



**Evaluation of the impact of possible new  
measures concerning the type approval of  
agricultural vehicles**

by M Dodd

CPR 349

ENTR/05/17.01

**CLIENT PROJECT REPORT**





**CLIENT PROJECT REPORT CPR 349**

**Evaluation of the impact of possible new measures concerning the type approval of agricultural vehicles**

by M Dodd (TRL)

**Prepared for: Project Record: ENTR/05/17.01**

**Evaluation of the impact of possible new measures concerning the type approval of agricultural vehicles**

**Client: European Commission, DG Enterprise and Industry  
(Pieter Hoekstra)**

Copyright Transport Research Laboratory April 2009

This Client Report has been prepared for European Commission. It is unpublished and should not be referred to in any other document or publication, or disseminated (electronically or otherwise) outside European Commission without the issue of a TRL PPR number.

The views expressed are those of the author(s) and not necessarily those of European Commission.

	<b>Name</b>	<b>Date Approved</b>
<b>Project Manager</b>	Will Donaldson	17/04/2009
<b>Technical Referee</b>	Iain Knight	17/04/2009



# Contents

<b>Executive summary</b>	<b>vii</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 Literature review</b>	<b>2</b>
2.1 CARS 21 initiative	2
2.2 Directive 2003/37/EC	2
2.3 EC Consultation	4
2.4 Cost of implementing Regulations	4
<b>3 Stakeholder consultation</b>	<b>6</b>
3.1 Introduction	6
3.2 Stakeholder questionnaire	6
3.3 Stakeholder workshop	6
<b>4 Cost benefit analysis</b>	<b>7</b>
4.1 Option A: Replacing current directives with a “split level approach” legislation	7
4.2 Option B – Reference to existing standards	11
4.3 Option C - Completion of the internal market	14
4.4 Combination of policy options	20
<b>5 Discussion</b>	<b>22</b>
<b>6 Conclusions</b>	<b>25</b>
<b>Acknowledgements</b>	<b>26</b>
<b>References</b>	<b>26</b>
<b>Appendix A Stakeholder questionnaire</b>	<b>27</b>
<b>Appendix B Questionnaire responses</b>	<b>28</b>
<b>Appendix C Workshop Meeting Report</b>	<b>36</b>
<b>Appendix D Impact Assessment</b>	<b>38</b>



## Executive summary

Type approval requirements for agricultural and forestry vehicles, trailers and towed machinery (Vehicle Categories T, C, R and S, hereafter referred to generally as agricultural vehicles) are currently contained within Directive 2003/37/EC and the series of separate directives that are referenced by 2003/37/EC and contain the detailed technical requirements. This framework became mandatory on the 1<sup>st</sup> July 2005 for new types of tractor in categories T1, T2 and T3 and will become mandatory for all new T1, T2 and T3 tractors on the 1<sup>st</sup> July 2009. For the remaining types of agricultural vehicles (category T4, T5, C, R and S) the requirements are optional or, in some cases, incomplete. For example, there are no technical requirements for the braking performance of category R and S vehicles.

The European Commission (EC) would like to simplify the legislation on agricultural vehicles and replace the 24 present directives by a basic act and a limited number of implementing acts. In addition, the Commission propose to extend the EU type-approval system for all vehicle categories specified in Directive 2003/37/EC in order to allow completion of the internal market.

The Commission is required to carry out an impact assessment when proposing significant changes to legislation and this report describes the findings of a cost benefit analysis to identify the likely economic, social and environmental effects that would be expected if a range of different policy options were to be implemented. Specifically the effects were evaluated for the following potential regulatory actions:

- Option A - Replacing current directives with a “split level approach” legislation
- Option B - Replace existing technical provisions with reference to other standards
- Option C - Completion of the internal market for T4, T5, C, R & S

This impact assessment only considers the costs and benefits to individual Member States and to industry organisation. The Commission has indicated that its own costs to implement the proposed changes and the cost to make regular amendments to existing directives will be dealt with by the Commission in their own impact assessment report.

