility of measures.

Case studies were conducted, based on desk research and expert interviews. The case studies analysed public procurement in four Member States (CZ, DE, IT, SE). Additional overview information was collected for a three Member States (ES, FR, UK). The annex provides further information.

In addition, a short procurers' questionnaire was sent to 51 procuring authorities. The aim was to cross-check and to extend further information on public procurement as obtained from the TED database. A total of 7 (13.7%) responses were received; further information is provided in the External Support Study for this Impact Assessment.

10.2.3. Meetings

A public meeting on the outcomes of the public consultation was organised on 28 April 2017 in Brussels. It brought together 61 participants.

The Commission also organised two meetings with expert representatives of Member States. The first meeting took place 08 February 2017 and discussed the general state of play and objectives of the

[2] Moreover, the comparatively high number of responses from Belgium is reflects the fact that a larger number of European interest organisations with seat in Brussels contributed to the OPC.

policy initiative. The second meeting took place on 28 April 2017 and discussed the main outcomes of the public consultation for the Impact Assessment of the Clean Vehicles Directive.

The Commission organised a meeting on the assessment of territorial impacts of the revision of the Directive on 11 May 2017 in Brussels. It brought together 20 participants, representing individual cities and regions, city networks and European interest organisations. The results are presented in a separate annex of the Impact Assessment Report.

Minutes of all these meetings are presented in the appendix of this stakeholder synopsis report. The outcomes of the territorial Impact Assessment Workshop are discussed in a separate report (annex 10).

10.3. Analysis of results of the stakeholder consultation (OPC and targeted consultations)

The remainder of the report presents the main findings from the analysis of stakeholder contributions to the consultation process. These are structured following the areas of a) problem analysis, b) policy measures, c) impacts and d) relevance of EU level action.

10.3.1. Problem analysis

The large majority of contributions to the OPC agreed that it was important to use public procurement- to stimulate the market for clean vehicles (67.4% very important, 18.6% important (n=130). Public authorities, contracting entities, manufacturers and NGOs did not deviate much in their opinions.

In the OPC, question 2 asked respondents about their opinion on the relevance of root causes that limit the impact of the Directive, including limits to the scope of the Directive, lack of a clear definition, lack of concrete minimum requirements for action or the approach of the monetisation methodology.

2.3.1.1 Limited scope

On average, a majority of OPC respondents regarded limitations in the scope of the Directive as a relevant root cause (n=130; 29% strongly agree, 38% somewhat agree). These responses are in line with findings from the targeted consultations: key stakeholders representing public authorities, but also transport operators acknowledged that the current Directive is not impacting on an increasing number of contracts that concern provision of transport services to public authorities.

2.3.1.2 Lack of a clear definition

OPC respondents widely agreed on the relevance of this root cause: 81% of public authorities', all of contracting authorities', 78% of company and 90% of NGO respondents to the OPC strongly or somewhat agreed that this is a relevant root cause of the lack of impact of the Directive. All stakeholders consulted in the targeted consultation underlined the relevance of this root cause.

2.3.1.3 Lack of minimum procurement targets

In terms of OPC responses, 62% of public authorities agreed or somewhat agreed to the relevance of this root cause. Agreement of companies (73% strongly or somewhat agree) and NGOs (76% strongly or somewhat agree) was stronger. Respondents from contracting authorities were split on the relevance of this root cause, with half of the respondents strongly or somewhat agreeing and half of them not. Targeted consultations generated a similar feedback: some of the public and contracting authorities noted that the lack of a clear definition was comparatively more important.

2.3.1.4 Fragmentation of procurement rules

Here, OPC respondents from public and contracting authorities were split on the topic. No clear majority was either agreeing or disagreeing to the relevance of this root cause. OPC respondents from companies and NGOs agreed to the relevance, but the agreement was less strong compared to other root causes (59% and 58% strongly or somewhat agree respectively). Targeted consultations did not

generate detailed feedback on this root cause: principally, interviewees felt it was not as important as other root causes.

2.3.1.5 Complexity of the monetisation methodology

A majority of OPC respondents regarded this root cause to be relevant: while NGOs strongly agreed (72% strongly or somewhat agree), contracting authorities and companies (60% strongly or somewhat agree) and public authorities (57% strongly or somewhat agree) noted less strong support to the argument. In targeted interviews, transport operators and contractors emphasized the relevance of this root cause. Particularly representatives of public authorities noted that the requirements of the methodology often exceed the available knowledge and information base of public authorities.

10.3.2. Policy measures - expanding the scope of the Directive

A large majority of respondents to the OPC agreed that it is important to expand the scope of the Directive to address its limited impact (34% very important, 27% important and 14% somewhat important). No key target group issued a different opinion.

Stakeholders' opinions differed though, both in the OPC and in targeted consultations, on the relevance and effectiveness of the different measures under discussion. While none of the possible measures was overwhelmingly rejected by any key target group, different preferences were expressed: Representatives of public authorities and public transport operators noted that changes to the thresholds should anticipate impacts on administrative burden. Representatives of rental companies noted the need to anticipate impacts on rental and lease companies in case of an extension of the scope to vehicles rented, leased or hire-purchased.

2.3.2.1 Extending the scope by removing the procurement threshold

While public authorities noted slight majority support to this measure in the OPC (14 % very relevant, 23% relevant, 14% somewhat relevant), targeted consultation activities generated more sceptical views: interviewees majorly noted the practical implications, particularly the increase of administrative burden for smaller authorities. A similar outcome exists for contracting authorities: 60% of contracting authorities considered this measure very relevant, relevant or somewhat relevant. But in targeted consultations those actors referred to the administrative burden implications as well. OPC respondents from companies (75% very relevant, relevant, somewhat relevant) and particularly from NGOs supported this measure (81% very relevant or relevant).

2.3.2.2 Extending the scope to vehicles rented, leased or hire-purchased

This measure received consistent strong support from all target groups in the OPC. 75% of public authorities, 90% of contracting authorities, 81% of companies and 79% of NGOs regarded this measure as either very relevant, relevant or somewhat relevant. During targeted consultations, experts from public authorities noted the relevance of this measure. Yet they noted the need for a flexible approach that does not substantially increase administrative burden and takes into account the wider diversity of contractual arrangements in this area.

2.3.2.3 Extending the scope to private operators

This measure received general support from a majority of respondents to the OPC, but the level of support differed among target groups. Only a slight majority of public authorities agreed (55% very relevant, relevant or somewhat relevant), whereas the support from contracting authorities and companies was far more stable (both 90% very relevant, relevant or somewhat relevant). NGOs also strongly supported this measure (75% very relevant, relevant or somewhat relevant). In the targeted consultation, representatives of public authorities highlighted that monitoring of such a requirement

could be a challenge in view of differentiated contractual situations between public authorities and private operators. They required a flexible approach that would be simple to implement.

2.3.2.4 Extending the scope by including all contracts with major transport elements

This measure did not get a majority support from public authorities in the OPC (19% very relevant, 14% relevant, 14% somewhat relevant). In the targeted consultations experts from public authorities particularly referred to the needs of clearly defining the elements of the contracts that will fall under the responsibility of this measure, which could be challenging. There was stronger support from contracting authorities and NGOs to this measure (70% and 72% very relevant, relevant, somewhat relevant respectively). In the OPC, respondents from companies also strongly supported this measure (67% very relevant, relevant, somewhat relevant). However, it is also relevant to note that close to every fifth respondent to the OPC noted "I do not know", underlining uncertainties about how to assess this measure.

10.3.3. Policy measures – changing the main implementation mechanisms of the Directive

Stakeholders confirmed the principal need to change the main implementation mechanisms through which the Directive seeks to stimulate the update of clean vehicles. 58% of all OPC contributions regarded changes to Art. 5 of the Directive on the provisions for the purchase of clean vehicles as very important, 17% regarded them as important. Similarly, close to 52% of all OPC contributions considered changes to the monetisation methodology as very important, 19% considered them important. A better adaptation of the provisions of the Directive to technical progress was viewed by three quarters of OPC participants as important (35% very important, 41 % important).

However, opinions of stakeholders differed with regard to the relevance and effectiveness of the different principal measures for changing the provisions of the Clean Vehicles Directive.

2.3.3.1 Vehicle purchase on the basis of monetised impacts as award criteria

Measures concern changes to the methodology for calculating operational life time cost. The OPC asked participants about their opinions on further simplifying the methodology and/or making it more ambitious by updating cost figures, by broadening it to cover noise as an additional impact and by conditioning its use more strictly.

In all target groups, a majority supported the need for revising and updating the methodology. However, the outcomes of the OPC on the combination of implementation mechanism provide a clear context message: the option to base the revised Clean Vehicles Directive only on a definition and related minimum procurement mandate, while abandoning the monetisation methodology option, received the strongest support (see

The targeted consultations added more emphasis on the principal relevance of the approach: while it was judged to be theoretically well-placed to enable the selection of clean vehicles on the basis of their actual true cost, it was found to be difficult to implement in practice. All stakeholders agreed that the current monetisation methodology is not fit for purpose. Some interviewees expressed their support to keeping a simplified methodology, whereas others requested its complete abandoning. One needs to note that the topic was not met by strong interest, or strong positioning by different target groups.

The OPC generated the following preferences of key target groups for measures on the revision of the monetisation methodology, provided it was to be retained:

- *Public authorities* gave strongest support to putting greater emphasis on air pollutants and CO2 emissions (76% noted this to be very important, important or somewhat important for

CO2, and 72% for air pollutants). Three quarters of respondents also supported the extension to noise; however, only 14 percent noted "strong importance". Simplification was considered to be a second priority (67% very important, important or somewhat important). 75% of the respondents also considered a more effective update mechanism as strongly important, important or somewhat important. Participants were split on the question of a mandatory use: slightly more than half supported this measure (29% strongly agree, 24% somewhat agree).

- *Contracting authorities:* 60% considered the simplification of the methodology as very important, important, or somehow important. 70% considered it very important, important or somewhat important to update the CO2 values of the methodology. Similarly, 80% of respondents considered update of values for pollutants to be very important, important or somewhat important. 80% of respondents considered the extension to noise as very important, important or somewhat important. A frequent update of the methodology was considered by 60% as very important, important or somewhat important. 60% agreed strongly or somewhat strongly to establish a binding requirement to follow the methodology, in case it was retained.

- *Companies:* 79 % considered the simplification of the methodology as very important, important, or somehow important. 80% considered it very important, important or somewhat important to update the CO2 values of the methodology. Similarly, 91% of respondents considered update of values for pollutants to be very important, important or somewhat important. 77% of respondents considered the extension to noise as very important, important or somewhat important. The more frequent update of the methodology was considered by78% as very important, important or somewhat important. 60% agreed strongly or somewhat strongly to establish a binding requirement to follow the methodology, in case it was retained.

- *NGOs:* 87% considered the simplification of the methodology as very important, important, or somehow important. 93% considered it very important, important or somewhat important to update the CO2 values of the methodology. Similarly, 97% of respondents considered update of values for pollutants to be very important, important or somewhat important. 86% of respondents considered the extension to noise as very important, important or somewhat important. The more frequent update of the methodology was considered by 93% as very important, important or somewhat important. 65% agreed strongly or somewhat strongly to establish a binding requirement to follow the methodology, in case it was retained.

Discussions during meetings with Member States confirmed a rather limited use of the approach of monetising environmental impacts as such. During the Member State meeting in April 2017, France raised the point that the Commission should establish a working group to support better use of the methodology, provided it was to be retained. Germany also noted that the monetisation methodology reflects the state of thinking about clean vehicles at the time it was developed (around 2005); revision should not lead to a more complex methodology. However, Germany noted that Member States could be left with a choice of using the monetisation methodology or not. During the stakeholder meeting on the outcomes of the OPC, there was no considerable opinion raised in support of a revised monetisation methodology. One environmental NGO supported the abandoning of the approach as it was too complex and did not really lead to the desired outcome of supporting vehicle take-up.

2.3.3.2 Setting up a definition of clean vehicles

The principle of adding a definition of a clean vehicle received a lot of support from key stakeholders in the OPC and in the targeted consultation activities. However, as further corroborated in the exploratory and in-depth interviews, views diverged with regard to the most adequate approach to designing such a definition. The OPC asked about views on the suitability of basing such a definition on a tailpipe or well-to-wheel CO2 emission threshold approach, on an air pollution threshold approach, on an alternative fuels approach, or on a zero-emission threshold approach. Responses to the OPC from key target groups were as follows:

- *Public authorities* expressed broader agreement to setting up a clean vehicle definition: 71% noted it to be very important, important or somewhat important. Public authorities either rejected the tail-pipe emission approach (41%), but also did not majorly support it (38%). 53% of respondents noted support to life-cycle emissions and 64% to a definition based on air pollutants, whereas 53% supported a definition on the basis of alternative fuels. Only, 34% supported a definition based on zero-emission approach. 52% also supported a combination in case of an emission-based approach.

- *Contracting authorities* signalled broader agreement to setting up a clean vehicle definition: 70% noted it to be very important, important or somewhat important. However, all conceptual approaches were rejected but the approach to base it on emission of pollutants: here, 70% of respondents noted that a basis of air pollutants should be regarded as completely or somewhat adequate.[3] 70% also supported a combination in case of an emission-based approach.

- *Companies:* 78% noted it to be very important, important or somewhat important. 70% noted their support to a definition based on real-world air pollutants. 59% supported a definition based on alternative fuels as completely or somewhat adequate; 51% supported a definition based on life-cycle emissions as completely or somewhat adequate. The other approaches did not find a majority.[4] 83% supported a combination in case of an emission-based approach.

- *NGOs:* 92% noted it to be very important, important or somewhat important. 55% supported a definition based on tail-pipe emission, whereas support for a life-cycle emission based approach was at 69%. 83% supported a definition based on air pollutants as completely or somewhat adequate, whereas there was no majority support for a definition based on alternative fuels (48% considered to be completely or somewhat inadequate. The other approaches did not find a majority.[5] Similarly, a definition based on zero-tailpipe emissions only was regarded by 48% of respondents to be completely or somewhat adequate. 86% supported a combination in case of an emission-based approach.

Interviews and discussions during stakeholder meetings exhibited the different positions further. In the stakeholder meeting on 28 April 2017, environmental NGO representatives called for a tailpipe zero-emission approach, public transport operator representatives called for a tailpipe emission-approach and automotive representatives called for an alternative fuels approach. Other representatives, including some representatives of public authorities, supported a lifecycle-emission approach. The targeted interviews brought about a similar difference in opinions.

All stakeholders consulted acknowledged that any emission-based approach would work for light-duty vehicles, but not for heavy duty vehicles given the lack of existing regulatory standards. Conversely an approach based on alternative fuels could be applied to all market segments, but would pose a greater monitoring challenge in case of specific fuels such as biofuels. Here it would be needed to ensure that these fuels were actually used to fuel the vehicle. In the meeting with Member States, representatives of France and Germany noted that any definition should be simple to use, and not repeat setting up another complex approach that would not be helpful, like the monetisation methodology.

2.3.3.3 Setting up a minimum procurement mandate in relation to the definition

In the targeted interviews, all stakeholders agreed that there should be a clear mandate. But stakeholder preferences differed to a larger extent with regard to the design of the mandate. The OPC

[3] 70% found a definition based on a tailpipe emission approach to be completely or somewhat inadequate, whereas 60% of respondents regarded the life-cycle emissions approach to be completely or somewhat inadequate. 60% considered a definition on the basis of alternative fuels to be fully or somewhat inadequate; and 70% hold the same opinion of the zero-emission approach.

[4] 64% found the definition to be based on a tailpipe emission approach to be completely or somewhat inadequate; and 72% hold the same opinion of the zero-emission approach.

[5] 64% found the definition to be based on a tailpipe emission approach to be completely or somewhat inadequate; and 72% hold the same opinion of the zero-emission approach.

asked participants if contracting authorities and entities should be required to only purchase clean vehicles, following a definition in the revised Directive. Only representatives of NGOs agreed with a clear majority of 73%; in all other target groups a majority rejected this approach.[6] In terms of approaches to defining a specific minimum share of the total number of procurements the following reactions from key target groups were recorded:

- *Public authorities*: 37% considered an approach based on the contract to be adequate, 43% agreed to setting up a specific percentage fixed over time. 62% disagreed to setting up a specific requirement for zero-emission vehicles per contract, but only 28 % disagreed to do so for a defined period of time. 48% agreed to this measure.

- *Contracting authorities:* Respondents were somehow split on how such a mandate should be set up: 50% considered an approach based on the contract to be adequate, 50% agreed to setting up a specific percentage fixed over time. 80% disagreed to setting up a specific requirement for zero-emission vehicles per contract, and 50% disagreed to do so for a defined period of time.

- *Companies*: Respondents were split on how such a mandate should be set up: 56% considered an approach based on the contract to be adequate, 59% agreed to setting up a specific percentage fixed over time. 66% disagreed to setting up a specific requirement for zero-emission vehicles per contract, and 51% disagreed to do so for a defined period of time.

- *NGOs:* there were not very diverging views among respondents: 65% agreed that it should be set up at contract level, but 65% also agreed that it should be set up as a percentage fixed over time. 68% agreed to setting up a specific requirement for zero-emission vehicles per contract, and 58% agreed to do so for a defined period of time.

Importantly, nearly all stakeholders noted in the targeted consultations the need for mandate differentiation. This should include differentiation of a minimum procurement mandate by Member States to account for differences in economic capacities to cope with low-emission technology transitions. It should furthermore include a differentiation according to light- and heavy-duty transport. The need for differentiating between light-duty and heavy-duty vehicles was also echoed in the stakeholder meeting by representatives of the public transport operators, and in the Member States workshop by the representative of Austria.

A majority of contributions to the public consultation (n=130; 30 % very important, 29 % important) noted the relevance of a requirement to report on minimum procurement mandate implementation in the Member States. Expert representatives in the two meetings on 8 February 2017 and 28 April 2017 noted the relevance of reporting, but also underlined the need for a pragmatic approach.

2.3.3.4 Setting the overall governance approach: keeping or abandoning the dual choice approach

The OPC asked participants about different principal approaches. The aim was to get views from participants if the revised Directive should be settled on one main implementation mechanism or leave it to Member States to make a binding choice between different implementation mechanisms. This concerns two principal possibilities:

- the revised Directive keeps an option for Member States: they can either follow the clean vehicles definition and set related minimum procurement mandates. Or they use impacts as award criteria based on the mandatory use of the revised monetisation methodology.

- The revised Directive settles for one of the two mechanisms as the sole approach.

[6] 29% of public authorities, 40 % of contracting authorities agreed 46% of companies agreed.

On average, the approach that scored the largest support from all target groups was to settle the revised Clean Vehicles on an approach of providing a clean vehicle definition and related minimum procurement mandates: 73 respondents (or 57%) agreed or somewhat agreed to this option (n=129).

Public authorities: No clear majority views surfaced on this topic. 38% agreed that the revised Directive should establish a definition and keep the monetisation methodology, but require Member States to make a binding choice. 24% agreed that the revised Directive should be solely based on the use of the monetisation methodology. 48% agreed that the revised Directive should set up only a definition and a related minimum procurement mandate. 34% agreed that the revised Directive should establish such an approach but include also a specific requirement for clean vehicles.