The cost benefit analysis found that:

- Ten years after implementation, the option to replace the current type approval framework with “split level approach” legislation was introduced (Option A) was likely to produce a net benefit to society of between €0.2m and €7.8m.
- The benefits of option B were found to be relatively small in monetary terms and the overall benefit was heavily influenced by the initial investment cost. The estimated benefits suggest that it is more likely to result in a small overall cost to society although the results were uncertain.
- Option C, as proposed, was likely to have a benefit to cost ratio substantially lower than 1 such that the costs outweighed the benefits. However, much could depend on the details of the implementation and it is possible that a positive outcome could be achieved if the system were optional at least for some of the categories considered.
- The effect of implementing more than one of the three options at the same time showed that combining Option A and Option B would likely result in an overall positive effect. However, the net costs from the inclusion of Option C, as proposed, was found to outweigh any potential net benefit from Option A and Option B.

The confidence in the estimates could be improved if additional responses and data were available from stakeholders. The lack of data has meant that some of the estimates made in this impact assessment have relied heavily on assumptions made by TRL or on anecdotal evidence from stakeholders.





# 1 Introduction

Type approval requirements for agricultural and forestry vehicles, trailers and towed machinery (Vehicle Categories T, C, R and S, hereafter referred to generally as agricultural vehicles) are currently contained within Directive 2003/37/EC and the series of separate directives that are referenced by 2003/37/EC and contain the detailed technical requirements. This framework became mandatory on the 1<sup>st</sup> July 2005 for new types of tractor in categories T1, T2 and T3 and will become mandatory for all new T1, T2 and T3 tractors on the 1<sup>st</sup> July 2009. For the remaining types of agricultural vehicles (category T4, T5, C, R and S) the requirements are optional.

In recent times agricultural tractors, and the trailers and equipment they tow have typically increased in size, weight, and technical complexity and diversity. They are also now capable of much greater speeds. Some of the separate technical directives required by Directive 2003/37/EC have not yet been fully adapted to this substantial technical progress such that the requirements for some vehicles remain optional and the internal market for these vehicles is incomplete.

Following the CARS 21 initiative, the European Commission (EC) would like to simplify the legislation on agricultural vehicles and replace the 24 present directives by a basic act and a limited number of implementing acts. In addition, the Commission intend to extend the EU type-approval system for all vehicle categories specified in Directive 2003/37/EC in order to allow completion of the internal market.

The Commission is required to carry out an impact assessment when proposing significant changes to legislation and this report describes the findings of a cost benefit analysis to identify the likely economic, social and environmental effects that would be expected if a range of different policy options were to be implemented. Specifically the effects were evaluated for the following potential regulatory actions:

- Option A - Replacing current directives with a "split level approach" legislation
- Option B - Replace existing technical provisions with reference to other standards
- Option C - Completion of the internal market for T4, T5, C, R & S

This impact assessment only considers the costs and benefits to individual Member States and to industry organisations. The Commission has indicated that its own costs to implement the proposed changes and the cost to make regular amendments to existing directives will be dealt with by the Commission in their own impact assessment report.

## 2 Literature review

### 2.1 CARS 21 initiative

The CARS 21 initiative was set up in 2005 to carry out an automotive-related regulatory and policy review to advise the Commission on future policy options<sup>1</sup>. One of the reasons for setting up CARS 21 was the concern expressed by industry that the cumulative cost of Regulation had a negative effect on competitiveness and made vehicles unnecessarily expensive. A dedicated sub-group was set up to scrutinise the regulatory framework and to identify possibilities for withdrawing or simplifying the legislation in force.

The CARS 21 High Level Final Report<sup>2</sup> contained 18 recommendations aimed at increasing the worldwide competitiveness of the EU automotive industry and maximising the benefits for European society and industry through the development of a comprehensive regulatory approach to the automotive sector.

The CARS 21 sub-group concluded that most of the legislation in force should be maintained for the protection of health, safety, consumers and the environment. The group also recommended that 38 directives could be replaced by UNECE Regulations without any loss in the level of safety and environmental protection. The group identified one directive which could be repealed and 25 directives and UNECE Regulations in which self –testing and virtual testing could be introduced so as to reduce regulatory compliance costs for industry by making administrative procedures less costly and time-consuming. The study identified that one of the greatest savings to industry would come from permitting virtual testing to demonstrate compliance with the technical requirements of some directives.

### 2.2 Directive 2003/37/EC

Directive 2003/37/EC contains the type approval requirements for agricultural and forestry vehicles, trailers and towed machinery. A series of separate directives are referenced by 2003/37/EC and contain detailed technical requirements.

This framework became mandatory on the 1<sup>st</sup> July 2005 for new types of tractor in categories T1, T2 and T3 and will become mandatory for all new T1, T2 and T3 tractors on the 1<sup>st</sup> July 2009. For the remaining types of agricultural vehicles (category T4, T5, C, R and S) the requirements are optional.

Part 1 of Chapter B in Annex II of Directive 2003/37/EC lists the different areas of type approval and identifies the separate directives that contain the technical requirements. Parts 2A and 2B of the same Annex, list alternative EC directives and UNECE Regulations that may be applied in place of the corresponding directives listed in Part 1. The alternative EC directives in Part 2A are separate directives relating to motor vehicles and so some of the requirements are more stringent than those in the directives relating to agricultural vehicles. Part 2C of the Annex list standardised OECD codes which may be used in place of the test reports drawn up in compliance with the corresponding separate directives.

Table 1 shows the 14 EC directives which have a UNECE Regulation or OECD Code alternative.

---

<sup>1</sup> <http://ec.europa.eu/enterprise/automotive/pagesbackground/competitiveness/cars21.htm>

<sup>2</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0022:FIN:EN:PDF>

**Table 1: UNECE or OECD alternatives to EC directives relating to agricultural vehicles**

N°	Subject	Base directive & Annexes	UNECE Regulation	OECD Code
1.5.	Audible warning device	74/151/EEC V	R28	
1.6.	Sound level (external)	74/15 1/EEC VI	R51	
4.1.	Field of vision and windscreen wipers	74/347/EEC	R71	
5.1.	Steering	75/321/EEC	R79	
6.1.	Electromagnetic compatibility	75/322/EEC	R10	
7.1.	Braking devices	76/432/EEC	R13	
10.1.	ROPS	77/536/EEC		Code 3
13.1.	Lighting installation	78/933/EEC	R86	
14.1.	Lighting and light signalling devices	79/532/EEC	R3, 7, 6, 4, 1, 8, 20, 98, 19, 38	
16.1.	ROPS (static testing)	79/622/EEC		Code 4
19.1.	Rear-mounted ROPS (narrow-track tractors)	86/298/EEC		Code 7
21.1.	Front-mounted ROPS (narrow-	87/402/EEC		Code 6
22.2.	Glazing	89/173/EEC III	R43	
23.1.	Pollutant emissions	2000/25/EC	R49/96	

Article 9 of Directive 2003/37/EC describes the limits and requirements of vehicles produced in small series. Table 2 shows the maximum number of units that can be registered, offered for sale or put into service each year in each Member State.

**Table 2: Maximum number of units for small scale series.**

Category	Units (for each type)
T	150
C	50
R	75
S	50

Directive 2003/37/EC does not prescribe specific requirements for small series vehicles, but instead it describes how Member States, on an annual basis, are required to send the EC and other Member States a list of EC type-approvals of these vehicles, including information documents and the EC type-approval certificate and all its attachments. The other Member States then have three months to decide if they accept the EC type-approval for vehicles to be registered within their territory and, if so, for how many vehicles.

## 2.3 EC Consultation

Prior to the commencement of this project, the EC launched a public consultation on the outline proposals for new legislation on agricultural vehicles. The individual responses and a summary of the responses are available on the EC website.<sup>3</sup>

The consultation was open for just over two months and the Commission received 19 responses. Nine of these were from Member States governmental organisations, and 10 were from industrial representatives.

The summary document for the consultation reported that the majority of stakeholders supported a split-level approach to the legislative format, where the fundamental requirements are contained in a Mother Regulation decided by co-decision, and the technical requirements are contained and updated in implementing Regulations by comitology.

It was also reported that responses were highly positive about increasing references to international Regulations and standards, and this approach was supported because stakeholders welcomed its simplification effect.

It was reported that both the public and private stakeholders broadly (but not unanimously) supported the mandatory type-approval system at the European level for all agricultural and forestry tractors (categories T & C).