Contracting authorities: Only 20% agreed that the revised Directive should establish a definition and keep the monetisation methodology, but require Member States to make a binding choice. 40% agreed that the revised Directive should be solely based on the use of the monetisation methodology. 50% agreed that the revised Directive should set up only a definition and a related minimum procurement mandate. 60% agreed that the revised Directive should establish such an approach but include also a specific requirement for clean vehicles.

Companies: Only 29% agreed that the revised Directive should establish a definition and keep the monetisation methodology, but require Member States to make a binding choice. 27% agreed that the revised Directive should be solely based on the use of the monetisation methodology. 49% agreed that the revised Directive should set up only a definition and a related minimum procurement mandate. 47% agreed that the revised Directive should establish such an approach but include also a specific requirement for clean vehicles.

NGOs: Only 34% agreed that the revised Directive should establish a definition and keep the monetisation methodology, but require Member States to make a binding choice. 27% agreed that the revised Directive should be solely based on the use of the monetisation methodology. 49% agreed that the revised Directive should set up only a definition and a related minimum procurement mandate. 47% agreed that the revised Directive should establish such an approach but include also a specific requirement for clean vehicles.

In addition, a slight majority of contributions to the public consultation (N=130; 30 % very important, 29 % important) noted the relevance of a requirement to regularly report on minimum procurement mandates. In the targeted interviews, representatives of public authorities noted that requirements on reporting obligations should not lead to a strong increase in administrative burden. They also noted the need for flexible solutions.

10.3.4. Impacts

The OPC asked respondents about their views on socio-economic and environmental impacts related to the possible measures discussed for the revision of the Clean Vehicles Directive.

In terms of economic impacts, the following general opinions were collected:

- Out of 129 respondents, 82 (or 63.5%) agreed or somewhat agreed that the revision will lead to growth and jobs in the manufacturing sector, due to stronger public demand for vehicles.

- Out of 127 respondents, 82 (or 63%) agreed or somewhat agreed that the revision will contribute to a bigger internal market and strengthened competitiveness of the transport sector.

- Out of 129 respondents, 92 (or 71%) agreed or somewhat agreed that measures discussed will lead to an initial strain on budgets of procuring authorities. Moreover, 75 of 129 respondents (or 58%) noted that the initial administrative burden of local authorities could increase. 102 respondents (or 79%) however also agreed or somewhat agreed that simplification of the monetisation methodology could ease the administrative burden of authorities. Similarly, 80

participants (or 62%) agreed or somewhat agreed that a clear definition of clean vehicles could reduce the administrative burden of authorities.

- There was a split view on the question, whether lower operational cost of low and zero-emission vehicles could reduce pressure on public budgets: Out of 129 respondents, 60 (or 46%) agreed or somewhat agreed, but 43 (or 33%) also disagreed or somewhat disagreed.

In interviews as well as in the stakeholder workshop and the territorial impact assessment workshop the relevance of a differentiated mandate was highlighted in this respect. Representatives of transport operators noted in targeted interviews, that any revision of the Clean Vehicles Directive should not overwhelm the principal economic capacity of transport operators: it could lead to constraints in the overall offer of public transport services. Public authorities' representatives also noted the need for local and regional flexibility. Representatives of environmental NGOs noted the prospects of falling battery prices and increased competitiveness of low-and zero-emission vehicles: further reduction of the price interval would decrease the cost impact, but markets also needed a clear signal.

In all consultation activities, there was very high agreement on positive environmental impacts. In the OPC, out of 129 respondents, 100 participants (or 77.5%) agreed or somewhat agreed to positive impacts on energy consumption reduction. 105 participants (or 81%) agreed or somewhat agreed to positive impacts on CO2 emission reduction. 101 participants (or 78%) agreed or somewhat agreed to positive impacts on air pollutant reductions. Concluding, 100 participants (or 77.5%) underlined the positive impacts on human health stemming from reduction of emissions of air pollutants.

In total, 62 of 129 respondents (or 48%) strongly agreed that socio-economic benefits will over-compensate cost related to an increase in administrative burden, and 19 respondents (or 15%) somewhat agreed. 13 respondents (or 10%) strongly disagreed, and 6 respondents (or 5%) somewhat disagreed. Experts of public authorities in targeted interviews noted that long-term benefits could indeed outweigh the cost, but also noted that those who had to bear the cost would not be fully benefiting from these benefits. A stronger increase in the roll-out of low- or zero-emission vehicles would need to be met in a number of occasions by adequate public support.

10.3.5. Adequacy of other means of action

The OPC asked participants about their opinions on the adequacy of achieving the objectives of the Directive by means of other action, notably the use of soft legislative instruments (guidance notes, voluntary measures) rather than a legislative instrument. 42 respondents (or 32.5%) agreed or somewhat agreed this was a feasible approach. 68 respondents (or 62%) of respondents disagreed or somewhat disagreed (n=129). In the stakeholder workshop in April 2017, none of the participants suggested that a repeal of the Directive was adequate. Also in the targeted interviews no stakeholder expressed such a position.

The OPC further asked participants about their opinions if the objectives of the Directive could be better achieved by the use of a Regulation. 44 respondents (or 34%) agreed or somewhat agreed to this question, 37 respondents (or 29%) of respondents disagreed or somewhat disagreed (n=129). Out of 21 responses from public authorities, 3 respondents (14.5%) agreed or somewhat agreed, 10 (or 48%) disagreed or somewhat disagreed and 8 (38%) stated "do not know" or "no answer", reflecting higher degree of uncertainty about this measure. A similar recording was made for contracting entities, where 5 (or 50%) respondents disagreed or somewhat disagreed, 2 (or 20%) agreed or somewhat agreed and 3 (or 30%) respondents did not know (n=10).

The targeted consultation activities yielded a very clear position on this question, however. In the stakeholder workshop in April 2017, representatives of city networks negated the adequacy of this measure. Some degree of flexibility was needed for procuring authorities to cope with different local context conditions. This position was also reflected in the targeted interviews with experts of public authorities. Experts from Member States in the meetings February and April also referred to the need of a flexible procurement mandate, which could not really well be guaranteed.

10.4. Conclusions and use of results

There was general support to using public procurement to further the uptake of clean vehicles in the Union. There was also a broad-scale agreement that the Clean Vehicles Directive in its current format is not fit for purpose and that shortcomings in the current Directive provisions are a key factor.

All main target groups of the consultation supported the need for setting up clearer requirements and increasing the level of ambition. A clear majority of all key target groups supported the extension of the scope of the Clean Vehicles Directive to better cover vehicles rented, leased or hire-purchased and transport service contracts other than for public passenger transport. The relevance of introducing a definition of clean vehicles was underlined by representatives from all target groups. Yet there were distinct differences among stakeholders on the preferred approach to setting up a definition and also to the level of ambition for related action requirements. A commonly recognised need concerned the need to define an approach that is simple to use and leaves amounts of flexibility to the final target groups of the Clean Vehicles Directive. Also, close to all stakeholders acknowledged that there are severe shortcomings in the current monetisation methodology. The majority of respondents to the OPC were in favour of abandoning the monetisation methodology in favour of a clean vehicle definition and related minimum action requirement for public bodies.

The results of the consultation were used in confirming the initial screening of the potential policy measures and in designing the policy options. Particularly, the different preferences for setting up a clean vehicle differentiation led to the two main approaches of using emission-based thresholds (in policy option 3) and of using alternative fuels based mandates (in policy option 4). Policy option 2 was developed to test the impacts of an approach with full responsibility for defining the level of ambition to the Member States. The differentiation of Member States mandates (in policy option 3 and 4) and the differentiation between mandates for light and heavy-duty transport (in policy option 5) were introduced following stakeholder feedback.

Also the combination of CO2 and air pollutant emission thresholds was introduced in policy option 3. Results were also used to inform the design of the minimum mandate, with two target years based at the level of Member States rather than based at the level of the contract or for a fixed period of time. Widespread criticism of the monetisation methodology and doubts about its usefulness among a larger part of the stakeholders consulted informed the design of all policy options: in policy option 2 and 5 the methodology is being updated, in policy options 3 and 4 it is being discarded. These results are referred to in the different sections of the Impact Assessment.

10.5. Appendix to the stakeholder consultation synopsis report

10.5.1. Overview of stakeholder engagement

Further information on the process of stakeholder consultation through targeted interviews and questionnaires is provided in the External Support Study for this Impact Assessment.

Table 10.1: Stakeholder engagement activity – responsive stakeholders by type of organisation

Stakeholder type**	Stakeholder engagement activity – responsive stakeholders*					
	Open Public Consultation	Exploratory Interviews	Targeted interviews	Bilateral engagement ***	Workshops	Total
Business	33	-	-	1	-	34
NGO	29	-	1	-	1	30
Other	25	-	-	6	-	31
Individual	16	-	-	-	-	16
Business Procurer	4	-	-	-	-	4
Public Authority	23	6	9	5	14	57
Trade Association / EU-business interests	-	2	3	-	2	8
Total	130	8	13	12	17	180

* A number of stakeholders participated in more than one engagement exercise. In addition, one or more stakeholder represented multiple interests (for example; a city procurement unit officer who is also active in an EU-level interest group). In addition – this encompasses only stakeholders who participated, the total figures cannot be said to represent the total number of stakeholders who were contacted in the course of this study.

** Groups identified during the Open Public Consultation have been amalgamated into those shown in the table

*** Short questionnaires/ case studies

Table 10.2: Stakeholders contacted and interviewed as part of the exploratory interviews

Stakeholder	Contact	State of play
UITP (public transport)	Annika Stienen	UITP has provided written comments.
FEAD (municipal waste)	Margot Auvray	Declined as not involved in the CVD
ACEA (manufacturers)	Petr Dolejsi	Discussed the questions at an internal ACEA meeting on the 13th December; has provided a written response
T&E (Transport and Environment)	Greg Archer	Interviewed (2nd December)
Council of European Municipalities and the Regions (CEMR) (CCRE - francais)	Angelika Poth-Moegele (Dr)	Arthur ter Weeme of the Association of Netherlands Municipalities (VNG) was interviewed on behalf of CEMR on 12th January.
European Metropolitan Transport Authorities (EMTA)	Ruud van der Ploeg	No response
European Cities and Regions networking for innovative transport solutions (POLIS)	Nicolas Hauw	Interviewed (25th January)
EUROCITIES	Vanessa Holve	Interviewed (Jonas Ericson, City of Stockholm on behalf of Eurocities) (13th December)
Local governments for sustainability (ICLEI)	Simon Clement	Interviewed (12th December)
International Road Transport Union	Marc Billiet	IRU sought their members' views but received only one response - Duncan Buchanan from Road Haulage Association Ltd (UK, IRU member) was interviewed on 25th January.

Table 10.3: Targeted stakeholder interviews – stakeholder type

Stakeholder type	Organisations interviewed
Procurement authorities (national, regional authorities, municipalities)	• Warsaw, Poland, EU13 • London, United Kingdom, EU15 • Municipality of Rijssen-Holten, The Netherlands, EU15 • City of Niort, France, EU15 • City, Sweden, EU15 • City, Ireland, EU15
Contractors (representative of EU-wide interests)	• Food Service Europe • DHL • GeoPost • Malta Post (members of EuropPost)
EU Level stakeholders or associations (including NGOs representing environmental interests, city networks, interest groups representing alternative fuel producers and retailers	• ICLEI • Eurocities • International Association of Public Transport (UITP)

10.5.2. Meeting with expert representatives of Member States

This meeting brought together expert representatives from UK, Finland, Ireland, Italy, Belgium, Slovakia, Estonia, Portugal, Czech Republic and Lithuania. After an exchange of information on relevant public procurement practice in the Member States present DG MOVE presented the state of play of the Impact Assessment of the Clean Vehicles Directive. DG MOVE also presented an overview of available opportunities for funding support at European level.

Several initiatives for public procurement of clean vehicles in Member States were presented, including support measures to battery-electric vehicles in Estonia, a governmental low emission task force and a green public procurement fund to finance clean buses in Ireland and a new public procurement act in Italy that obliges public authorities to procure green vehicles. In the UK, there is a national long-term vision of having every car and van comply with zero-emission standards by 2050. UK has adopted official government buying standards for vehicles to better inform public procurement, mandatory for central government, voluntary for any organisation. Finland noted in good experiences with clean bus procurement and related national information exchange system. In SK, a clean vehicle programme supports procurement of clean vehicles, complementing reduced vehicle registration fees, preferential parking and road charging/toll benefits. In Portugal a special environmental fund will be implemented in 2017 to subsidize electric vehicles. Tax exemption for electric vehicles is in place.

DG MOVE presented the state of play of the problem analysis and the initial screening of possible policy measures, as also included in the Open Public Consultation. Member States experts underlined the relevance of reporting, but also the need for simple and straightforward reporting. Simplification of the Directive should be a priority.

Experts noted that no formal positions have been taken in their Member States on the different parts of the revision of the Directive. Some Member State experts (United Kingdom, Finland) noted that ambitious results need ambitious targets, and that the public sector should take a lead. Also, some

Member States experts tentatively agreed that the extension of the scope should be discussed (Portugal). Experts underlined the relevance of keeping the current public procurement thresholds.

Experts also agreed to the relevance of a technology neutrality approach (CZ, IE, SK, BE, PT, FI). They also noted that the current values of the monetisation methodology are in need of an update.

10.5.3. Public meeting with stakeholders

A meeting with public stakeholders on the outcomes of the public consultation took place on 28 April 2017. It brought together 64 participants.

A public consultation was open from 19 December 2016 until 24 March 2017 to collect stakeholders' views in the context of the Impact Assessment of the revision of Directive 2009/33/EC on the promotion of clean, energy efficient road vehicles ("Clean Vehicles Directive").

This meeting was organised to provide stakeholders with an overview of the received contributions to the public consultation and hear the views of different stakeholders. After a presentation by the European Commission, Directorate-General for Transport and Mobility (DG MOVE), on the state of play and outcomes of the Public Consultation, an exchange of stakeholder's views on different aspects of the possible revision of the Clean Vehicles Directive took place.

This discussion was informed by presentations from different stakeholders (all presentations are available through the public consultation webpage for the revision of the Clean Vehicles Directive). [7]

DG MOVE informed participants that public consultation yielded 130 contributions from over 20 Member States. DG MOVE will carefully analyse the contributions.

Extension of the scope

- The need to anticipate impact on administrative burden of small public procurers when considering measures such as removal of the public procurement threshold.
- Several stakeholders noted the relevance of broadening the scope of the Directive, particularly in view of extension to vehicles rented, leased or hire-purchased and in view of extension to certain transport-relevant services.
- Monitoring of extension of the scope of the Directive would need to be met by a relevant reporting scheme.

Definition

1. There was general agreement about the benefits of having a clear definition.
2. Different views were raised with regard to the basis of a definition:
    1. Several stakeholders noted the relevance of combining GHG emissions and air pollution emissions and the relevance of using real-drive emission standards in the definition of a clean vehicle in case the definition was to be based on a emission-based approach;
    2. some stakeholders noted the need to consider other environmental impacts such as noise; other stakeholders supported basing a definition on the use of alternative fuels as defined in Directive 2014/94/EU.
    3. Yet other stakeholders suggested that clean vehicles should be defined on the basis of a zero-emission approach.

[7] https://ec.europa.eu/transport/themes/sustainable/consultations/2016-clean-vehicles_en

3. The need for keeping a technology-neutral approach was flagged repeatedly; also in view of establishing needed second-hand markets.

4. The need for improving policy coherence among different pieces of legislation, particularly in view of the implementation of Directive 2014/94/EU on alternative fuels infrastructure was broadly noted. Coherence is also relevant with regard to indicative policy targets as enshrined in e.g. the 2011 Transport White Paper and the Low-Emission Mobility Strategy, and their impact on reporting structures.

5. Discussions also showed different views about the relevance of a well-to-wheel approach as the basis of an emission-oriented definition of a clean vehicle: while several stakeholders strongly supported this, others noted problems of complexity of upstream emissions (also in a global context) and allocation of emissions to the energy or transport sector; another example of complex policy design should be avoided.

Mandating minimum action

1. Discussion about possible minimum procurement mandates underlined the variety of approaches at hand and also surfaced a broader range of stakeholder views. Stakeholders:

    2. noted the need for treating light-duty and heavy-duty transport sector differently,
    3. highlighted differences with regard to rural and urban transport;
    4. saw a need for flexibility of any mandate option with regard to implementation by public authorities and transport operators was requested
    5. underlined the relevance of mandate action, particularly in case of smaller entities.
    6. Purchase of new and of second-hand vehicles pose different procurement challenges. Total cost of ownership: more and better exchange of information and experience as well as capacity-building is needed; TCO perspective will change

Monetisation methodology

Some stakeholders supported abandoning the current methodology for monetising environmental impacts of vehicles as it was too complex, biased and not really used.

10.5.4. Meeting with representatives of Member States

DG MOVE organised a meeting with expert representatives of Member States on 28 April 2017 to present and discuss the outcomes of the public consultation. The meeting brought together representatives of Austria, Belgium, Denmark, Germany, Estonia, Ireland, France, the Netherlands, Poland, Slovenia, Romania and the United Kingdom.

DG MOVE presented the main state of play on the revision of the Clean Vehicles Directive note. The external contractor to the Impact Assessment, Ricardo, presented the main outcomes of the public consultation carried out in the context of this Impact Assessment.

Germany noted that only 30 per cent of the respondents expressed support to turning the Directive into a Regulation, indicating the need for flexibility for Member States.

Scope

France and Belgium noted its principal consent to extend the scope of the Directive to vehicles rented, leased and hire-purchased. Belgium also asked to carefully to consider the possible impacts on local authorities with the different measures under consideration.

Implementation mechanisms

Germany informed that the Federal Government has set up a quote that 10 of the federal government owned fleet has to be clean vehicle. No threshold applies to this quota. DE also noted that it will be

relevant to have a definition of clean vehicles introduced, but also insisted that this definition should not be complicated.

Belgium also noted the principal relevance of a clean vehicles definition, but highlighted also the need for feasibility. There is not yet a common position on this; though CO2 (life cycle) and air pollution thresholds appear most relevant. Going beyond the "clean" vehicle notion, for example through including a zero emission target could be considered. There is support to revising the monetisation methodology should it be retained, but noted that in this context simplification of the methodology is less a priority than putting greater emphasis on emission reduction, particularly on air pollution.

France noted on the monetisation methodology that, provided it should be retained, it should be revised in view of covering pollution with more weight. There is a need to have tools to support its use; a working group at EU level should be set up to revise the methodology and develop tools to use it. The methodology is not used in France.

Germany noted the relevance of giving Member States a binding choice to choose one of the main implementation mechanisms; the use of the methodology should not be principally binding. Any definition should not increase complexity of the Directive. Particularly the revision should not leave a complicated calculation methodology.

Austria highlighted that any discussion about a mandate needs to differentiate according to the different market segments.

Reporting

On reporting representatives updated on ongoing initiatives in their Member States and underlined the need for a simple and flexible solution.

Presentation of single policy frameworks in Member States

Belgium presented its policy approach to clean vehicle procurement. A procurement target is set for authority fleets of more than 20 vehicles (leased vehicles are included); setting of minimum technical specifications is informed by the Ecoscores tool, which allows the evaluation of the environmental performance of the vehicles on a well-to-wheel basis. There is no central reporting; no final account of the number of public procurement. The take up of joint public procurement is not clear.