However, for the trailers and interchangeable towed machinery (categories R & S) only half the governmental organisations thought that mandatory type-approval should be applied for these vehicles, with the other administrations reporting that they would prefer type-approval of these vehicles to be optional at the European level, or only mandatory for safety aspects. Most of the manufacturers also supported voluntary harmonisation only.

## 2.4 Cost of implementing Regulations

Library and internet based searches were carried out to try and identify any reports or documentation which quantified the cost to society of changing and implementing new Regulations.

There were very few documents related to this subject and the majority were related to the financial cost of Regulations imposed on financial services industry which were not relevant to this project.

However, one document by the British Chamber of Commerce (BCC, 2008) summarised figures from Regulatory Impact Assessments (RIAs) produced by different UK governmental departments between 1998 and 2007. This includes the following EU Regulations from the Department for Transport.

---

<sup>3</sup> [http://ec.europa.eu/enterprise/automotive/consultation/agricultural\\_vehicles/contributions.htm](http://ec.europa.eu/enterprise/automotive/consultation/agricultural_vehicles/contributions.htm)

**Table 3: Estimated cost to UK businesses from the introduction of EU Regulations.**

Description	RIA date	Regulation introduced	One-off cost (£m)	Recurring cost (£m)
The Vehicle Excise Duty (Reduced Pollution) (Amendment) Regulations 2000 (EU Pollution Directive 98/69/EC)	Dec-01	Jan-01	0	1225
Fuel Quality Directive – Maximum Sulphur content/Review of volatility	Dec-03	Dec-03	0	117
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004	Apr-04	May-04	44	35
The Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) (Amendment) Regulations 2004	Aug-04	Jul-04	0	134
Proposal to Amend The Air Navigation Order 2000	Nov-04	Jan-05	18	0
Directive 2002/15/EC on the working time of persons performing mobile and road transport activities	Mar-05	Mar-05	0	423
The Carriage of Dangerous Goods and the Use of Transportable Pressure Equipment (Amendment) Regulations 2005	Jul-05	Jul-05	39	14
	<b>Average</b>		<b>£14m</b>	<b>£278m</b>

This document did provide some indication about the initial one-off and recurring costs associated with these changes; however, the report acknowledged that whilst half of the RIAs had claimed that the new Regulations provide a benefit to businesses, the consumer and/or the environment, the magnitude of these benefits had only been quantified in a minority of cases.

### 3 Stakeholder consultation

#### 3.1 Introduction

To gather detailed information as efficiently as possible, given the limited timescale of this project, representatives of Member States governmental organisations and industry organisations were contacted and asked to provide data related to this impact assessment. Information was gathered using a questionnaire and an informal workshop.

#### 3.2 Stakeholder questionnaire

Based on the initial research carried out by TRL, a questionnaire was designed to gather information that was not available in published literature. A copy of the questionnaire is included in Appendix A to this report.

The questionnaire was distributed to more than 100 stakeholders including invited attendees to the Working Group for Agricultural Tractors (WGAT) plus additional industry contacts known to TRL. The questionnaire was distributed at the start of October 2008 and responses were received up to the start of December 2008.

A total of 22 responses were received, however only 11 respondents attached a completed questionnaire; the remaining 11 only commented on their availability to attend proposed workshops.

From these 11 responses; nine were from representatives of Member States governmental organisations and two were from industry organisations:

**Table 4: Detailed responses to the questionnaire**

Member States representatives	Industry representatives
Finland	Case New Holland
Greece	CEMA*
Latvia	
Hungary	
Slovenia	
UK	
Romania	
Slovakia	
Austria	
Estonia	

\*: CEMA reported that there was no real consensus on these data, and as such the responses do not represent a common CEMA position

0 to this report summarises the responses that were received to the questionnaire. These responses were used to quantify the magnitude of the costs and benefits associated with the three different impact assessment options described in section 4.

#### 3.3 Stakeholder workshop

At the same time that the questionnaire was distributed TRL also invited Member States representatives and industry representatives to a number of informal workshops. Two

workshops were proposed to take place in October 2008, however due to a lack of availability of stakeholders both of these meetings had to be cancelled.