France also presented its national policy framework, public sector leading by example, including the order on public procurement (2015) and the act on energy transition and green growth and related decree on purchase of low-emission vehicles (2017): federal public authorities have to purchase 50 per cent of low emission vehicles and local authorities 20 percent. There is no final definition of a low-emission vehicle, but different technologies (based on alternative fuels) are presented.

11. ANNEX 3: WHO IS AFFECTED BY THE INITIATIVE AND HOW?

The following key target groups of this initiative have been identified.

7. Public authorities at national, regional and local level in charge of transport policy and public procurement policy
8. Contracting authorities and entities at national, regional and local level (both public and private)
9. Transport operators (public)
10. Transport operators (private)
11. Vehicle and equipment manufacturers and suppliers
12. Fuel producers and retailers
13. Interest organisations representing societal interests, particularly on environmental topics

The remainder of this annex indicates how these actors are being affected by this policy initiative. It needs to be noted that the boundaries between the different target groups are not always clear. In some cases the public authority (defining the policy objectives for the public procurement) is a different public body compared to the contracting authority (in charge of the public procurement), in some cases it can be the same public body. A transport operator can also be the contracting entity. The remainder analysis hence can repeat information. Section 6 of the Impact Assessment already provides the (quantified) figures on cost and benefits occurred by public bodies, companies and wider public (socio-environmental impacts), which have to be read in conjunction.

Type of stakeholder	Practical implications
Public authorities at national level	Organisational changes (change of administrative procedures to ensure rule compliance) Member State authorities will need to adapt existing national legislation to the provisions of the revised Clean Vehicles Directive. This will include different legislative and organisational changes, namely: 14. Set up and agree with regional and local authorities the allocation of the national public procurement mandate. This will be the most challenging implication of the preferred policy option for Member State administration. 15. Establish supporting guidance and change procurement practice: Guidance to public bodies on new procurement procedures is needed (can be simplified through using guidance material developed at European level). Where public authorities are purchasing vehicles or transport service, they will have to adapt their practice. 16. Reporting: Member States administrations will have to consolidate reporting on the implementation of the minimum mandate by regional and local authorities. Provided that updates to the CPV vocabulary are made available, reporting could be facilitated as the number of publicly procured clean vehicles would be easy to identify. Investment needs 17. When affected in their role as contracting authorities, national public authorities will have to invest into procurement of clean vehicles (depending on the decisions taken domestically on the implementation

	of the minimum mandate). 18. Administrative cost of public procurement procedures are expected to be rather low. Cost *19.* The purchase cost for replacements to the national vehicle fleet is expected to increase (depending on the contribution to the national mandate), while operational cost savings also occur. However, given the fact that national authorities seldom run the more expensive public transport services, the additional cost over the total time period are not expected to be proportionally high, particularly when taking further cost decreases of vehicle technologies into account. *20.* Much more diverse cost impacts are expected in terms of impacts on revenues from fuel taxes and electricity taxes. Depending on the organisation of the national taxation system, increased procurement of clean vehicles leads to reduction in fuel tax revenue, but (depending on the technology) on increased in revenues from electricity taxes. Benefits *21.* Over time, operational cost savings should compensate the higher procurement cost (e.g. IEA estimates cost parity of conventional and non-conventional vehicles by 2030).[8] *22.* Economies of scale can be obtained through better alignment of procurement and also joint procurement
Public authorities at regional and local level	Organisational changes (change of administrative procedures to ensure rule compliance Similarly to the impacts on Member State authorities, namely: 23. Set up and agree with national authorities the allocation of the national public procurement mandate: This will be the most challenging implication of the preferred policy option for all involved authorities 24. Change procurement practices: public bodies need to adapt their practice to comply with the revised provisions of procurement law. 25. Reporting: public bodies will have to consolidate reporting on the implementation of the minimum mandate. Provided that updates to the CPV vocabulary are made available, reporting could be facilitated as the number of publicly procured clean vehicles would be easy to identify. A national platform can support this exercise (see UK experience). Investment needs 26. When affected in their role as contracting authorities, regional and local public authorities will have to invest into procurement of clean vehicles (depending on the decisions taken domestically on the implementation of the minimum mandate) 27. Administrative cost of public procurement procedures are expected to be rather low. Cost *28.* The purchase cost for replacements to regional and local vehicle fleet

[8] International Energy Agency (2017) Global EV outlook 2016. Two million and counting, Paris IEA. Other studies (e.g. McKinsey (2017) Electrifying insights: how automakers can drive electrified vehicles sales and profitability) expect cost parity to arrive in the first half of the 2020s

	is expected to increase (depending on the contribution to the national mandate), while operational cost savings occur. Over time (2020-2035) increasing cost parity of conventional and non-conventional vehicles should led to a decrease if not closure in the cost gap. *29.* Cost are also impacted by the respective organisational business model (e.g. whether OPEX and CAPEX can be jointly assessed, or need to be treated separately) as well as the available public funding and financing support.[9] Seen from a life-cycle cost perspective, there are already now examples where e.g. battery-electric buses are cost-competitive to conventional vehicles. [10] *30.* Economies of scale can be obtained through better alignment of procurement and also joint procurement. *31.* A better cost-benefit ratio might also be obtained by public authorities through increasing transparency of their procurement notice and encouraging open competition to get better bids. [11] Benefits 32. Over longer time period (2020-2035), operational cost savings should compensate the higher procurement cost (e.g. IEA estimates cost parity of conventional and non-conventional vehicles by 2030).[12] 33. Depending on how public authorities organise vehicle access to their cities, additional benefits can increase from greater attractiveness of public transport (in the context of access restrictions for polluting vehicles, for examples), also due to the possibility of opening new routes in areas where this was not possible before (because e.g. of noise implications). 34. Regional and local authorities can realise indirect benefits due to positive impacts on air pollution in cities and sub-urban agglomerations and related increases in the quality of living.
Contracting authorities and entities (can overlap with public authorities) at all levels of governance	Organisational changes 35. Contracting authorities and entities (both public and private) occur rather limited administrative cost in adapting to the revisions of the revised Clean Vehicles Directive Investment needs 36. Contracting authorities and entities (both public and private) will have to invest into new vehicles, if they are not already obliged by existing national, regional or local frameworks to do so. Cost *37.* The purchase cost for replacements to regional and local vehicle fleet is expected to increase (depending on the contribution to the national mandate), while operational cost savings occur. Over time (2020-2035) increasing cost parity of conventional and non-conventional vehicles should led to a decrease if not closure in the cost gap.

[9] At European level, for example, through funding under the European Structural and Investment Funds or the Connecting Europe Facility (CEF) or through the EU research and innovation programme Horizon 2020

[10] Operation of battery-electric buses in the Amsterdam Schipol region by TransDev is such an example.

[11] A recent review of overall European public procurement practice in the context of the European Semester process found that public procurement in many cases is still characterised by a lack of competition, as well as a very low level of demand aggregation. See https://ec.europa.eu/info/sites/info/files/european-semester_thematic-factsheet_public-procurement_en.pdf

[12] International Energy Agency (2017) Global EV outlook 2016. Two million and counting, Paris IEA. Other studies (e.g. McKinsey (2017) Electrifying insights: how automakers can drive electrified vehicles sales and profitability) expect cost parity to arrive in the first half of the 2020s.

	38. Cost are also impacted by the respective organisational business model (e.g. whether OPEX and CAPEX can be jointly assessed, or need to be treated separately) as well as the available public funding and financing support.[13] Seen from a life-cycle cost perspective, there are already now examples where e.g. battery-electric buses are cost-competitive to conventional vehicles. [14] 39. Economies of scale may be obtained through better alignment of procurement and also joint procurement. Benefits 40. Depends on the organisational model and the use cases.
Transport operators (public)	Impacts depend very much on the organisational model, which varies in the EU (most notably in view of the fact who actually owns the vehicles). 41. In addition to the cost and benefit impacts noted above, transport operators face additional cost in terms of changing their operational management, related facilities for maintenance of vehicles and infrastructure as well as related cost for skilling their workforce. 42. They may also incur benefits in terms of reduced health care cost for their employees (less noise exposure, smoother driving conditions, less pollutant exposure).
Electric grid operators	Depending on the type of vehicle technology used Organisational changes 43. none Investment need 44. Grid operators will have to invest into grid expansion and innovative technologies (e.g. smart metering) to cope with increased demand from recharging of vehicles. Cost 45. Cost for expanding infrastructure 46. Increased cost can be particularly occurred in case of equipping bus depots with recharging infrastructure. Benefits 47. Include increase of revenues; depending on the business models revenue streams can vary.
Manufacturers and suppliers of vehicles	Organisational changes 48. Limited cost are occurred in view of adapting to the changed provisions of the Clean Vehicles Directive Investment needs 49. Manufacturers and suppliers will have to invest into higher production capacities and technology development 50. They will have to invest in skilling their workforce 51. Their contractual relations with public authorities (e.g. maintenance,

[13] At European level, for example, through funding under the European Structural and Investment Funds or the Connecting Europe Facility (CEF) or through the EU research and innovation programme Horizon 2020

[14] Operation of battery-electric buses in the Amsterdam Schipol region by TransDev is such an example.

	guarantees, liability) will need to be reviewed and revised Cost / benefits 52. Manufacturer and suppliers are expected to largely benefit from increased revenues from the procurement of low- and zero-emission vehicles, with revenues being distributed among businesses involved in the procurement of vehicles (including vehicle dealers) 53. They will have increased cost in terms of investment into production capacity and new technologies, but with the exception of the market segment of trucks, low- and zero-emission technologies are either mature or are becoming mature. 54. Benefits will largely outweigh cost. 55. Cost and benefits will not be evenly spread – particularly suppliers for conventional vehicle technologies will have to adapt, whereas suppliers for non-conventional vehicle technologies will largely benefit. This is mainly relevant for the bus segment; due to the limited market share of publicly procured passenger cars and vans.

12. ANNEX 4 ANALYTICAL MODELS USED IN PREPARING THE IMPACT ASSESSMENT

12.1. Introduction

A specific cost-benefit assessment tool had been developed in the context of the 2015 ex-post evaluation by Ricardo. [15] It has been revised and updated in the context of the External Support Study for this Impact Assessment. The model was used to establish the quantitative baseline scenario and the impact of the analysed policy options. The tool is a spreadsheet-based model implemented in Microsoft Excel.

Box 12.1: Overview of the CVD IA cost-benefit tool

The Excel-based cost-benefit calculation tool that was developed for the ex-post evaluation quantitatively estimates the impacts of the Clean Vehicles Directive on overall pollutant and CO_2 emissions from vehicles procured during the period 2012-2014. These impacts are monetised (over the lifetime of the vehicles procured during the assessment period) and compared to additional capital and administrative costs incurred as a result of the Directive. For the Impact Assessment, the cost-benefit tool has been modified to develop a quantified baseline scenario that projects the total costs, as well as air pollutant and CO_2 emissions from publicly procured vehicles over the period 2020-2035. Costs are provided in monetary terms and EU average values. It has been expanded to include greater detail on alternatively fuelled vehicles and sensitivity options have been added to allow the assessment of an alternative baseline scenario for buses. Several key parameters used in the CVD Evaluation cost-benefit tool have been updated with more recent data and supplemented with relevant projections for the situation in future years, including were possible input from the EU Reference scenario 2016. The model is now referred to as the CVD Impact Assessment cost-benefit tool (= the tool).

Modelling results have been provided in monetary terms, separately for public bodies and companies. Cost have been disaggregated by a number of cost categories, including direct cost (vehicle purchase cost, operational cost) and indirect cost (administrative cost, reporting and compliance cost).

Modelling results have further been provided for CO2 emission and air pollutants. The quantification and, where possible, monetisation of the environmental impacts is based on the assessment of the number and type of vehicles procured under each policy package combined with data on emissions for each vehicle type together with data on the unit cost of CO2 and air pollutant emissions. The quantitative analysis of economic, social and environmental impacts of the policy options is based on the analysis of the number of vehicles procured by powertrain type under each policy option as well as the available data on vehicle purchase and operating costs.

The tool estimates public sector vehicles procured between 2020 and 2035. Four main types of vehicles are considered in the analysis:

56. Passenger cars,
57. Vans (light commercial vehicles),
58. Rigid trucks (with a gross vehicle weight <16 tonnes), and
59. Buses.

[15] https://ec.europa.eu/transport/sites/transport/files/facts-fundings/evaluations/doc/2015-09-21-ex-post-evaluation-directive-2009-33-ec.pdf

The tool includes a breakdown of each vehicle type into petrol (where relevant), diesel and different alternatively fuelled vehicles (AFVs). This means that, for example, plug-in hybrid electric vehicles are in a separate category, rather than being grouped together with other AFVs that may have different emissions profiles. The powertrain/fuel types match those shown in an update of the EU Reference 2016 scenario. Annex 3 of the Impact Assessment Support Study provides further information.

12.2. Model inputs and assumptions

Modelling inputs have been provided for each of the categories mentioned above. In order for the baseline for the CVD Impact Assessment to be comparable to other Impact Assessments currently underway, the majority of data inputs (e.g. technology costs, new registrations by type of powertrain, energy consumption and CO2 emissions of new vehicles, etc.) have been obtained directly from an update of the EU Reference Scenario 2016 with the cut-off date for adopted policies end of 2016[16], developed by the ICCS-E3MLab using the PRIMES-TREMOVE model. In cases where the required data is not available from PRIMES-TREMOVE, data from Ricardo Energy & Environment's SULTAN transport policy analysis tool has been used.[17] For monetising the environmental costs savings, the 2014 Handbook on external costs of transport has been used.[18] A full detailed overview of the different model inputs is provided in the Impact Assessment Support Study.

One of the key inputs into the tool is the number of vehicles publicly procured in the EU. As there is no European database that specifically records new vehicle registrations by type of owner (and type of fuel), data input has been generated from the Tender Electronic Database of the EU, where public contracts above the common procurement thresholds have to be published.[19] As the assessment concerns the impacts of the Clean Vehicles Directive, which is conditioned by the public procurement thresholds, TED has been used to extract data on tenders for the period 2009-2015. Data in TED typically does not include information on the number of vehicles procured but includes information pertaining to the monetary value of the awarded contract. The evaluation study therefore estimated the number of vehicles purchased based on average prices of vehicles. The cost estimates used in this part of the analysis were derived from a survey of procurers also carried out during the evaluation study. The methodology to estimate the number of public procurements per year is summarised below:

60. Step 1: Extract 2009-2015 data from the TED database and identify the contracts relevant to vehicle purchases, hired vehicles and the procurement of transport services.

61. Step 2: Identify the number of contracts in each category, the value of each contract and the types of vehicles procured (passenger cars, vans, rigid trucks or buses).

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16 This update (i.e. Baseline scenario) builds on the EU Reference scenario 2016 but additionally includes some updates in the technology costs assumptions (i.e. for light duty vehicles) and few policy measures adopted after its cut-off date (end of 2014) like the Directive on Weights and Dimensions, the 4th Railways Package, the NAIADES II Package, the Ports Package, the replacement of the New European Driving Cycle (NEDC) test cycle by the new Worldwide harmonized Light-vehicles Test Procedure (WLTP). It has been developed with the PRIMES-TREMOVE model (i.e. the same model used for the EU Reference scenario 2016) by ICCS-E3MLab. A detailed description of the this scenario is available in the Impact Assessment accompanying the Proposal for a Directive amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures, SWD (2017) 180.

17 Exploration of EU transport decarbonisation scenarios for 2030, Ricardo Energy & Environment project for DG CLIMA, forthcoming

18 Source: https://ec.europa.eu/transport/themes/sustainable/studies/sustainable_en

19 As noted in a recent review of public procurement practice under the European Semester process, there is, however, no uniform compliance with the registration of contracts above the thresholds of EU public procurement law in TED. There are some Members States where the value of procurement published in relation to GDP is far below the EU average of 4.7% (2009–2014). Hence the TED data are likely to underrepresent the actual value of public procurement of vehicles.

62. Step 3: Using average cost values per vehicle and the contract values, estimate the number of vehicles publicly procured per year (for each category – purchases, hired vehicles and transport services).

63. Step 4: Assume that on average, the fuel type split for public sector procurements is the same as the EU average (based on data from the REF2016+ scenario) and project the number of public sector procurements in future years.

For the market segment of urban buses, an alternative baseline was constructed for carrying out a sensitivity check against a higher baseline based on input provided by UITP and ACEA. Further information on each step is again provided in the Impact Assessment support study.

A number of assumptions have been made on the types of vehicles selected by public bodies under the different policy options. In the case of policy options 3 and 4 that include a definition of vehicles and related minimum procurement mandates available information on CO_2 and air pollutant emissions have been used to identify the powertrains that meet the criteria of the policy option and the share of the vehicles needed to meet the requirements of the option.

In case of the policy options 2 and 5, which make use of the monetisation methodology, several assumptions had to be taken. First, the PO2 leaves a binding choice to Member States whether to use the approach of setting up a national policy framework based on a clean vehicle definition provided by the Clean Vehicles Directive or to use the approach of monetising vehicle impacts. This requires an assumption about how many authorities will actually make use of the monetisation methodology. Second, in that case it has been assumed that authorities will select the vehicles with the least internal and external costs. Total costs (internal and external) have been calculated and the least expensive powertrain for each vehicle type has been identified. Annex 7 of the Impact Assessment Support Study provides further information on this assessment. In practice, it is not fully realistic that public authorities will only purchase one type of vehicle; a complete shift from petrol/diesel to battery-electric or LNG/CNG is unlikely. Yet this is the only option that is currently available to implement the principle logic of the monetisation approach.

Table 12.1: Ranking of vehicles by powertrain on the basis of total costs (internal and external) calculated using the monetisation methodology (1st: cheapest available technology in bold; unavailable powertrains below 1% in red)

Vehicle Type	2020	2025	2030	2035
Passenger cars	**1-Petrol** 2-E85 3-LPG 4-CNG 5-Diesel 6-PHEV Petrol 7-Electric 8-PHEV Diesel 9-Fuel Cell	**1-Petrol** 2-Electric 3-E85 4-PHEV Petrol 5-LPG 6-CNG 7-Diesel 8-PHEV Diesel 9-Fuel Cell	**1-Electric** 2-Petrol 3-PHEV Petrol 4-E85 5-LPG 6-CNG 7-PHEV Diesel 8-Diesel 9-Fuel Cell	**1-Electric** 2-Petrol 3-PHEV Petrol 4-E85 5-LPG 6-PHEV Diesel 7-CNG 8-Diesel 9-Fuel Cell
Vans	1-LPG **2-Petrol** 3-CNG 4-PHEV Petrol 5-Electric 6-Diesel 7-PHEV Diesel 8-Fuel Cell	1-LPG 2-PHEV Petrol **3-Petrol** 4-CNG 5-Electric 6-PHEV Diesel 7-Diesel 8-Fuel Cell	1-PHEV Petrol 2-LPG **3-Electric** 4-Petrol 5-CNG 6-PHEV Diesel 7-Diesel 8-Fuel Cell	1-PHEV Petrol **2-Electric** 3-LPG 4-CNG 5-PHEV Diesel 6-Petrol 7-Fuel Cell 8-Diesel

Vehicle Type	2020	2025	2030	2035
Rigid trucks	1-Electric 2-Fuel Cell 3-LPG **4-Diesel Hybrid** 5-LNG 6-Diesel	1-Electric 2-Fuel Cell **3-Diesel Hybrid** 4-Diesel 5-LNG 6-LPG	1-Electric 2-Fuel Cell **3-Diesel** 4-Diesel Hybrid 5-LNG 6-LPG	1-Electric 2-Fuel Cell **3-Diesel** 4-LNG 5-Diesel Hybrid 6-LPG
Buses	**1-Electric** 2-Fuel Cell 3-Diesel Hybrid 4-Diesel 5-LPG 6-CNG	**1-Electric** 2-Fuel Cell 3-Diesel Hybrid 4-Diesel 5-LPG 6-CNG	**1-Electric** 2-Fuel Cell 3-Diesel Hybrid 4-Diesel 5-LPG 6-CNG	**1-Electric** 2-Fuel Cell 3-Diesel Hybrid 4-Diesel 5-LPG 6-CNG

12.3. Reliability and appropriateness of the cost-benefit tool

Public procurement of clean vehicles is a specific area of transport policy. General transport models are of little use and not really appropriate to analyse the impacts of policy options to change the public procurement framework at European level, as they do not adequately take into account and represent the specific conditions of public procurement of clean vehicles. A simpler cost-benefit tool as the one used for this Impact Assessment, and in the ex-post evaluation of the Clean Vehicles Directive, has the advantage of providing a transparent understanding of links between inputs, assumptions and outputs, more closely related to the reality of public procurement.