A stakeholder workshop was held on the afternoon of the 21<sup>st</sup> November 2008. Using the preliminary results of the impact assessment discussions were held with representatives from the European Committee of Associations of Manufacturers of Agricultural Machinery (CEMA), the UK Agricultural Engineers Association (AEA), and the UK Department for Transport (DfT).

At this workshop the preliminary results of the impact assessment were presented by TRL and the representatives provided comment and additional information which was used to strengthen the assessment.

A brief report summarising the discussions that took place at the Stakeholder meeting is included in 0.

## 4 Cost benefit analysis

This section summarises the main findings from the cost benefit analysis. More details on the data, calculations and assumptions used are included in 0 to this report.

In direct response to the Commission's Service Request, TRL considered the following options in this analysis:

- Option A - Replacing current directives with a "split level approach" legislation
- Option B - Replace existing technical provisions with reference to other standards
- Option C - Completion of the internal market for T4, T5, C, R & S

This cost benefit analysis only considers the costs and benefits to individual Member States and to industry organisation. The Commission has indicated that the costs incurred by them to implement the proposed changes, and to make regular amendments to existing directives will be dealt with by the Commission in their own impact assessment report.

### 4.1 Option A: Replacing current directives with a "split level approach" legislation

This option looked at simplifying the current legislative framework for agricultural vehicles by replacing the 24 directives with "split-level" legislation: a Regulation adopted by co-decision and a coherent, limited number of implementing Regulations adopted by Comitology.

Currently whenever a directive is introduced or amended each Member State must transcribe the change into their National Legal Framework. The intention is that the current system would be replaced by a small number of Regulations which will be directly applicable in each Member State thus reducing the administrative effort required by the Member States to implement any changes.

For this option the following scenarios were considered:

1. *Do nothing* - retaining the agricultural vehicle Type Approval in its current form.
2. *Replace the EC Framework with two Regulations* (one by co-decision & one by comitology)
3. *Replace the EC Framework with four Regulations* (one by co-decision & three by comitology [environmental, road safety and work safety])

#### **4.1.1 “Do nothing”**

For this scenario, Directive 2003/37/EC would remain in its current form with all Member States retaining reference to the existing 24 implementing directives.

Stakeholders were asked what their procedure is, within their national legal framework, when one of the current 24 directives is amended. The responses were varied with some needing to prepare technical specifications and others modifying one or two “decrees”.

Each respondent provided an estimate of the staff time required to make the necessary changes as well as an estimated labour rate for the staff that would be involved in the process. Based on this information, along with an estimate for the number of amendments per year, a total estimated annual cost to EU-27 was calculated to be between €29,160 and €2,435,400, with an average of €533,993.

It can be seen that there was a substantial difference between the highest and lowest values provided by the five Member States that responded. It is possible that this variation is because of differences in the way each respondent estimated the costs and effort required or that the costs stated by the respondents are accurate but there is a genuine difference between the costs in each Member State.

The written comments from respondents suggest that there are genuine differences in the effort required to implement changes to directives in each Member States. This means that the true cost is likely to be closer to the average value than either the extreme upper or lower values.

However, only eight Member States responded quantitatively to the questionnaire so it is possible that the costs in these Member States are not fully representative of the whole EU. This could lead to the actual costs varying to some extent from the average value.

#### **4.1.2 *Replace the EC Framework with two Regulations (one by co-decision & one by comitology)***

For this scenario, Directive 2003/37/EC and its 24 implementing directives would be replaced by one “Mother” Regulation adopted by co-decision and one implementing Regulation adopted by Comitology.

If this scenario was selected then there would be an initial administrative investment to Member States to replace the current type approval framework with the two Regulations discussed, followed by a regular annual cost to adapt the new Regulations to technical progress.

Based on the information received from the stakeholder questionnaire, the initial investment cost was estimated to be between €18,225 and €3,653,100, with an average of €909,225. The annual cost was estimated to be between €7,560 and €1,217,700, with an average of €320,153.

#### **4.1.3 *Replace the EC Framework with four Regulations (one by co-decision & three by comitology [environmental, road safety and work safety])***

For this option, the results from the questionnaire showed no significant cost differences from the option to replace the EC Framework with two Regulations (as described in the previous section), therefore the above figures have been used to estimate the one-off investment cost and an annual cost for EU-27 Member States.