As noted in detail in the Impact Assessment Support Study a number of assumptions had to be made as input to the spreadsheet-based model implemented in Excel. These assumption reflect the thorough expertise of the study team in the field of transport and procurement of vehicles as well as, where relevant, related consultation of key stakeholders. The tool has been successfully used for the evaluation of the Clean Vehicles Directive. Together this should ensure the appropriate level of reliability needed for the Impact Assessment.

One of the most crucial inputs concerns the number of vehicles that are publicly procured in the Union, as well as the share of clean vehicles therein. There are shortcomings in using data from TED, but no other approach exists. The results from the analysis of TED have been cross-checked with experts from Member States and representatives of key stakeholders during the consultation meetings in April 2017 (see Annex 6 of the Impact Assessment Support Study). No comments were received that the results of the analysis are inappropriate for further use. The results have further been cross-checked with available information from external surveys and studies.

Accordingly, the results are considered to be robustly displaying the relevant trends in the baseline and in the policy options, and provide the appropriate means for comparing the baseline and the policy options between themselves.

13. ANNEX 5: PACKAGING OF POLICY OPTIONS

The preselection of measures and the subsequent packaging of policy options has been done in a way to ensure that the policy options address all of the identified specific policy objectives, at least to some extent.[20] The objective was to construct policy options that can illustrate impact of increased levels of policy ambition, so that policy makers can choose from a broader portfolio of options.

13.1. Principles for packaging of policy options

It is relevant to recall that the specific policy objectives (SPOs) for this initiative aim to

SO1: Ensure that the Directive covers all relevant procurement practices
SO2: Ensure that the Directive supports clear, long-term market signals
SO3: Ensure that the Directive provisions are simplified and effective to use

Policy options should address all policy objectives, at least to some extent. Furthermore, there should be an increase of policy ambition throughout the policy options. Together, policy options should also represent different principal governance approaches to tackling the identified policy problem.

The measures retained after the pre-screening offer three principal approaches (section 5 of the Impact Assessment Report), which address the three specific policy objectives:

64. varying the overall scope of the Clean Vehicles Directive will lead to an increase in the volume of contracts that are affected by the provisions of the Directive (SPO1). Measures retained after the pre-screening included extending the scope to vehicles rented, leased or hire-purchased as well as transport service contracts other than public passenger transport.

65. varying the level of ambition and scale of requirements for vehicle purchase in the Clean Vehicle Directive will lead to a greater number of clean vehicles procured (SPO2). Measures retained after the pre-screening included approaches to setting up a definition of clean vehicles and to setting up a mandate for minimum procurement requirements, including different possibilities for differentiating between Member States and between light- and heavy-duty transport vehicles as well as different approaches to review the monetisation methodology.

66. varying the level of obligation for public bodies will affect the effectiveness of use of the Directive (SPO3). It considers the degree to which a revision of the Clean Vehicles Directive intervenes into the content and process of procurement by public bodies. The measures retained after the pre-screening include using the legal instrument of a Directive (which can be varied in the detail of its provisions) or a Regulation.

These three principal approaches should be combined in the design of policy options, to the extent possible. Wherever possible, the scale of policy ambition should be raised linearly.

13.2. Rationale behind the proposed packaging of policy options

To better orient the discussion, cox 1 includes an overview of the final selected policy options. The packaging of policy options followed two principal steps:

67. First, review how to best reflect different levels obligation, providing different forms of flexibility to public authorities;

[20] PO1 departs from this rule as it was chosen to test the impacts of the repeal of the Clean Vehicles Directive and whether the objectives of the initiative could be reached by means of non-legislative action

68. Second, assess how to best reflect different levels of ambition for vehicle purchase requirements and how to best reflect different levels of ambition with regard to the scope of the Clean Vehicles Directive.

Table 13.1: Summary and comparison of policy options

Nr.	Policy option description	Degree of ambition	Level of intervention
PO1	This policy option repeals the Clean Vehicles Directive. Support to public authorities and the market is provided through soft policy measures such as guidance, recommendations and voluntary policy initiatives.	-	-
PO2	This policy option lightly revises the Clean Vehicles Directive. It introduces a definition of clean vehicles and sets up a requirement for Member States to adopt a national policy framework that should set an ambition level for 2030. However, setting the level of ambition and the scope is the entire responsibility of Member States. The policy option also includes a possibility to use a revised monetisation methodology. Member States have to make a binding choice between the approach of using the clean vehicle definition and national policy frameworks and the approach of using the revised monetisation methodology. The scope of the Directive is not changed, but it does not preclude the inclusion of other contracts (such as rent, lease, hire-purchase, or transport services) into the national policy frameworks by Member States, which should be recommended.	+	+
PO3 *	This option thoroughly revises the Clean Vehicles Directive. It extends the scope of the Directive to vehicles rented, leased or hire-purchased as well as specific transport service contracts. It sets up a clean vehicles definition and sets up related minimum procurement target, based on an emission-based threshold combing CO_2 and air pollutant thresholds for light-duty vehicles. It does not set up such a definition for heavy-duty vehicles, as emissions from these vehicles are not regulated. Two different sub-options test impacts of a moderate (PO3a) and a high (PO3b) policy ambition.	++	++
PO4 *	This option thoroughly revises the Clean Vehicles Directive. It extends the scope to vehicles rented, leased or hire-purchased as well as specific transport service contracts. It sets up a clean vehicles definition and sets up related minimum procurement target, based on an alternative fuels basis for light- and heavy-duty vehicles. Two different sub-options test impacts of a moderate- (PO4a) and a high (PO4b) policy ambition.	+++	+++
PO5	This option replaces the Clean Vehicles Directive with a Regulation that prescribes to public bodies the use of a revised monetisation methodology to set monetised impacts as the award criteria for vehicle procurement. It is also based on an extended scope like in PO3 and PO4.	++++	++++
PO6 **	This option combines the approach to addressing light-duty vehicles in PO3 with the approach to addressing heavy-duty vehicles in PO4, while enabling the Commission to use a delegated to set-up CO_2 and air pollutant thresholds for heavy-duty vehicles once the regulatory requirements have been set at European level. In terms of scope it follows the same approach as PO3 and PO4	+++	+++

\- less compared to the status quo
\+ moderate increase compared to the status quo
++ stronger increase compared to the status quo
+++ strong increase compared to the status quo
++++ very strong increase compared to the status quo

* the differentiation in the level of policy ambition among PO3 and PO4 is due to the fact that PO4 considers both light- and heavy-duty vehicles, whereas PO3 only considers light-duty vehicles.

Concerning the first step of reasoning, the choice of the legal instrument and its design offers opportunities for differentiating the level of flexibility and obligation for public authorities:

69. Repealing the Clean Vehicles Directive offers the greatest form of flexibility to Member States, because there is no direct legal requirement.

70. Replacing the Directive with a Regulation offers the greatest form of direct impact, with high level of obligation and no room for flexibility. [21]

71. In between these two extreme options a revision of the Directive leaves room for differentiating the level of flexibility and obligation for authorities under the Directive. The main basis for variation here is the design of the definition of the Directive and a related minimum procurement mandate, as well as changes to the scope of the Directive.

Accordingly, it was decided to design at least one policy option that would repeal the current Directive, and one policy option that would replace the current Directive with a Regulation. In the final set of policy options, this is reflected in policy options 1 and 5 (see table A3.1).

13.2.1. Reasoning behind the design of PO1

The policy option repeals the Clean Vehicles Directive. It is assumed that the set of existing guidance and recommendations available at European level for the purchase of clean vehicles will be revised and made available in an updated format. This concerns particularly the "Guidelines on financial incentives for clean and energy-efficient vehicles"[22]. In addition, the current methodology and guidelines to its use would be published for voluntary use. Moreover, the Commission could support voluntary action of local and regional authorities and manufacturers through fora such as the Civitas Initiative and its annual forum conference[23], the Sustainable Transport Forum of DG MOVE[24] or through initiatives such as the European Clean Bus Deployment Initiative.[25]

13.2.2. Reasoning behind the design of PO2, PO3 and PO4

The following conclusions informed the design of these policy options:

72. The degree of policy ambition is strongly affected by the decision to introduce minimum procurement mandates for Member States, or not. It is also affected by the design of the definition of clean vehicles and related possible minimum procurement mandates. Accordingly, it was decided for the packaging of the policy options:

    1. In a first step the level of ambition throughout the different policy options by establishing policy options that include, or not include, minimum procurement mandates for Member States, following a clean vehicles definition.

    2. In a second step, the design of the policy options with a clean vehicles definition and a minimum procurement mandate varied the strictness of the threshold for the definition and the scope of the minimum procurement mandate.

        1. In a sub-step, the design of the policy options with a definition and a minimum procurement mandate sought to differentiate the level of ambition between light-duty and heavy-duty transport

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21 There are, however, implications for the use of some of the pre-screened measured: only the use of the monetisation methodology fits under this option.

22 SWD (2013)27

23 http://civitas.eu/

24 https://ec.europa.eu/transport/themes/urban/cpt/stf_en

25 See for further information https://ec.europa.eu/transport/themes/urban/cleanbus_en

2. In a sub-step, the design of the policy options with a definition and a minimum procurement mandate sough to differentiate the level of ambition between Member States.

73. The degree of policy ambition is further affected by decisions on the scope of the Directive. Here, implementing a step-wise increase of the level of ambition would refer to gradual extensions of the scope of the Directive: one could, for example, either require the extension of the scope of the Clean Vehicles Directive to vehicles rented, leased or hire-purchase or to vehicles that are affected by specific transport services contracts (e.g. for transportation of elderly or handicapped people) or to both.

74. Moreover, the degree of policy ambition is further affected by the ability to choose from different implementation approaches or the need to follow one implementation approach. The Inception Impact Assessment had noted that policy options should test the impacts of giving up the current dual choice between either using technical specifications or using impacts as award criteria, coupled with monetisation. Accordingly, it was decided to also differentiate the policy options: PO 3 and PO4 discard the use of the monetisation methodology, PO5 solely builds on it (see table A3.1).

5.2.2.1 Designing PO2

Following the reasoning under point 1a above, PO2 was designed to set up a definition of Clean Vehicles at European level. It does not include further provisions on its use apart from the requirement that Member States should set up a national policy framework with a target for 2030. Member States are free to define the target and the related follow-up actions (see table A3.1).

PO2 should moderately change the level of ambition compared to the current status quo. It should also keep a higher degree of flexibility to Member States. PO2 hence leaves a (mandatory) choice for Member States in using either the approach of setting a national definition and related procurement action or in using the revised monetisation methodology to monetise energy and environmental impacts of vehicles. To follow the logic of moderate changes, PO2 does not include changes to the legal scope of the Clean Vehicles Directive. Member States should decide whether and how to include other contracts, while setting up their national policy frameworks.

The impact of this policy option is difficult to establish. As PO2 leaves a choice to Member States, the Impact Assessment needed to estimate, how many Member States would go for the one or other approach. Accordingly, two sub-options were created[26]:

75. Sub-option 2a is based on the assumption that a limited number of Member States choose the monetisation option (following the ex-post evaluation findings on the use of the monetisation approach, this was set at 13%).

76. As a sensitivity check it was also assumed that half of the Member States choose the monetisation approach. This assumption underpins PO2b.

5.2.2.2 Designing PO3 and PO4

Following the reasoning as explained under point 1b above, PO3 and PO4 include a definition of clean vehicles and a mandatory minimum procurement mandate. They also extend the scope of the Clean Vehicles Directive (see table A3.1). While PO2 moderately revised the overall governance approach of the Clean Vehicles Directive, PO3 and PO4 thoroughly revise it. The options increase the level of policy ambition, but also the degree of obligation for local and regional authorities. They lead a better directing of public procurement outcomes in the EU.

[26] In both cases, arbitrary assumptions underpin the Impact Assessment as it is not possible to identify ex-ante how many Member States will choose the one or other approach.

The monetisation approach and hence the ability to choose from different implementation mechanisms as in PO2 has been discarded for PO3 and PO4. This design follows the request of many interviewees for a simplification of the Clean Vehicles Directive, but also the outcome of the Open Public Consultation (see annex 2). Here, the option to base the Clean Vehicles Directive only on a definition of clean vehicles and related minimum procurement mandates found the strongest support among all respondents. It was also done to respond to the principal requirement of simplification of EU law. Moreover, a full coherent assessment of the impacts of minimum procurement mandates for all Member States following a clean vehicles definition would not be possible if there was a continued choice for Member States of main implementation mechanisms. Again, assumptions would need to be made for the preferences of Member States.

The principle distinction between PO3 and PO4 is the basis of their definition. It has implications for the policy ambition of the options. PO3 is based on an emission-based approach and applies to light-duty vehicles only. PO4 is based on an alternative fuels approach and applies to all categories of vehicles, including heavy-duty vehicles. The alternative fuels approach provides at this moment the only possibility to set up a minimum procurement mandate in the area of heavy-duty transport (see Impact Assessment Support Study). The emission-based approach at this moment works for light-duty vehicles only.[27] Accordingly, it was decided to differentiate the two policy options on this basis: the main increase in terms of policy ambition between PO3 and PO4 concerns the extension of the definition and the related minimum procurement mandates to heavy-duty transport.

The impact of lower- and a higher ambition minimum procurement mandates was tested in two sub-options in each policy option. The approach to defining and differentiating the level of policy ambition among Member States and among the light-duty and heavy-duty transport segments is described in greater detail in annex 4 of this Impact Assessment.

No distinction was made between PO3 and PO4 concerning the extension of the scope of the Clean Vehicles Directive. Principally, different degrees of ambition could be prescribed by extending the scope to either only vehicles rented, leased or hire-purchased or vehicles purchased for transport-service contracts other than public passenger transport. However, no suitable justification presented itself to excluding one of the two for the other in relation to the design of PO3 and PO4. Both the measures of extending to vehicles rented, leased and hire-purchased and of extending to specific transport service contracts had also received considerable positive support during the ex-post evaluation. It was hence regarded to be more important to test the differences of the emissions- and fuels-based approach on the basis of the same extended scope of the Clean Vehicles Directive.

13.2.3. Reasoning behind the design of PO5

PO5 represents the most ambitious of all policy options. It directly harmonises procurement procedures and related criteria at European level. Replacing the Directive with a Regulation stems from the logic of making the use of impacts as award criteria on the basis of a revised monetisation methodology the sole approach to clean vehicle procurement. In PO3 and PO4, there is a target that Member States must achieve. Accordingly, Member States are required to devise their own acts on how to reach this target and a Directive is the right legislative tool. In PO5, there is a procedure based on a common methodology that should be applied in its entirety across the EU. The main objective is to ensure a uniform application of the methodology, not to what extent it conforms to reaching a certain target. A legal transposition into national law is not needed, as there is no need to make changes to the methodology to adjust it to domestic circumstances.

The increase of policy ambition compared to PO4 is considerable. PO5 obliges actions from all public bodies in the Union. It does not enable Member States to prioritise and adapt the provisions for clean vehicle procurement to their specific domestic circumstances. This corresponds to recital 15 of the current Clean Vehicles Directive that "procurement of vehicles for public transport services can make

[27] Subject to progress with regulation of CO2-emissions from heavy-duty vehicles in the area of trucks and buses, this situation will change in the future.

a significant impact on the market if harmonised criteria are applied at Community level". It also corresponds to recital 16 of the current Clean Vehicles Directive that "the biggest impact on the market, together with the best cost-benefit result, is obtained through mandatory inclusion of life cost for energy consumption, CO_2 emissions and pollutant emissions as award criteria in the procurement of vehicles for public transport services". It was also decided to include the same extension of scope to vehicles rented, leased and hire-purchased and to specific transport service contracts (waste collection, specific transport services other than public transport).

13.2.4. Reasoning behind the design of PO6

This option aims at combining the respective strengths of policy option 3 on light-duty vehicles and policy option 4 on heavy duty vehicles, which principal approach is also being followed by PO6. The intention is namely to preserve the positive impact on policy coherence with other legislative requirements on vehicle emission reduction, notably on CO_2 emission reduction, but also air pollutants reductions, and to ensure the principal ability to adapt heavy-duty clean vehicle procurement legislation to future emission-based legislative requirements in this sector (through a delegated act).

Understanding the potential time lags with fully putting the related legislative requirements into place at a European level, this option seeks to ensure a continued impact on the market through adopting a minimum target based on alternative fuels for heavy-duty vehicles, as developed in PO4b, in the meantime. PO6 hence ensures that public procurement can more effectively deliver its potential to support markets in their early stage of development.

14. ANNEX 6: APPROACHES TO SETTING THE LEVEL OF AMBITION FOR THE MINIMUM PROCUREMENT MANDATES

The remainder of this annex discusses approaches to setting minimum procurement mandates as included under policy option 3 and policy option 4 under this Impact Assessment. It also specifies which approaches have been used for the assessment of impacts. Further information on the context and the methodology can also be found in the Impact Assessment Support study.

14.1. Principal approaches to setting up a minimum procurement mandate based on a definition of a clean vehicle

Different elements need to be considered and brought together with respect to how to set up a minimum procurement mandate. These include the definition of the initial level of ambition, the possible differentiation of the mandate among Member States, but also among light- and heavy-duty vehicles applied. These are discussed in the following sub-sections. The annex complements the information provided through the pre-screening of measures.

14.1.1. .Defining the initial level of ambition of the minimum procurement mandate

The initial level of the minimum procurement mandate can be established in two ways:

77. By establishing an EU average level of ambition, which is then modulated across Member States or
78. By establishing an individual level of ambition for each Member States, which is then aggregated to a EU average value.

In terms of the first principal option, there is no explicit legal EU policy target that can be used as a starting point for setting a European average level of ambition. The proposed GHG-emission reduction targets under the discussed Effort-Sharing Regulation explicitly do not foresee any sectoral target setting. However, such an approach can be informed by long-term goals and by established policy needs. Most notably, the 2011 Transport White Paper of the Commission establishes a number of aspirational long-term policy goals, including for urban mobility (box 1).[28] In addition, other international forecasts assess the deployment needs of low- and zero-emission and other alternatively fuelled vehicles in order to meet long-term environmental objectives of the EU (see box 1). Furthermore, some Member States have also installed minimum procurement targets, which can help orientate the discussion (see box 1, and annex 8). The modulation of the average ambition among the Member States can be informed through different relevant criteria (see section 6.2 ff.).

The second principal option is even more complex. Here, an individual level of policy ambition per Member State would need to be set up and then aggregated to a final EU average level of policy ambition. Under this approach, it is more difficult to ensure consistency and coherence in the exercise: the process of agreeing to the different levels of policy ambition can lead to outcomes that are informed by different reasons and rationales.

[28] **European Commission, White Paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system,** COM/2011/0144 final

Box 14.1: Long-term goals and assessment of deployment needs of clean vehicles in the EU

The *Commission 2011 Transport White Paper* notes that the development and deployment of new and sustainable fuels and propulsion systems need to be pushed. To this end, it suggests a long-term goal to "halve the use of 'conventionally-fuelled' cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO_2-free city logistics in major urban centres by 2030". The White Paper highlights the benefits of using smaller, lighter and more specialised road passenger vehicles. Large fleets of urban buses, taxis and delivery vans are particularly suitable for the introduction of alternative propulsion systems and fuels. These are expected to make a substantial contribution in reducing the carbon intensity of urban transport while providing a test bed for new technologies and opportunity for early market deployment.

The decarbonisation pathways/scenarios for light-duty vehicles underpinning the *Commission's Low-Emission Mobility Strategy* support the penetration of both new technologies related in internal combusion engines and to alternative fuels. In the more ambitious pathways/scenarios, the share of eletric-rechargable vehicles ranges in between 15-18% of the light-duty vehicle stock, whereas in the less ambitious scenarios shares are in the range of 11-13%.[29]

At COP 21 in Paris 2015, the *Paris Declaration on Electric-Mobility and Climate Change and Call to Action* was launched. It calls for action to increase electro-mobility to levels compatible with a less-than-2-degree pathway. Partners to the declaration commit to broaden their action and call for joint efforts towards electrification of transport, including that at least 20% of all road vehicles (cars, 2 and 3 wheelers, trucks, buses and others) are to be electrically powered by 2020.[30] This corresponds to exceeding a global treshold of 100 million electric cars and 400 million electric two-wheelers by 2030.[31]

The *Electric Vehicles Initiative (EVI) of the Clean Energy Ministerial (CEM)* process has launched the EV30@30 campaign. It sets a collective aspirational goal for all EVI members of a 30% market share of electric vehicles in the total of passenger cars, light commercial vehicles, buses and trucks by 2030. It is currently supported by 10 Member States, including Canada, China, France, Germany, Japan, Netherlands, Norway, Sweden, the United Kingdom and the United States of America. As part of this process. EVI members have confirmed their commitment to use public procurement of low-emission vehicles, including electric vehicles, to foster this transition through the Governmental Fleet Declaration in line with the ambitions of the EV30@30 campaign, that was launched at COP 22 in Marrakech in November 2016.[32]

The scenarios of the *International Energy Agency on energy technolgoy perspectives* (2017) all suggest a substantive electrification of transport until 2030. In the reference technology scenario, this number increases to 56 million electric cars in circulation in 2030, compared to 2 million electric cars in circulation in early 2017. In the more ambitious 2DS scenario, this number increases to 160 million electric vehicles. The review of the IEA notes that recent trends have been positive, but that the overall trend is not on track to meet the 2°C scenario targets to 2025.[33]

According to the *International Energy Agency*, 14 countries have adopted national targets for the deployment of electric vehicles, including Austria, China, Denmark, France, Germany, India, Ireland, Japan, the Netherlands, Portugal, Korea, Spain, the United Kingdom and the United States (where targets have been defined for 8 states).[34] From a perspective of public procurement, the following country examples are particularly interesting:

The *French government* has adopted the Energy Transition for the Green Growth Act in 2015[35]. The act required public bodies to introduce minimum shares of vehicles with low emissions of CO2 and air pollutants, when renewing their fleets. Central authorities are required to procure a minimum share of 50 percent of those vehicles, including primarly BEV and PHEVs, while local authorities have to procure a minimum share of 20%. There is no central defintion, but a listing of (alternative fuels) technologies. In addition, only low-emission buses and coaches can be procured for public transport services from 2025 onwards. On top, the French Government has recently announced that sales of conventionally fuelled vehicles should stop in France as of

[29] SWD(2016) 244 final
[30] http://newsroom.unfccc.int/lpaa/transport/the-paris-declaration-on-electro-mobility-and-climate-change-and-call-to-action/
[31] See https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdf
[32] See https://www.iea.org/media/topics/transport/EVI_Government_Fleet_Declaration.pdf
[33] http://www.iea.org/etp/tracking2017/
[34] https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdfb
[35] http://www.gouvernement.fr/en/energy-transition

2040.

In the *Netherlands*, all the regions as the responsible actors for the organisation of public transport have set up an agreement to only buy zero-emission buses from 2025 onwards.

The *Swedish government* has adopted specific incentives for the procurement of clean vehicles by public bodies. Governmental agencies have to consider environmental aspects in the procurement following a central national definition of clean vehicles, particularly by either procuring electric vehicles or by using biofuels.

In *Belgium*, a procurement target is set for public authority fleets of more than 20 vehicles (including leased vehicles): setting of minimum technical specifications for tendering has to be informed by the Ecoscores tool which allows for the evaluation of the environmental performance of vehicles. Ecoscores is supposed to prioritise those vehicles with best environmental performance in terms of a well-to-wheel approach.

The *German federal government* has set up a quota that 20% of the federal fleet should be electric vehicles in 2019, which has been achieved already (around 29% in May 2017[36].

The *UK government* has put in place national buying standards that set mandatory criteria for central governmental departments and their related organisations; others are encouraged to follow. The UK government also announced its intention to stop the sales of conventionally fuelled vehicles as of 2040.

It was decided to use the first principal approach and test the impacts of different levels of ambition in comparison to the baseline of the Impact Assessment.

On the basis of the outcomes of the baseline and the review of policies, strategies and assessments (box 1), it was decided to set three different levels of ambition:

79. Low ambition: 20% of light-duty vehicle procurement by public authorities
80. Higher ambition: 35% of light-duty vehicle procurement by public authorities
81. High ambition: 50% of light-duty vehicle procurement by public authorities.

It needs to be recalled that in PO3 the scope of the mandate (number of vehicles to be procured) is combined with the ambition of the entry threshold (emissions of CO2 and air pollutants) to define the overall ambition of the mandate. In PO3, the scope of the mandate remains the same in the two target years of 2025 and 2030, but the level of ambition is increased through changing the emission-based thresholds for eligible vehicles, to reflect the maturity of vehicle technologies (see section xx, and Impact Assessment Support Study). This means

82. In PO3a, a threshold of 50 gCO_2/km for cars and for vans is established.[37] The 50 gCO2/km were chosen in coherence with the current low-emission threshold enshrined in the CO2 emission performance standards regulation, which exerts a certain innovation push for low-emission technologies. It covers a relevant suite of low-emission technologies, including battery-electric and fuel-cell electric vehicles, natural gas blended with biogas and plug-in hybrids. In addition, it introduces a threshold for light duty vehicles with respect to RDE air pollutant emissions: vehicles should have a conformity factor of 1 (i.e. 0% meaning that they meet Euro 6 standards as originally defined). As the CO_2 threshold would not go much beyond the average CO_2 emission fleet standard in 2030, the CO_2 threshold is lowered in 2030 to 30 gCO_2/km for passenger cars and 46 gCO_2/km for vans. This threshold requires zero-emission capable vehicles and exerts an innovation push that is deemed feasible at the point of time, when these technologies have been established long in the market. The threshold with respect to RDE air pollutant emissions is lowered to a conformity factor of 0.8 (i.e. 20% below Euro 6 standards).

[36] Bundesministerium für Wirtschaft und Energie. Available from https://www.bmwi.de/Redaktion/DE/Artikel/Industrie/rahmenbedingungen-und-anreize-fuer-elektrofahrzeuge.html [19 May 2017]

[37] This follows the EUCO2030 scenario of the Low-Emission Mobility Strategy, which is built on the target of achieving 30% energy efficiency by 2030. 75 gCO2/km is also used in other policy context, such as the Ultra-Low Emission support programme from the UK government.

83. PO3b only allows low- and zero-emission vehicles to be counted towards the mandate. Hence, a threshold of 25 gCO_2/km for cars and 40 gCO_2/km for vans is set for 2025, coupled with a threshold with respect to RDE air pollutant emissions of having a conformity factor of 0.8 (i.e. 20% below Euro 6 standards). This threshold was chosen to deliver a considerable innovation push by 2025 to the market, incentivising battery-electric and fuel-cell electric vehicles, only very strong plug-in hybrids and biogas for natural gas vehicles. In 2030, the CO_2 threshold is lowered to zero gCO_2/km for cars and vans to reflect a continued high level of policy ambition after close to ten years of implementing the Directive and push for the full introduction of zero-emission vehicle technologies in light-duty transport sector.

Accordingly, the assessment of impacts of this policy option has been based on using the higher ambition average level of 35% of light duty vehicle procurement for setting the scope of the mandate, as it appeared to be best in line with the levels of ambition expressed in the different policies, strategies and market forecasts reviewed. The 35% were chosen by expert judgement and following analysis in the context of the IA support study as a mean to exert a considerable but feasible ambition impact relative to the baseline while ensuring that there is an overall flexibility of public bodies with regard to technical choice.

It needs to be recalled that in PO4 the overall ambition of the mandate can only be defined through the scope of the mandate (number of vehicles to be procured). The entry threshold remains the same, as it is defined by the alternative fuels. The range of vehicle technologies is also broader, as the mandate will always include other alternative fuels technologies such as natural gas vehicles. Accordingly, the policy options needs to increase the scope of the mandate over time to increase the level of the ambition. Hence the PO4 uses the different levels of ambition noted above differently in the two target years of 2025 and 2030:

84. PO4a starts with a low ambition mandate in 2025 and scales it to a higher ambition mandate in 2030
85. PO4b starts with a higher ambition mandate in 2025 and scales to a high ambition mandate in 2030

PO4 targets both light- and heavy-duty vehicles. Following comments received during the consultation process for this Impact Assessment, a differentiation of the basic level of ambition in comparison to the baseline was regarded necessary, also to account for the different levels of vehicle technologies maturity in the different subsectors. Following the analysis of relevant information, including from EU-funded projects on zero-emission technologies in buses and trucks[38] the following average levels of ambition were assumed for trucks and buses, reflecting expert judgement and analysis in the context of the Impact Assessment Support Study on suitable degrees of ambition levels relative to the baseline and taking into account recent forecasts of market developments, particularly in the area of urban buses:

86. Low: 5% of trucks and 30% of buses
87. Higher: 10% of trucks and 50% of buses
88. High: 15% of trucks and 75% of buses

PO 6 combines PO3b for light-duty vehicles and PO4b for heavy-duty vehicles and hence builds on the same policy option rationale as described for these options.

14.1.2. Approaches to differentiating procurement mandates among Member States

Section 5 of the Impact Assessment Report provides an overview of the pre-screened measures for differentiating an initial level of average policy ambition at European level among Member States. On this basis, four variants were initially tested, all based on data from Eurostat:

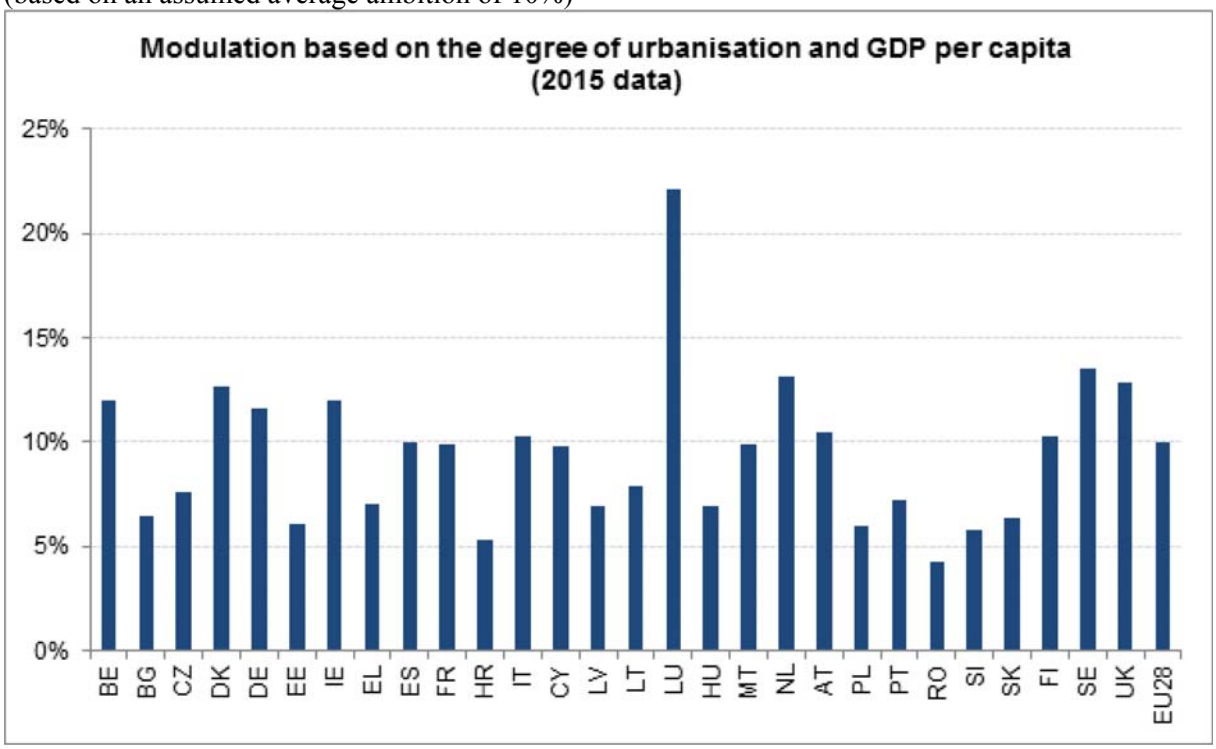
[38] See ZEeUS report, ACEA/UITP market forecasts, FREVUE project

89. Variant 1: using the share of urban and intermediate regions population (50% weight) plus GDP per capita (50% weight) for modulation
90. Variant 2: using the share of urban and intermediate regions population;
91. Variant 3: using GDP per capita
92. Variant 4: using the share of GDP from predominantly urban and intermediate regions

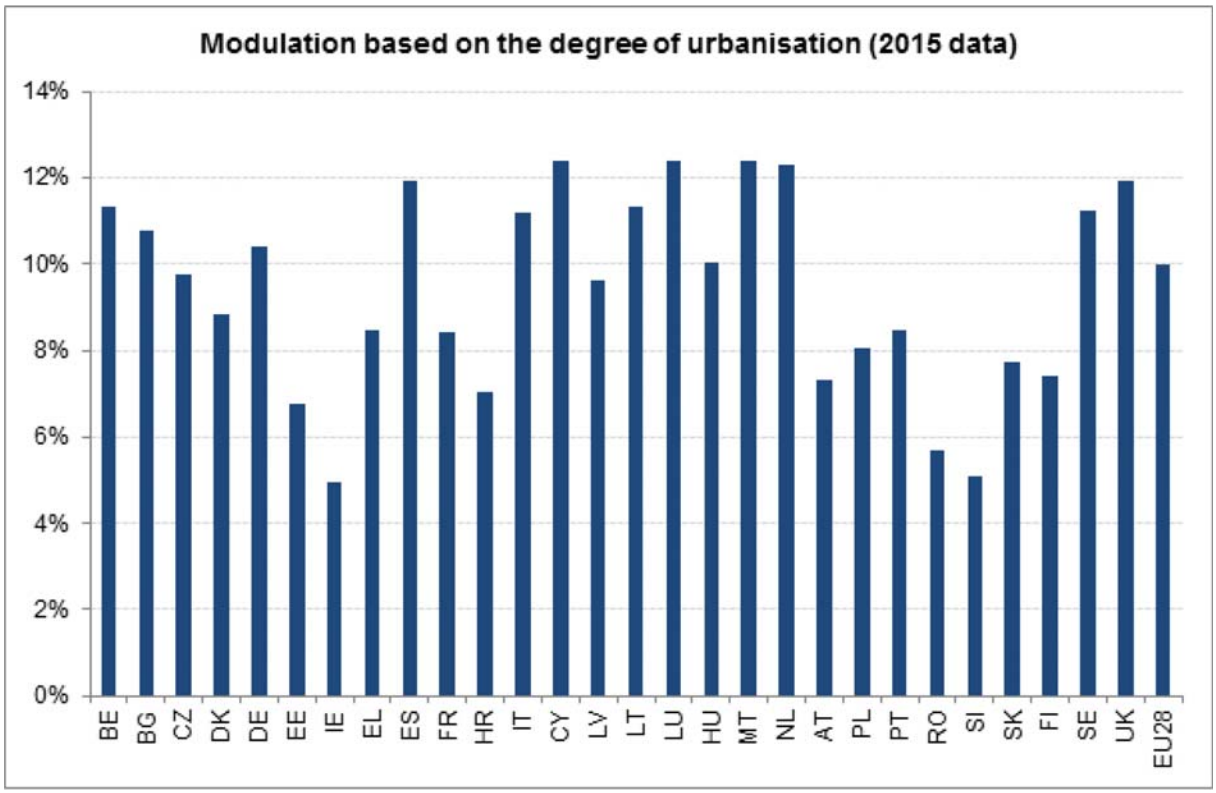
As discussed in the pre-screening of measures (section 5.1.2.2), a starting assumption was that the combination of GDP per capita and share of urban and intermediate regions population (variant 1) would provide a principle well-founded approach, as it helps accounting for both economic capacity of Member States (in order to deal with introduction of more innovative technologies), but also for urban problems such as air quality exposure (which is higher in more densely populated areas). To test the validity of the approach, other variants of only using the share of urban and intermediate regions population, only using GDP per capital or only using the share of GDP from predominantly urban and intermediate regions were tested as well.

Box 14.2 below shows the initial results of a testing of the different variants, on the basis of an initial average assumption of 10%.