At the Stakeholder Workshop on the 21<sup>st</sup> November 2008, industry representatives suggested that there would not be any particular financial benefit in having three implementing Regulations (one each for road safety, work safety and environmental safety issues), instead of a single Regulation containing all three. However, they indicated that it would be preferable to have three implementing Regulations because it would provide a clear, logical structure.



#### 4.1.4 Analysis

The stakeholder responses did not identify any significant difference between the cost to implement and operate two Regulations and four Regulations. Therefore, a comparison has only been made between 'no change' and 'replacing the EC framework with two Regulations'. The analysis has been undertaken for a period of ten years, assuming that the costs of implementing any change are incurred in year one.

By subtracting the cumulative costs associated with replacing the existing framework with two Regulations from the cumulative costs associated with maintaining the current framework it was possible to estimate the net cost effect of simplifying the regulatory framework by replacing the 24 directives with a system of "split-level" legislation.

Table 5 and Figure 1 below show that after an initial cost in year 1, the cost to amend the new Regulation is less than the estimated cost to amend the current Framework, resulting in a year on year saving.

It is estimated that it would take between zero and three years to achieve a benefit to cost ratio of one (i.e. break even) and ten years after the scheme is implemented it is estimated that a benefit to cost ratio of between 4:1 and infinity could be achieved.

For this analysis of all the options, the estimated costs and benefits have been uplifted by 2% per annum to reflect inflation<sup>4</sup>. In addition the total costs for future years have been adjusted to estimate the 'net present value' by applying a constant discount factor of 3.5%. This reflects the fact that current benefits have greater value in the present than in the future.

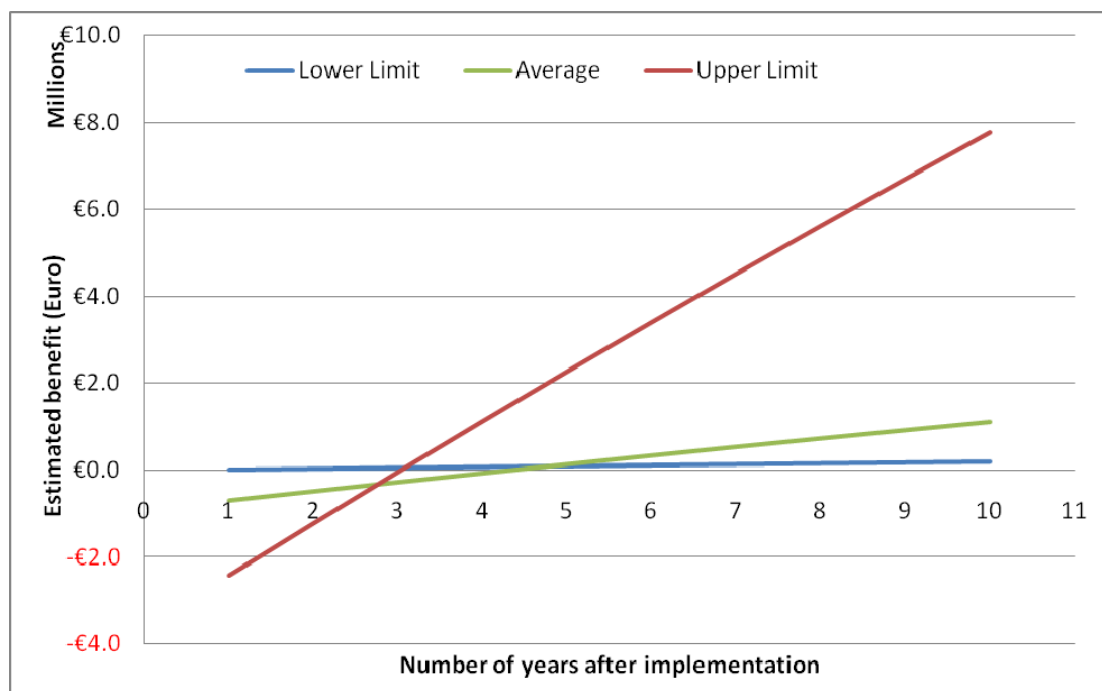
**Table 5: Option A - The cumulative benefit of simplifying the regulatory framework with "split-level" legislation.**