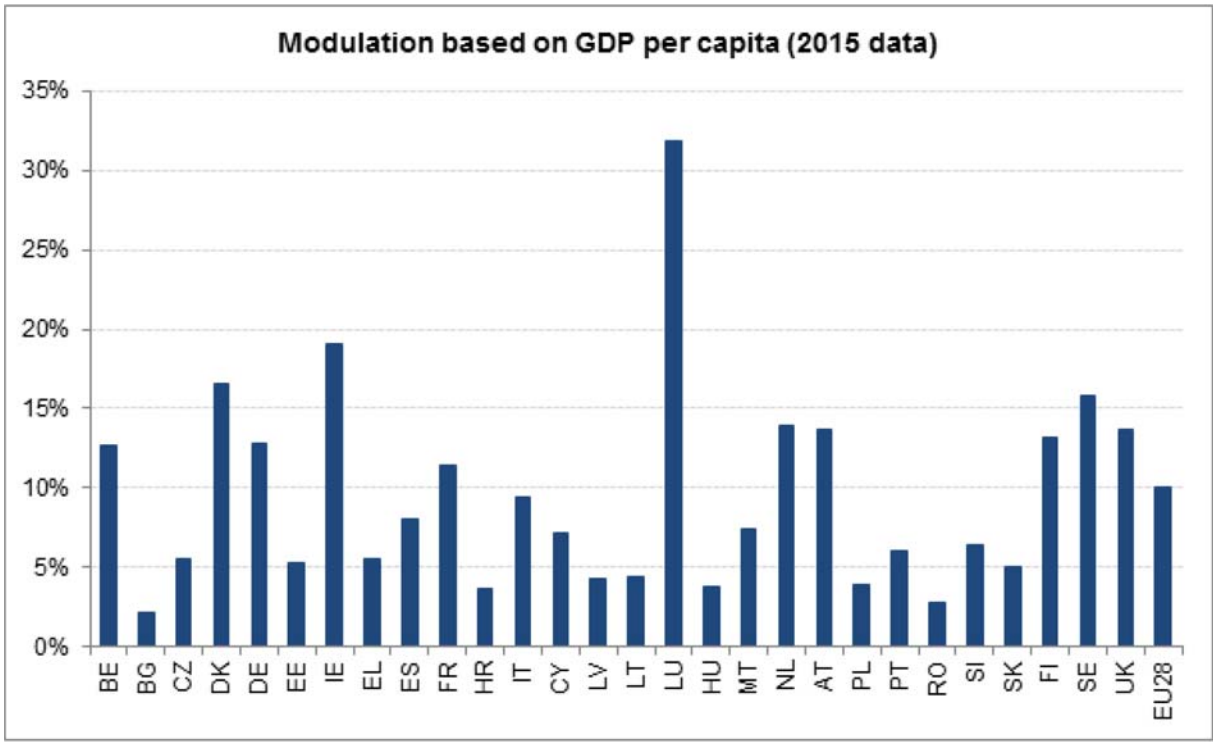
Box 14.2: Variants for the modulation of minimum procurement requirements by Member States (based on an assumed average ambition of 10%)



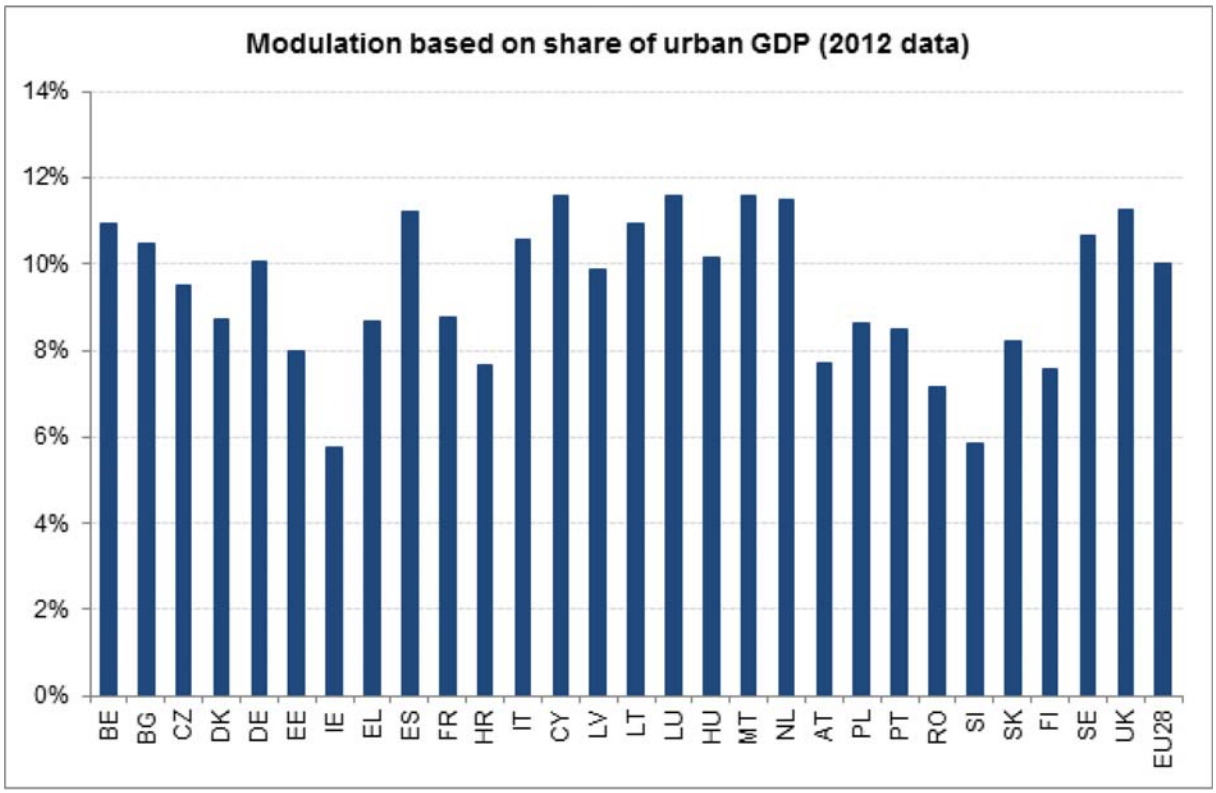
Variant 2: using the share of urban and intermediate regions population



Variant 3: using GDP per capita



Variant 4: using the share of GDP from predominantly urban and intermediate regions



From the initial analysis it appeared that variant 2 (based on urbanisation data only) would lead to cases, where Member States economic capacity (which is not reflected in this variant) would be overstretched. This could be, for example, particularly the case with Bulgaria that would be above the main European average. Even if all Member States above the European average would be capped to get the same full target, some of those would still be non-proportionally mandated. A similarly, though less pronounced outcome could be found for the use of the urban GDP approach (variant 4). Modulating solely on the basis of the GDP per capita (variant 3) leads to a very high mandate for Luxembourg, and also comparatively high mandates for e.g. Ireland or Denmark; with the additional drawback that this measure does not include a take on the actual problem pressure. Also the combination of GDP/capita and urbanisation data leads to a still high value for Luxembourg. In all cases, the modulations leads to mandates for some Member States above the European average level of ambition.

From the comparison of all four variants, it appears that none of the compared variants had significant advantages over variant 1. Accordingly, it was decided to use variant 1 as the basis for the differentiation of Member State mandates as it combines economic capacity and problem pressure in terms of urban population density (with a 50% weighting for each factor). The main rationale for using the modulation was to ensure that Member States with lower economic capacities are not burdened too much, which could result in further decreases of public transport services offer and overall public transport quality, but are still being incentivised to accelerate their transition to a low-emission mobility. Also, modulation leads in some cases to mandates for Member States which exceed the EU average considerably. It was hence concluded that the objectives of the policy initiative are best reflected if the modulation is used to differentiate all Member State mandates below the EU average level and if all Member States above the EU average level are capped at the average level (1.0) to have a full target.

14.2. Minimum mandates under PO3, PO4 and PO6

Tables 1 and 2 provide an overview of the differentiated minimum mandates under PO3, PO4 and PO6. Note that only the approach of using an average level of ambition of 35% of vehicle procurement was used to analyse the impacts of PO3 and subsequently in PO6.

Table 14.1: Minimum mandates differentiated by Member State under PO3 and PO6

		2025 & 2030		
		20% **(all cars and vans)**	**35%** **(all cars and vans)***	**50%** **All cars and vans**
		Low	higher	
Luxembourg	1.00	20%	35%	50%
Sweden	1.00	20%	35%	50%
Denmark	1.00	20%	34%	50%
Finland	0.92	18%	35%	46%
Germany	1.00	20%	35%	50%
France	0.95	19%	34%	48%
United Kingdom	1.00	20%	35%	50%
Netherlands	1.00	20%	35%	50%
Austria	1.00	20%	35%	50%
Belgium	1.00	20%	35%	50%
Italy	1.00	20%	35%	50%
Ireland	1.00	20%	35%	50%
Spain	1.00	20%	33%	50%
Cyprus	1.00	20%	29%	50%
Malta	1.00	20%	35%	50%
Portugal	0.81	16%	27%	40%
Greece	0.76	15%	23%	38%
Slovenia	0.67	13%	20%	33%
Czech Republic	0.93	19%	27%	46%
Estonia	0.71	14%	21%	36%
Slovakia	0.77	15%	20%	39%
Lithuania	0.94	19%	19%	47%
Poland	0.74	15%	20%	37%

Croatia	0.64	13%	17%	32%
Hungary	0.84	17%	21%	42%
Latvia	0.80	16%	20%	40%
Romania	0.57	11%	17%	29%
Bulgaria	0.77	15%	16%	39%

* used for quantification of impacts in the final policy option

Table 14.2 Minimum mandates differentiated by Member State under PO4 and PO6

		Cars and vans				Trucks				Buses			
		EU target											
		P4a		P4b / PO6		P4a		P4b / PO6		P4a		P4b/PO6	
		2025	2030	2025	2030	2025	2030	2025	2030	2025	2030	2025	2030
		20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
	Scaling factor	National targets											
Luxembourg	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Sweden	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Denmark	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Finland	0.92	18%	32%	32%	46%	5%	9%	9%	15%	28%	46%	46%	69%
Germany	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
France	0.95	19%	33%	33%	48%	5%	10%	10%	15%	29%	48%	48%	71%
United Kingdom	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Netherlands	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Austria	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%

Belgium	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Italy	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Ireland	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Spain	1.00	20%	35%	35%	50%	5%	10%	10%	14%	30%	50%	50%	75%
Cyprus	1.00	20%	35%	35%	50%	5%	10%	10%	13%	30%	50%	50%	75%
Malta	1.00	20%	35%	35%	50%	5%	10%	10%	15%	30%	50%	50%	75%
Portugal	0.81	16%	28%	28%	40%	4%	8%	8%	12%	24%	40%	40%	61%
Greece	0.76	15%	27%	27%	38%	4%	8%	8%	10%	23%	38%	38%	57%
Slovenia	0.67	13%	23%	23%	33%	3%	7%	7%	9%	20%	33%	33%	50%
Czech Republic	0.93	19%	32%	32%	46%	5%	9%	9%	11%	28%	46%	46%	70%
Estonia	0.71	14%	25%	25%	36%	4%	7%	7%	9%	21%	36%	36%	53%
Slovakia	0.77	15%	27%	27%	39%	4%	8%	8%	9%	23%	39%	39%	58%
Lithuania	0.94	19%	33%	33%	47%	5%	9%	9%	8%	28%	47%	47%	70%
Poland	0.74	15%	26%	26%	37%	4%	7%	7%	9%	22%	37%	37%	56%
Croatia	0.64	13%	23%	23%	32%	3%	6%	6%	7%	19%	32%	32%	48%
Hungary	0.84	17%	29%	29%	42%	4%	8%	8%	9%	25%	42%	42%	63%
Latvia	0.80	16%	28%	28%	40%	4%	8%	8%	9%	24%	40%	40%	60%

Romania	0.57	11%	20%	20%	29%	3%	6%	6%	7%	17%	29%	29%	43%
Bulgaria	0.77	15%	27%	27%	39%	4%	8%	8%	7%	23%	39%	39%	58%

EU weighted average		19%	34%	34%	48%	5%	10%	10%	14%	28%	48%	48%	72%

15. GLOSSARY

Buses and coaches	Larger buses which are suited or intended to carry more than 16 passengers
CNG	Compressed naural gas
CO_2	Carbon dioxide
COM	European Commission
COP 21	21 Convention of Parties to the United Nations Framework on Climate Change (UNFCC)
CVD	Directive 2009/33.EC on the promotion of clean and energy-efficient road transprot vehicles (Clean Vehicles Directive)
Euro VI/6	European Light-duty vehicle (EURO VI) and heavy-duty vehicle (Euro 6) emissions standards - have been adopted on grounds of environmental public health policy considerations and are not meant to address emissions with global warming effects.
GDP	Gross domestic product
GHG emissions	Greenhouse gases emission, which include CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3
HDV's	Heavy duty vehicles
LCV's	Light commercial vehicles
LDV's	Light duty vehicles
Life time cost	The total cost encoutered over the lifetime operation of the vehicle, including for example the price, energy and emissions included in vehicle construation and operation, comprising costs for energy consumption, CO2 emissions, and pollutant emissions
LNG	Liquefied Natural Gas
NGO's	Non-governmental organisations
NMHC	Non-methane hydrocarbons
NO_X	Nitric oxide (NO) and nitrogen dioxide (NO_2) are together referred to as nitrogen oxides (NO_X).
PM	Particulate matter
PO	Policy option

RDE	Real driving emissions
REFIT	Regulatory Fitness and Performance programe - program to ensure the effectivity of EU legislation which belowe to the better regulation agenda of the European Commission.
RMB	Renminbi, currency of People's Republic of China
SME's	Small and medium-sized enterprires
SPO	Specific policy objectives
SPR	Specific evaluation recommendations
Tailpipe emissions	Exhaust gas emissions that occur due to fuel combustion during a vehicle's operation
TED	Tenders Electronic Daily database
TTW	Tank-to-wheels is part of the well-to-wheels analysis and measures emissions that arise during the vehicle operation (downstream stage).
WTT	Well-to-tank is part of the well-to-wheel analysis and measures emissions during the fuel production/feedstock and processing and fuel delivery or energy transmission (upstream phase)
WTW	Measuring emissions both upstream and downstreanm, including well-to-tank and tank-to-wheel.
ZEVs	Zero-emissions vehicles

16. OVERVIEW OF PUBLIC PROCUREMENT POLICY FRAMEWORKS IN THE EU

The table provides an overview of relevant legislation at national and subsequent regional and local level.

Legislation	Type of Policy	Importance	Jurisdiction
Passenger Car CO2 Regulations	Directive/Regulation	Core	EU
LCV CO2 Regulation	Directive/Regulation	Core	EU
((Heavy duty vehicle CO2 Regulation- Being developed))	Directive/Regulation	Additional	EU
EU Green Public Procurement criteria for Transport, 2012	Directive/Regulation	Additional	EU
Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Renewable Energy Directive) 2009	Directive/Regulation	Additional	EU
Euro 6/RDE for cars and vans	Directive/Regulation	Core	EU
Euro VI for trucks and buses	Directive/Regulation	Core	EU
Directive 2009/30/EC 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 and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (Fuel Quality Directive) 2009	Directive/Regulation	Additional	EU
Directive 2014/94/EU on the deployment of alternative fuels Infrastructure (Alternative Fuels Infrastructure Directive) 2014	Directive/Regulation	Additional	EU

General Safety Regulation	Directive/Regulation	Additional	EU

AT

Austrian Federal Public Procurement Law 2006 Bundesvergabegesetz 2006	National Legislation transposing Directive	Additional	AT
Guidelines for quality criteria of public procurement on transportation service, 2016 Leitfaden für Qualitätskriterien bei der Vergabe von Bundesverkehrsdienstleistungen, 2016	Member State procurement guidelines/ criteria	Additional	AT
Austria Action Plan for Sustainable Public Procurement Österreichischer Aktionsplan zur nachhaltigen öffentlichen Beschaffung, 2010	Member State procurement guidelines/ criteria	Additional	AT

BE

Royal Decree on the promotion of clean road transport vehicles and energy in the context of public procurement, No. 2010/21131 Arrêté royal relatif à la promotion de véhicules de transport routier propres et économes en énergie dans le cadre des marchés publics, 2010	National Legislation transposing Directive	Additional	BE
Decree of the Government of the Brussels-Capital Region on the introduction of vehicles more environmentally friendly fleets in the regional authorities, *2014* Arrêté du Gouvernement de la Région de Bruxelles-Capitale relatif à l'exemplarité des pouvoirs publics en matière de transport et modifiant l'arrêté du Gouvernement de la Région de Bruxelles-Capitale du 7 avril 2011 relatif aux plans de déplacem, actualisation 2014	National Legislation transposing Directive	Additional	BE

CY

Law providing for the award of public works contracts and services and related matters / Law providing for the award of public works contracts and services in the water, energy, transport and postal services and related matters (2011)	National Legislation transposing Directive	Additional	CY

CZ

Act on Public Procurement, 2006 Zákon ze dne 14. března 2006 o veřejných zakázkách	National Legislation transposing Directive	Additional	CZ

DE

Public Procurement Low, 2016 Verordnung über die Vergabe öffentlicher Aufträge, 2016	National Legislation transposing Directive	Additional	DE
Act on public procurement on public transport, drink water and energy supply, 2016 Verordnung über die Vergabe von öffentlichen Aufträgen im Bereich des Verkehrs, der Trinkwasserversorgung und der Energieversorgung, 2016	National Legislation transposing Directive	Additional	DE
Act on procurement of diesel-electric hybrid buses in public transport, 2016 Richtlinien zur Förderung der Anschaffung von diesel-elektrischen Hybridbussen im öffentlichen Nachverkehr, 2016	National Legislation transposing Directive	Additional	DE
National guidelines for sustainable procurement, 2016 Umweltfreundliche Beschaffung, 2016	Procurement guidelines/ criteria	Additional	DE
German "Blue Angel" Scheme	Ecolabel/National tax	Additional	DE

DK

Environmental Awareness surrounding purchase of vehicles, 2010 Bekendtgørelse nr. 1394 af 14. december 2010 om miljøbevidste indkøb af køretøjer til vejtransport	National Legislation transposing Directive	Additional	DK

ES

Law 2/2011 of March 4, 2011, on Sustainable Economy Ley 2/2011, de 4 de marzo, de Economía Sostenible	National Legislation transposing Directive	Additional	ES

FI

The Finnish Act on Consideration for the Energy and Environmental Impact of Vehicles in Public Procurement (1509/2011) Laki ajoneuvojen energia- ja ympäristövaikutusten huomioon ottamisesta julkisissa hankinnoissa, 2011	National Legislation transposing Directive	Additional	FI

FR

Act on Energy Transition for Green Growth, 2015 LOI no 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte	National Legislation transposing Directive	Additional	FR
Act on procurement of low emission vehicles for fleet operators, rental and leasing companies, taxi operators and operators of private rental vehicles Décret no 2017-21 du 11 janvier 2017 relatif aux obligations d'achat ou d'utilisation de véhicules à faibles émissions par les gestionnaires de flottes de véhicules, les loueurs de véhicules automobiles, les exploitants de taxis et exploitants de voitures de transport avec chauffeur	National Legislation transposing Directive	Additional	FR
Décret no 2017-22 du 11 janvier 2017 pris pour l'application du premier alinéa de l'article L. 224-8 du code de l'environnement définissant les critères caractérisant les véhicules à faibles émissions dont le poids total autorisé en charge excède 3,5 tonnes	National Legislation transposing Directive	Additional	FR
Décret no 2017-23 du 11 janvier 2017 pris pour l'application de l'article L. 224-8 du code de l'environnement définissant les critères caractérisant les autobus et autocars à faibles émissions	National Legislation transposing Directive	Additional	FR
Décret no 2017-24 du 11 janvier 2017 pris pour l'application des articles L. 224-7 du code de l'environnement et L. 318-1 du code de la route définissant les critères caractérisant les véhicules à faibles et très faibles niveaux d'émissions de moins de 3,5 tonnes	National Legislation transposing Directive	Additional	FR

EL

Law 3982/2011 Simplification of the licensing of technical professional and manufacturing activities and business parks and other provisions, 2011	National Legislation transposing Directive	Additional	EL

HU

48/2011 (III.30.) Government Regulation on the promotion of the purchase of environmentally friendly and energy-efficient road transport vehicles, 2011 48/2011. (III. 30.) Korm. rendelet a környezetkímélő és energiahatékony közúti járművek beszerzésének előmozdításáról	National Legislation transposing Directive	Additional	HU

IE

Statutory Instrument no. 339 of 2011. European Communities (clean and Energy-Efficient Road Transport Vehicles (Regulations 2011.	National Legislation transposing Directive	Additional	IE

IT

Implementation of the directive 2009/33/CE on the promotion of clean and energy-efficient road transport vehicles, 2011 Attuazione della direttiva 2009/33/CE relativa alla promozione di veicoli a ridotto impatto ambientale e a basso consumo energetico nel trasporto su strada, 2011	National Legislation transposing Directive	Additional	IT
Action Plan For The Environmental Sustainability of Consumption in the Public Administration Sector	Member State procurement guidelines/ criteria	Additional	IT
n. 3553: Measure for the realization of infrastructure aimed at assisting the broad introduction of EVs Piano Nazionale Infrastrutturale per la Ricarica dei veicoli alimentati ad energia Elettrica, 2012	National Legislation transposing Directive	Additional	IT
Urgent measures for the growth of the country, 2012 Legge 7 agosto 2012, n. 134, Conversione in legge, con modificazioni, del decreto-legge 22 giugno 2012, n. 83, recante Misure urgenti per la crescita del Paese (Gazzetta Ufficiale n. 187 dell'11 agosto 2012 - Suppl. Ordinario n. 171), Art. 17 (Piano nazionale infrastrutturale per la ricarica dei veicoli alimentati ad energia elettrica)	National Legislation transposing Directive	Additional	IT

LT

Order of the Minister of Transport and Communications No. 3-100 on the list of requirements for energy efficiency and environmental protection when purchasing road vehicles and cases in which these requirements are to be applied, 2011 Dėl energijos vartojimo efektyvumo ir aplinkos apsaugos reikalavimų, taikomų įsigyjant kelių transporto priemones, nustatymo ir atvejų, kada juos privaloma taikyti, tvarkos aprašo patvirtinimo, 2011 m. vasario 21 d. Nr. 3-100, 2011	National Legislation transposing Directive	Additional	LT

LU

Grand Ducal Regulation of 17th June 2011 on the promotion of clean road transport vehicles and energy.	National Legislation transposing Directive	Additional	LU

MT

Financial Administration and Audit Act. LN. 175 of 2011. Cleaner and more energy efficient road transport regulations 2011	National Legislation transposing Directive	Additional	MT

NL

Promotion of the purchase of clean and energy efficient vehicles, 2011 Regeling van de Staatssecretaris van Infrastructuur en Milieu van 2011, houdende regels ter bevordering van de aanschaf van schone en energiezuinige wegvoertuigen (Regeling bevordering aankoop schone en energiezuinige wegvoertuigen)	National Legislation transposing Directive	Additional	NL
Netherlands PIANOo sustainable public procurement scheme	Member State procurement guidelines/ criteria	Additional	NL
Voluntary agreement among Dutch Regions to only procure zero-emission buses as of 2025[39]	Electric/ Low emission vehicle incentive scheme	Additional	NL

PL

[39] https://www.government.nl/latest/news/2016/04/15/dutch-public-transport-switches-to-100-percent-emissions-free-buses

Law on Public Transport, 2010 Ustawa o publicznym transporcie zbiorowym, 2010	National Legislation transposing Directive	Additional	PL

PT

Ministry of Transport and Public Works, Transport and Communications Decree-Law no. 140/2010 promotion of clean and energy efficient road transport, 2010 Estabelece o regime jurídico relativo à promoção de veículos de transporte rodoviário não poluentes e energeticamente eficientes, no âmbito da Estratégia Nacional para a Energia 2020 e, transpõe a Directiva n.º 2009/33/CE (EUR-Lex), do Parlamento Europeu e do Conselho, de 23 de Abri, 2010	National Legislation transposing Directive	Additional	PT

RO

Act on promotion of clean and energy-efficient road transport vehicles, 2011 Ordonanţă de Urgenţă Nr. 40 din 20 aprilie 2011 privind promovarea vehiculelor de transport rutier nepoluante şi eficiente din punct de vedere energetic, 2011	National Legislation transposing Directive	Additional	RO
Program Guide on Greenhouse Gas Emissions Reduction in Transport by Promoting Clean and Energy-Efficient Road Transport Vehicles ORDIN Nr. 955/2016 din 20 mai 2016 pentru aprobarea Ghidului de finanţare a Programului privind reducerea emisiilor de gaze cu efect de seră în transporturi, prin promovarea vehiculelor de transport rutier nepoluante şi eficiente din punct de vedere energetic	National Legislation transposing Directive	Additional	RO

SE

Legislation regarding the environmental requirements for the procurement of cars and certain public transport services (SFS 2011:846) Lag (2011:846) om miljökrav vid upphandling av bilar och vissa kollektivtrafiktjänster	National Legislation transposing Directive	Additional	SE
Swedish Public Procurement Act, 2011	National Legislation transposing Directive	Additional	SE
Public procurement criteria's formalised by National Procurement Agency	National Legislation transposing Directive	Additional	SE

Ordinance concerning environmental and road safety requirements for administrative authorities cars and journeys by car, 2009 Förordning (2009:1) om miljö- och trafiksäkerhetskrav för myndigheters bilar och bilresor	National Legislation transposing Directive	Additional	SE
Swedish Government subsidy for clean buses	National Legislation transposing Directive	Additional	SE

SI

Decree on Green Public Procurement, 2011 Uredba o zelenem javnem naročanju, 2011	National Legislation transposing Directive	Additional	SI

SK

Act 158/2011 On the promotion of energy-saving and environmentally-friendly motor vehicles and on the amendment of other acts, 2011 Zákon z 19. mája 2011 o podpore energeticky a environmentálne úsporných motorových vozidiel a o zmene a doplnení niektorých zákono,2011	National Legislation transposing Directive	Additional	SK

UK

The Cleaner Road Transport Vehicles Regulation 2011. Statutory Instrument (SI): 2011 No. 1631.	National Legislation transposing Directive	Additional	UK
Official Government Buying Standards (GBS) for cars, vans, buses, trucks: engine requirements and emissions standards	Member State procurement guidelines/ criteria	Additional	UK
Low Carbon Vehicle Public Procurement Programme	Electric/ Low emission vehicle incentive scheme	Additional	UK

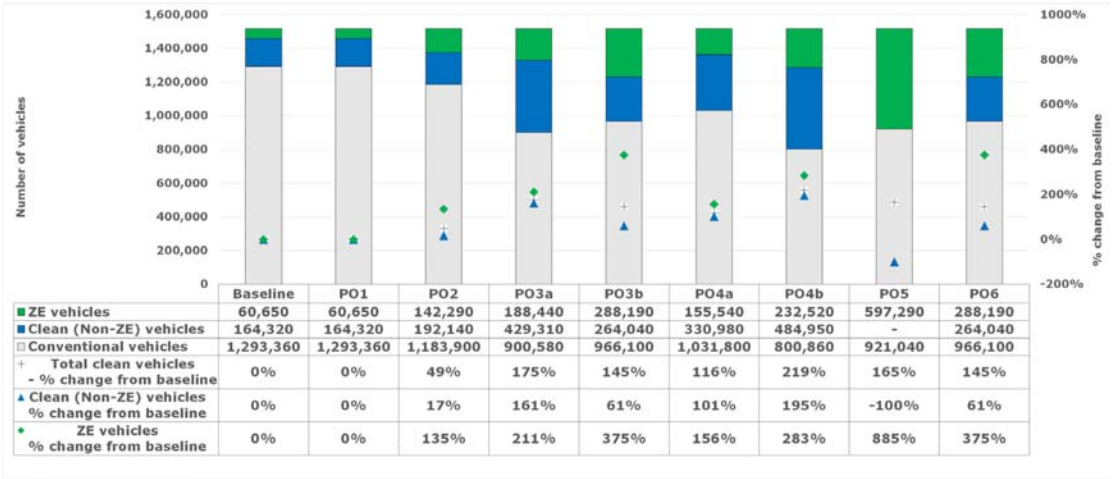
Example of city initiatives relevant for the CVD

London municipal vehicles policy An Ultra Low Emission Vehicle Delivery Plan for London	City procurement guidelines/ criteria	Additional	UK
Amsterdam municipal vehicles policy Sustainable Amsterdam, Agenda for renewable energy, clean air, a circular economy and a climate-resilient city	City procurement guidelines/ criteria	Additional	NL
Hamburg "Hamburg Climate Plan"	City procurement guidelines/ criteria	Additional	DE
Copenhagen municipal vehicles policy	City procurement guidelines/ criteria	Additional	DK
Paris Bus2025 strategy	City procurement guidelines/ criteria	Additional	FR
Clean Vehicles in Stockholm programme	City procurement guidelines/ criteria	Additional	SE

17. OVERVIEW OF RESULTS FOR VEHICLE CATEGORIES

17.1. Passenger cars

Table 17.1: Passenger cars procured by type (conventional, clean non-zero emissions and zero emissions) under the proposed policy options during the period 2020-2035 - number and % change from baseline

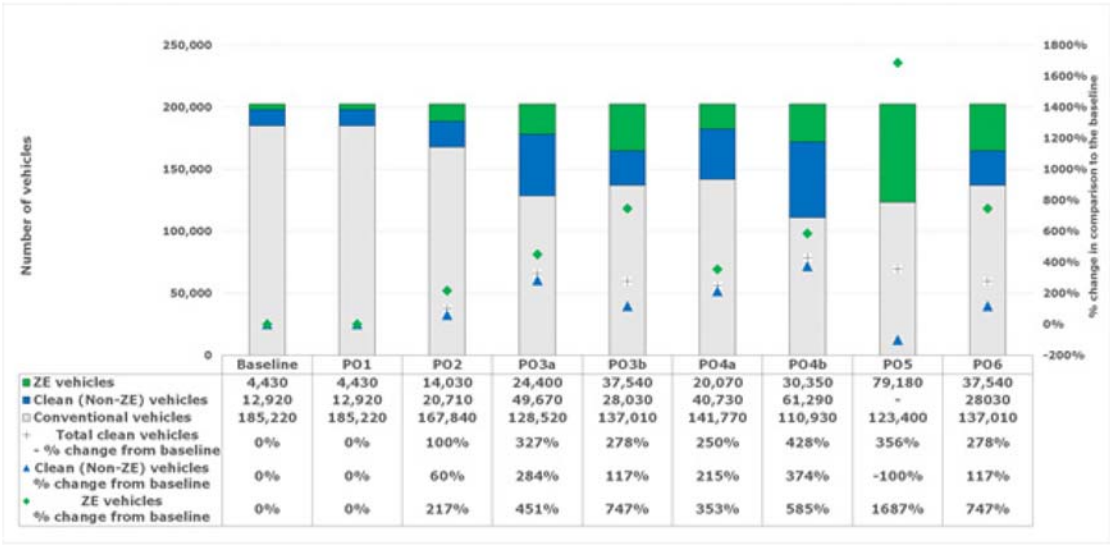


	Baseline	PO1	PO2	PO3a	PO3b	PO4a	PO4b	PO5	PO6
ZE vehicles	60,650	60,650	142,290	188,440	288,190	155,540	232,520	597,290	288,190
Clean (Non-ZE) vehicles	164,320	164,320	192,140	429,310	264,040	330,980	484,950	-	264,040
Conventional vehicles	1,293,360	1,293,360	1,183,900	900,580	966,100	1,031,800	800,860	921,040	966,100
Total clean vehicles - % change from baseline	0%	0%	49%	175%	145%	116%	219%	165%	145%
Clean (Non-ZE) vehicles % change from baseline	0%	0%	17%	161%	61%	101%	195%	-100%	61%
ZE vehicles % change from baseline	0%	0%	135%	211%	375%	156%	283%	885%	375%

Source: *Ricardo (2017) Support Study to the Impact Assessment of the Clean Vehicles Directive*

17.2. Vans

Figure 17.2: Vans procured by type (conventional, clean non-zero emissions and zero emissions) under the proposed policy options during the period 2020-2035 - number and % change from baseline

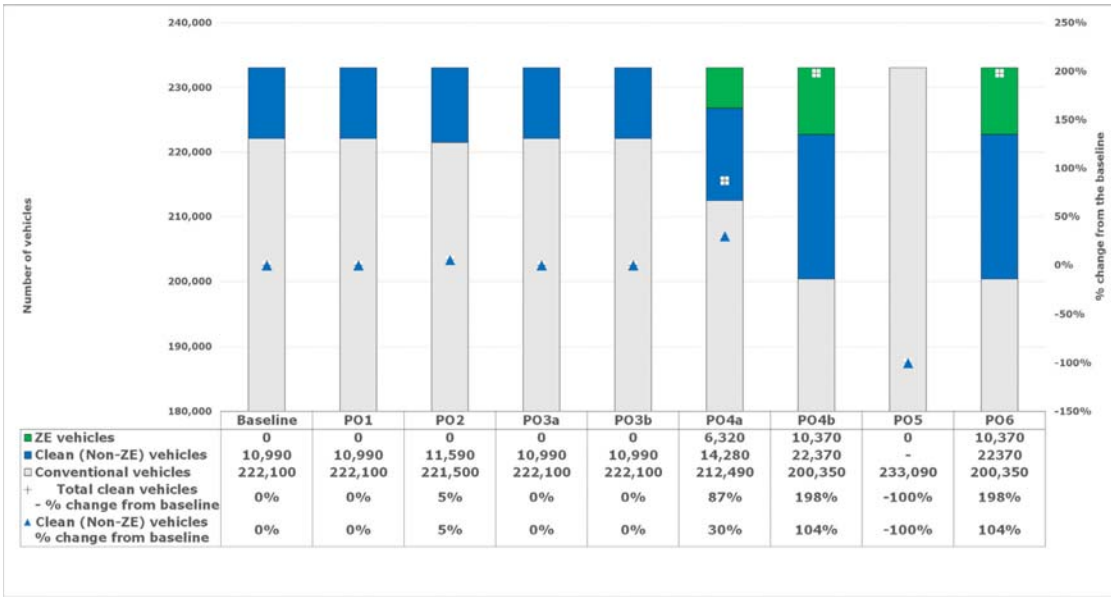


	Baseline	PO1	PO2	PO3a	PO3b	PO4a	PO4b	PO5	PO6
ZE vehicles	4,430	4,430	14,030	24,400	37,540	20,070	30,350	79,180	37,540
Clean (Non-ZE) vehicles	12,920	12,920	20,710	49,670	28,030	40,730	61,290	-	28030
Conventional vehicles	185,220	185,220	167,840	128,520	137,010	141,770	110,930	123,400	137,010
Total clean vehicles - % change from baseline	0%	0%	100%	327%	278%	250%	428%	356%	278%
Clean (Non-ZE) vehicles % change from baseline	0%	0%	60%	284%	117%	215%	374%	-100%	117%
ZE vehicles % change from baseline	0%	0%	217%	451%	747%	353%	585%	1687%	747%

Source: *Ricardo (2017) Support Study to the Impact Assessment of the Clean Vehicles Directive*

17.3. Rigid trucks

Figure 9.3 Rigid trucks procured by type (conventional, clean non-zero emissions and zero emissions) under the proposed policy options during the period 2020-2035 - number and % change from baseline



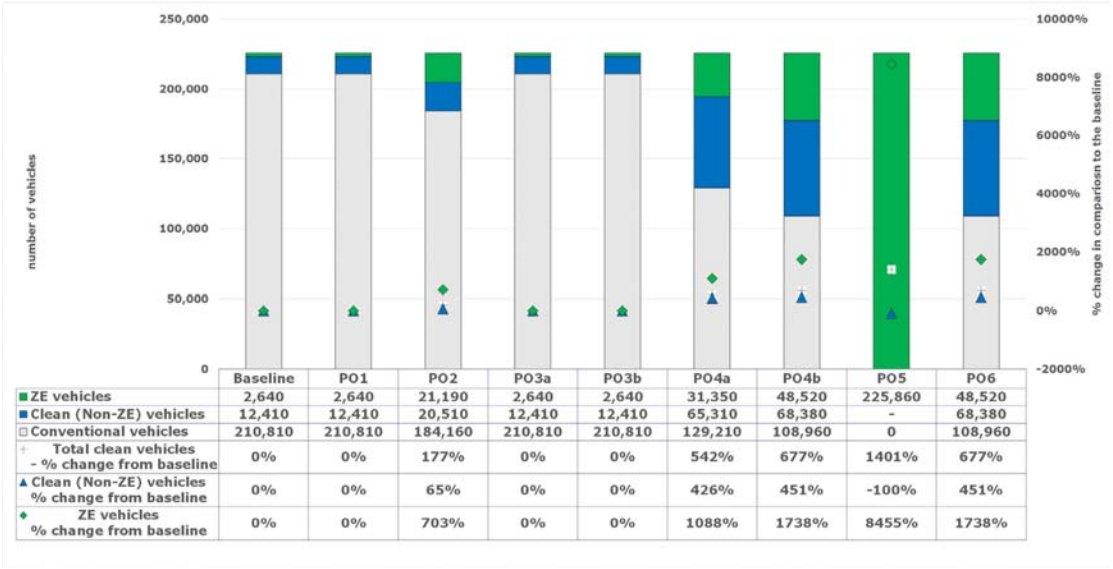
	Baseline	PO1	PO2	PO3a	PO3b	PO4a	PO4b	PO5	PO6
ZE vehicles	0	0	0	0	0	6,320	10,370	0	10,370
Clean (Non-ZE) vehicles	10,990	10,990	11,590	10,990	10,990	14,280	22,370	-	22370
Conventional vehicles	222,100	222,100	221,500	222,100	222,100	212,490	200,350	233,090	200,350
Total clean vehicles - % change from baseline	0%	0%	5%	0%	0%	87%	198%	-100%	198%
Clean (Non-ZE) vehicles % change from baseline	0%	0%	5%	0%	0%	30%	104%	-100%	104%

Note: No % change from baseline is calculated for ZE vehicles in the case of PO4a and PO4b, given that these were zero (0) under the baseline

Source: *Ricardo (2017) Support Study to the Impact Assessment of the Clean Vehicles Directive*

17.4. Buses

Figure 17.4: Buses procured by type (conventional, clean non-zero emissions and zero emissions) under the proposed policy options during the period 2020-2035 - number and % change from baseline – EU Reference scenario baseline



	Baseline	PO1	PO2	PO3a	PO3b	PO4a	PO4b	PO5	PO6
ZE vehicles	2,640	2,640	21,190	2,640	2,640	31,350	48,520	225,860	48,520
Clean (Non-ZE) vehicles	12,410	12,410	20,510	12,410	12,410	65,310	68,380	-	68,380
Conventional vehicles	210,810	210,810	184,160	210,810	210,810	129,210	108,960	0	108,960
Total clean vehicles - % change from baseline	0%	0%	177%	0%	0%	542%	677%	1401%	677%
Clean (Non-ZE) vehicles % change from baseline	0%	0%	65%	0%	0%	426%	451%	-100%	451%
ZE vehicles % change from baseline	0%	0%	703%	0%	0%	1088%	1738%	8455%	1738%

Source: *Ricardo (2017) Support Study to the Impact Assessment of the Clean Vehicles Directive*

18. TERRITORIAL IMPACT ASSESSMENT REPORT

This territorial impact assesement report is the outcome of an expert workshop organised by Directorate General of Regional and Urban Policy (DG REGIO) in collaboration with Directorate General for Mobility and Transport (DG MOVE) within the framework of the Better Regulation, applying tool No. 29 from the Better Regulation toolbox, in particular the TIA tool of the ESPON 2020 Cooperation Programme, partly financed by the European Regional Development Fund.[40]

18.1. Introduction

18.1.1. The Directive and options for its adaptation[41]

The European Commission (DG MOVE) in the last quarter of 2017 plans to present a proposal for the revision of Directive 2009/33/EC on the promotion of clean and energy efficient road transport vehicles (known as the "Clean Vehicles Directive"). This is in line with the European Commission's Energy Union package presented on 25 February 2015, which foresees actions on further decarbonisation of road transport in line with the 2030 climate and energy goals.