Cumulative benefit *			
Year	Lower Limit	Average †	Upper Limit
1	€ 3,375	-€ 695,385	-€ 2,435,400
2	€ 24,662	-€ 484,644	-€ 1,235,348
3	€ 45,640	-€ 276,957	-€ 52,688
4	€ 66,315	-€ 72,281	€ 1,112,832
5	€ 86,690	€ 129,430	€ 2,261,461
6	€ 106,769	€ 328,217	€ 3,393,443
7	€ 126,558	€ 524,123	€ 4,509,019
8	€ 146,059	€ 717,190	€ 5,608,427
9	€ 165,278	€ 907,458	€ 6,691,902
10	€ 184,219	€ 1,094,970	€ 7,759,675

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

<sup>4</sup> In January 2008, Eurostat (the Statistical Office of the European Communities) reported that annual inflation in the Euro area was 3.4%. This had fallen to 1.7% by January 2009. It is impossible to predict if the downward trend will continue or if it will stabilise or increase. Therefore a typical value of 2% has been used for the analyses in this study.



**Figure 1: Option A - The cumulative benefit of simplifying the regulatory framework with “split-level” legislation.**

It is possible that the actual benefit to cost ratios could differ from these estimates because they will be influenced by some factors which could not be quantified in this analysis. For example:

- The Commission will incur costs in developing and implementing the new Regulatory framework, thus increasing costs and lowering the benefit to cost ratio
- Under the current type approval system, the Commission must check that each Member State has correctly transposed the requirements of each new Directive or amendment and, if necessary, start infringement procedures. If the proposed Regulation were to be implemented this checking and enforcing activity would not be required, thus reducing costs and increasing the benefit to cost ratios

These costs and benefits will be considered by the Commission in their own impact assessment report.

Also, the Commission has made an assessment of the ongoing administrative savings that could be made in future if Regulations replaced Directives as part of their impact assessment for the General Safety Regulation (European Commission, 2008). This document stated that:

*“much of the administrative effort required by Member States to transpose Directives into national legislation will be avoided. Assuming that one full-time official per Member State is required to transpose these Directives (including any necessary consultation process) then elimination of this task could represent a saving of around €50,000 per Member State.”*

It can be seen that the predicted saving of €50,000 per Member State per year is considerably greater than the average of approximately €12,000 predicted by this analysis, and slightly greater than the maximum €45,000. However, one major difference between the proposals for motor vehicles is the number of separate Directives and thus the number of amendments required each year. For example, the Commission’s website provides a list of Directives for agricultural and motor vehicles, listed by the date of adoption. This data shows that over the last 11 years there have been, on average, less than two new or amended Directives adopted per annum for agricultural vehicles,

compared with approximately six new or amended Directives for motor vehicles. It would, therefore, be expected that the annual saving associated with motor vehicles would be at least three times greater than that for agricultural vehicles. Thus, if the survey responses analysed here were applied to motor vehicles there would still be some discrepancy between the average (€36k) and the Commission estimate (€50k) but the commission estimate would still fall comfortably within the range of predictions (€1k to €135k). Overall this comparison increases confidence in the estimates derived from the survey results.

It should be noted that the number of directives has little effect on the investment cost required to make the initial change because all would be repealed at the same time with a single action.

## **4.2 Option B – Reference to existing standards**

To replace the existing technical provisions in the current implementing EU directives by reference to relevant international/European standards, such as Regulations by UNECE, Codes by OECD or standards by CEN/CENELEC or ISO.

For this option the following scenarios were considered:

1. *Do nothing* - retaining the agricultural vehicle Type Approval in its current form.
2. *Replace technical specification* of existing directives with reference to other relevant documents

### **4.2.1 “Do nothing”**

With this option, the current EU Directive 2003/37/EC would remain in its current form with all Member States retaining the 24 directives.

#### *4.2.1.1 Type approval costs*

Stakeholders reported that the cost for type approval is very dependent on the test being carried out.