The transport sector, and particularly road transport, still needs to substantially reduce its greenhouse gas emissions in view of long-term EU climate and energy policy objectives. The EU has set itself the ambitious objective that greenhouse gas emissions from transport will need to be at least 60% percent lower than in 1990 and on a firm path towards zero.

The Clean Vehicles Directive (CVD) aims at incentivising different contracting authorities, entities and operators (subject to the EU public procurement directives and the public service regulation) to consider life-time energy and environmental impacts when they purchase road transport vehicles. By including energy- and environmental impacts (based on an operational tank-to-wheel cost and the possible monetisation of external effects of vehicle use) the legislator intended to counter-weigh the focus on sole purchase cost with a view to stimulate the market for cleaner (low- and zero-emission) vehicles and finally to support innovation and competiveness of the transport sector and reduce CO_2 and air pollutant emissions.

The 2015 REFIT evaluation[42] concluded that the Directive is relevant, but in its current format not effective and not efficient. Its impact on the market uptake of clean vehicles has been low, due to different shortcomings in the current format of the Directive, including limitations in scope, lack of clarity of purchase requirements and a complex methodology to be applied for the monetisation, which in some cases can also counteract the procurement of cleaner vehicles, as the methodology is giving more weight to fuel consumption and energy efficiency compared to pollutant emissions.

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40 The ESPON TIA Tool is designed to support the quantitative assessment of potential territorial impacts according to the Better Regulation guidelines. It is an interactive web application that can be used to support policy makers and practitioners with identifying, ex-ante, potential territorial impacts of new EU Legislations, Policies and Directives (LPDs). This report documents results of the territorial impact assessment expert workshop about the revision of the Directive 2009/33/EC on the promotion of clean and energy efficient road transport vehicles (known as the "Clean Vehicles Directive"). It serves for information purposes only. This report and the maps represent views and experiences of the participants of the workshop. It is for decision support only and does not necessarily reflect the opinion of the members of the ESPON 2020 Monitoring Committee as well as DG REGIO and DG MOVE. The ESPON EGTC is the Single Beneficiary of the ESPON 2020 Cooperation Programme. The Single Operation within the programme is implemented by the ESPON EGTC and co-financed by the European Regional Development Fund, the EU Member States and the Partner States, Iceland, Liechtenstein, Norway and Switzerland. The TIA report has been written by Erich Dallhammer and Bernd Schuh (ÖIR GmbH), Zintis Hermansons, ESPON EGTC and Eleftherios Stavropoulos, DG REGIO

41 The text of this chapter is based on the background paper for the TIA Workshop "Revision of Directive 2009/33/EC on Clean and Energy-efficient Road Transport Vehicles – Clean Vehicles Directive (CVD)" developed by the European Commission DG for Mobility and Transport and DG for Regional and Urban Policy.

42 European Commission, Regulatory Fitness and Performance Programme REFIT and the 10 Priorities of the Commission, Accompanying the Commission Work Programme 2017, SWD(2016)400

18.1.2. The approach of the ESPON TIA quick check

The concept of territorial impact assessment (TIA) aims at showing the regional differentiation of the impact of EU policies. The ESPON TIA Tool[43] is an interactive web application that can be used to support policy makers and practitioners with identifying, ex-ante, potential territorial impacts of new EU Legislations, Policies and Directives (LPDs). The "ESPON TIA quick check" approach combines a workshop setting for identifying systemic relations between a policy and its territorial consequences with a set of indicators describing the sensitivity of European regions. It helps to steer an expert discussion about the potential territorial effects of an EU policy proposal by checking all relevant indicators in a workshop setting. The results of the guided expert discussion are judgments about the potential territorial impact of an EU policy considering different thematic fields (economy, society, environment, governance) for a range of indicators. These results are fed into the ESPON TIA Quick Check web tool.

The web tool translates the combination of the expert judgments on exposure with the different sensitivity of regions into maps showing the potential territorial impact of EU policy on NUTS3 level. These maps serve as starting point for the further discussion of different impacts of a concrete EU policy on different regions. Consequently, the experts participating in the workshop provide an important input for this quick check on potential territorial effects of an EU policy proposal.

The workshop on the revision of Directive 2009/33/EC on clean and energy-efficient road transport vehicles – Clean Vehicles Directive (CVD) was held on 11 May 2017 in Brussels and brought together 20 experts representing different stakeholders, as e.g. the Automobile Manufacturers' Association, academic experts, NGOs and environmental institutions, local and regional authorities and European institutions such as SEC GEN, DG REGIO, DG ENV, DG MOVE, the CoR and ESPON EGTC.

Two moderators from the ÖIR, provided by ESPON, prepared and guided the workshop and handled the ESPON TIA tool.

Figure 18.1 Workshop Discussion

Source: Territorial impact assessment expert workshop, Brussels, 5 April 2017 © ÖIR

[43] https://www.espon.eu/main/Menu_ToolsandMaps/TIA/

18.2. The ESPON TIA Quick Check workshop – identifying potential effects on the territory

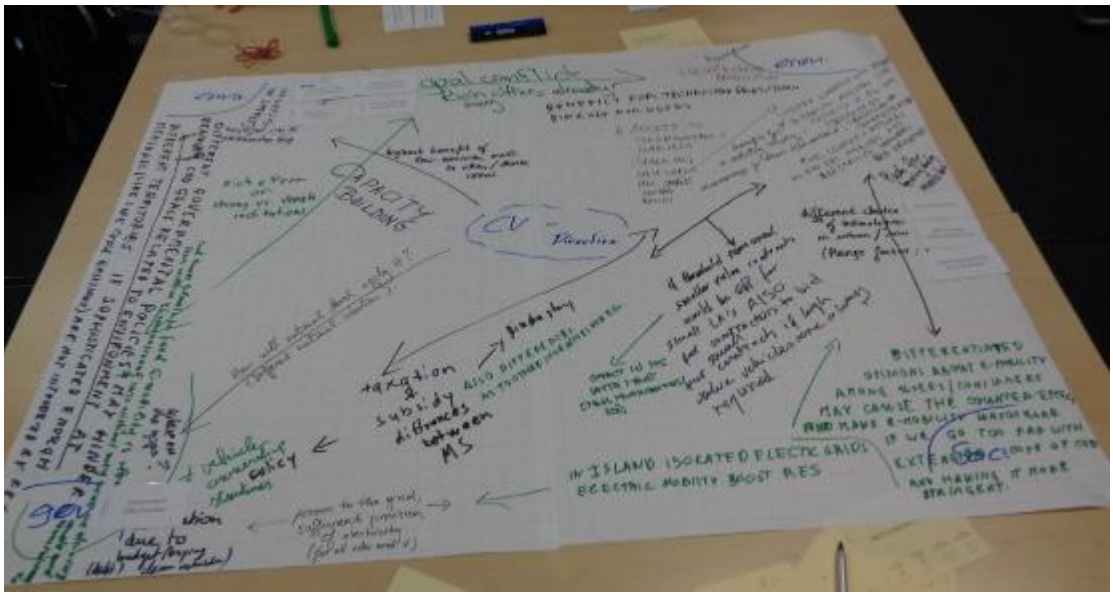
18.2.1. Identifying the potential territorial effects considering economy, society, environment and governance aspects – drafting a conceptual model

In the first step of the TIA workshop the participating experts discussed about the potential effects of the revision of the Clean Vehicles Directive on the development of regions. They agreed to focus their discussion about effects of the Clean Vehicles Directive on one core element the Directive is touching: Public authorities purchasing vehicles with certain technical standards to ensure that the vehicles purchased are "clean". Compared to the existing Directive the following scenario was assessed:

- The procurement threshold will be removed, thus ensuring that all vehicles purchased by public authorities are covered.
- The scope of the Directive will be extended to vehicles which are rented, leased, hired or purchased by public authorities

This discussion revealed potential territorial impacts of the revision of the Clean Vehicles Directive considering economy, society, environment and governance related indicators. The participants identified potential linkages between the revisions of the Directive and the effect on territories including interdependencies and feed-back-loops between different effects (see figure below).

Figure 18.2 Workshop findings: Conceptual model of the potential territorial effects from the revision of Directive 2009/33/EC on clean and energy-efficient road transport vehicles – Clean Vehicles Directive (CVD)



Source: Territorial impact assessment expert workshop, Brussels, 11 May 2017

During the workshop session the following issues were discussed by the experts:

Environment

- A more effective implementation of the Clean Vehicles Directive will lead to a reduction of CO_2 emissions. However, if the standards still allow fossil fuelled vehicles being labelled as clean vehicles this could also contribute to an increase in CO_2 emissions.

- However, the higher purchase cost associated with clean vehicles could lead to social inequalities, if ambition was overstretched. A potential increase of costs for means of public transport due to higher prices of "clean" technology could lead to a gap between "richer" municipalities and regions, which could afford clean vehicles, and "poorer" municipalities and regions who could not. Consequently, the "poorer" municipalities and regions would invest in public transport run by conventional fossil fuel effecting higher pollution (PM10).

Economy

- In the automotive industry electric car providers will benefit, thus it will have a positive impact on economic growth and employment in this sector. However, there will be losses in conventional transport vehicles production.

- The requirement for having clean vehicles in public administrations can push innovation especially in heavy transport and busses.

- Regions producing conventional transport vehicles and/or depending on fossil energy production would face less demand and a reduced economic production.

Society

- When there is a higher share of clean vehicles in public transport, it is expected that more people will get used to clean vehicles e.g. when using public transport. This could generate a positive effect on the suitability for the daily use of clean vehicles.

Governance

- On the one hand the revision of the CVD will facilitate establishing a better guidance to regions on how to improve procurement. Especially regions with an existing high potential to manage such challenges is anticipated that will gain a positive effect on government effectiveness.

- On the other hand the procurement procedures following the requirements of the CVD could lead to an increase in complexity. Consequently, the procurement costs and administration costs would increase. Here, it will depend on the final design of the revised Directive to minimise the impacts on administrative burden.

18.2.2. Identifying the types of region affected

ESPON TIA tool provides several regional typologies[44] for analysis taking under consideration the types of territories mentioned in the Lisbon Treaty §174: urban/metropolitan regions; rural regions; sparsely populated regions; regions in industrial transition; cross-border regions; mountainous regions; islands and coastal regions. The experts agreed that in general all regions would be affected by the modification of the Clean Vehicles Directive.

18.2.3. Picturing the potential territorial effects through indicators

In order to assess the potential effects pictured in the conceptual model suitable indicators need to be selected related to the parameters that the experts discussed in the fields of economy, environment,

[44] https://www.espon.eu/main/Menu_ToolsandMaps/ESPONTypologies/index.html

society and governance. The availability of data for all NUTS 3 regions is posing certain limitations to indicators that can be used. From the available indicators that the ESPON TIA Quick Check web tool offers the experts chose the following indicators to describe the identified effects although in some cases these indicators where not their first choice. For that reason several experts chose not to vote for several indicators as they did not deem them as relevant:

18.2.4. Selecting indicators

Picturing potential territorial impacts considering environmental related indicators

- Greenhouse gas emissions CO_2 (tonnes per capita)
- Emissions of NO_x (tonnes per capita)
- Pollutants in air (PM10)

Picturing potential territorial impacts considering economic related Indicators

- R&D Climate (R&D expenditure)
- R&D Employment
- Patent applications/mio inhabitants

Picturing potential territorial impacts considering societal related indicators

93. Number of people exposed to noise

Picturing potential territorial impacts considering governance related indicators -

- Government effectiveness

18.2.5. Judging the intensity of the potential effects

The participants of the workshop were asked to estimate the potential effects deriving from the modification of the Clean Vehicles Directive. They judged the potential effect on the territorial welfare along the following scores:

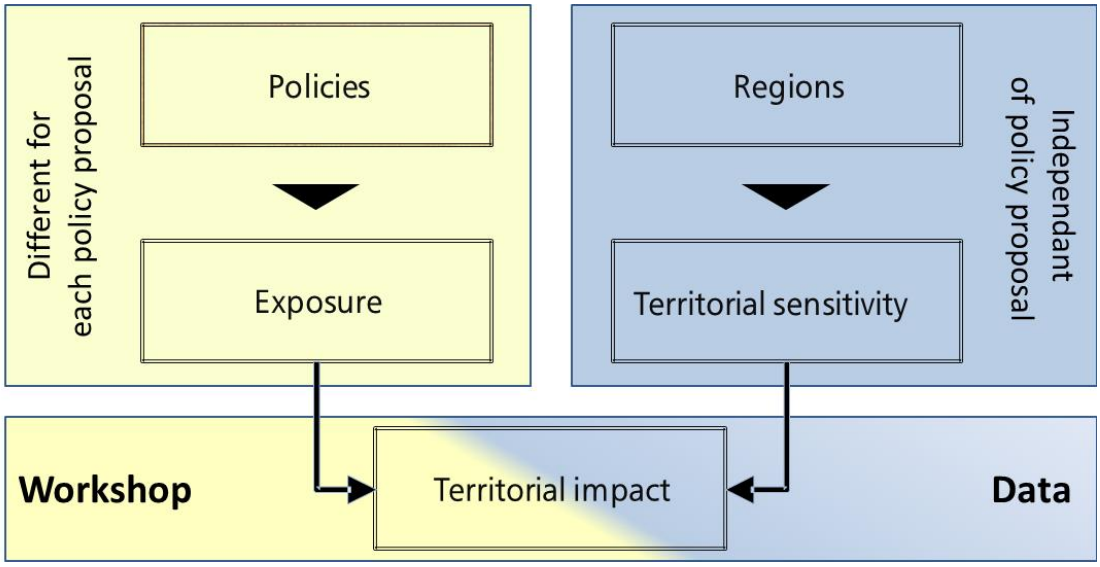
- ++ strong advantageous effect on territorial welfare (strong increase)
- \+ weak advantageous effect on territorial welfare (increase)
- o no effect/unknown effect/effect cannot be specified
- \- weak disadvantageous effect on territorial welfare (decrease)
- -- strong disadvantageous effect on territorial welfare (strong decrease)

18.2.6. Calculating the potential "regional impact" – Combining the expert judgement with the regional sensitivity

The ESPON TIA Quick Check combines the expert judgement on the potential effect of the revised CVD (exposure) with indicators picturing the sensitivity of regions resulting in maps showing a territorial differentiated impact. This approach is based on the vulnerability concept developed by the

Intergovernmental Panel on Climate Change (IPCC). In this case, the effects deriving from a particular policy measure (exposure) are combined with the characteristics of a region (territorial sensitivity) to produce potential territorial impacts (cf. following figure).

Figure 18.3: Exposure x territorial sensitivity = territorial impact



Source: ÖIR, 2015.

- "Territorial Sensitivity" describes the baseline situation of the region according to its ability to cope with external effects. It is a characteristic of a region that can be described by different indicators independently of the topic analysed.
- "Exposure" describes the intensity of the potential effect caused by the revision of CVD on a specific indicator. Exposure illustrates the experts' judgement, i.e. the main findings of the expert discussion at the TIA workshop.

18.2.7. Mapping the potential territorial impact

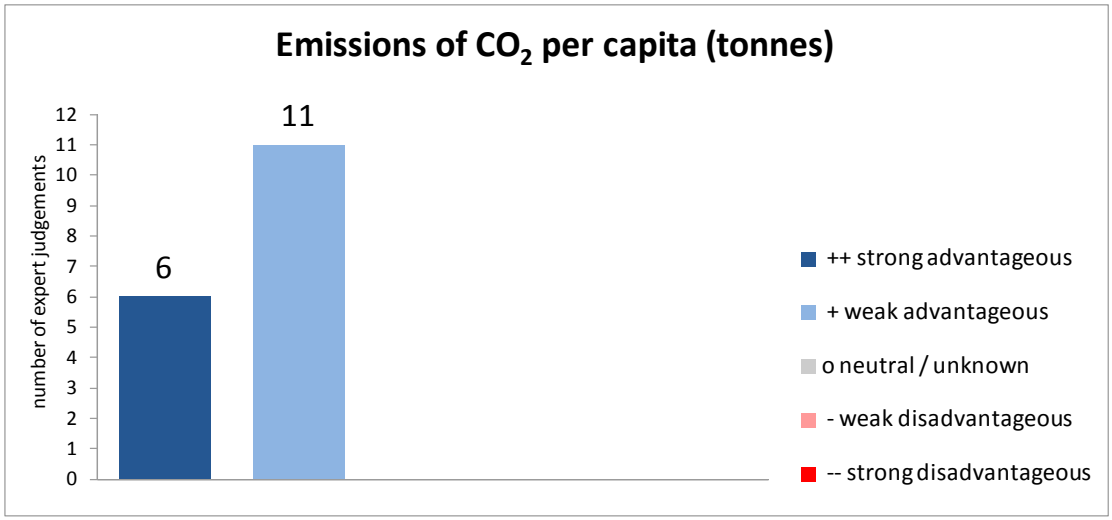
The result of the territorial impact assessment is presented in maps. The maps displayed below show potential territorial impacts based on a combination of the expert judgement on the exposure with the territorial sensitivity of a region, described by an indicator on NUTS3 level. Whereas expert judgement is a qualitative judgement (i.e strong advantageous effect on territorial welfare/weak advantageous effect/no effect/weak disadvantageous effect/strong disadvantageous effect), the sensitivity is a quantitative indicator. (The detailed description is provided in the annex.).

18.3. Results of the TIA quick check: Potential territorial impact considering environmental aspects

18.3.1. The potential territorial impact in relation on greenhouse gas emissions (CO_2) indicator

The experts estimated that the revision of the Clean Vehicles Directive will contribute to reducing CO_2 emissions. Eleven experts judged the effect weakly advantageous, six judged it as strongly advantageous[45].

Figure 18.4Workshop findings: Expert judgement: Effect of the modification of the Clean Vehicles Directive



Source: Territorial impact assessment expert workshop, Brussels, 11 May 2017

The indicator picturing the sensitivity of a region according to greenhouse gas emissions is measured by the indicator "CO_2 emissions in tonnes/year per capita". It is assumed that regions with higher Emissions of CO_2 per capita (tonnes) are more sensitive to directives aimed at its reduction.

The following map shows the potential territorial impact from the revision of the CVD based on CO_2 emissions. It combines the expert judgement of a weakly advantageous effect with the given sensitivity of regions. It shows that the effect of the revision of the CVD is quite equally distributed throughout all European regions. More than 99% could gain a minor positive impact.

[45] 5 out of the 22 experts did not consider this indicator as relevant