Industry representatives at the Stakeholder Workshop explained that whilst the cost of full type approval could be in excess of €100,000, most manufacturers use a “family approach” to gain approvals such that some test results from one particular type of vehicle can be re-used for another vehicle type. For example, if a new engine was introduced then this would require a separate type-approval, however if this vehicle used the same cab structure as another type of vehicle then it might not be necessary to obtain a new ROPS approval. Therefore whilst it may cost substantially more than €10,000 - €15,000 to approve a small number of types, it will also cost much less than this for other vehicles, thereby averaging out to the figure of approximately €15,000.

#### *4.2.1.2 Attend meetings*

In addition to the cost of gaining type approval, there is also a cost for Member State and industry representatives to attend regular meetings, such as GRRF, GRSG, WGAT and OECD, to discuss proposed changes and other issues. Respondents to the consultation provided estimates for the annual effort required to attend meetings. Using these estimates, and the labour rates identified in Option A, the annual cost associated with attending such meetings was calculated to be between €310,536 and €2,608,200; with an average of €1,135,085.

#### 4.2.1.3 *Translations*

Currently when an amendment is made to a directive the document will be translated from English to the languages of each individual Member State. If an amendment is a co-decision Regulation then the document must be translated from its original language into the 22 other languages of the Member States. For other proposals there is an exemption for Irish, meaning that just 21 languages are required. Also when reference is made to UNECE or OECD documents, these documents already exist in two languages (English & French) and so translation is only required into 20 or 21 languages. Therefore it has been assumed that each change in directive could be translated into 20 to 22 languages with four to five amended directives per year.

In addition, since the EU joined the UNECE system in 1998 the Commission has been required to translate UNECE Regulations when they are referenced in EU legislation. If the “do nothing” option was selected then there would remain a need to continue with these translations.

#### 4.2.2 ***Replace technical specification of existing directives with reference to other relevant documents***

This approach consists of repealing the EC directives where equivalent approvals from different standardisation bodies exist, and creating one regulatory standard.

##### 4.2.2.1 *Type approval costs*

The “do nothing” scenario showed that although there are often different standards to which manufacturers can gain type approval, the majority only select the single most appropriate approval standard for each particular type of vehicle. Therefore it has been assumed that there is unlikely to be a change to the number and annual cost of type approvals.

For example, currently ROPS can be approved to either OECD Codes or EC ROPS Directives and will still qualify for EU whole vehicle type approval. Stakeholders have indicated that when they submit a vehicle for whole vehicle type approval they choose the standard which suits them best and only gain approval to that one standard. Therefore, if whole vehicle type approval was changed so that only one standard for ROPS is permitted, it is unlikely to offer any cost saving to the manufacturer although it might reduce the choice available to them, which could have a negative effect on competition between test houses. The magnitude of this impact could not be quantified.

However, it is possible that there could be a small reduction in the number of multiple approvals because not all components are made by the OEM. For example, approval for headlamps is likely to be sought by the manufacturer of the lamp rather than the vehicle manufacturer and, since their aim would be to sell a single lighting product to as many vehicle manufacturers as possible, it is possible that they might choose to get a component approved to multiple standards so that it satisfies the requirements of the different markets they sell to.

In this case, if there were fewer standards applicable in Europe there may be a reduction in the approval costs for these companies, even if the tractor manufacturer only submits the documents for one of those component standards as part of their submission for whole vehicle type approval. This means that this analysis might be an underestimate of the true situation.

#### *4.2.2.2 Attend Meetings*

Stakeholders suggested that they expected little or no decrease in the amount of effort required to attend regular meetings. Industry representatives also suggested that a bigger reduction would be possible if ISO standards were given un-dated references.

TRL considered that it is unlikely that un-dated references would be acceptable to EC or Member States because this would mean that there is no governmental control over the technical content. Therefore, it has been assumed that dated references would be required, and this would have the effect of reducing the effort required to attend regular meetings by 0% to 10%. This equates to an annual saving of up to €56,754.

#### *4.2.2.3 Translations*

If the technical specifications of some existing directives were replaced with reference to other equivalent documents then it could be expected that there would be a reduction in the number of new EC Directives, or amendments to existing EC Directives, that would need to be translated into the different Member States languages.

However, since the Commission are already required to translate other documents such as UNECE Regulations when they are referenced in EC Directives, increasing the frequency that these alternative standards are referenced is likely to offset the potential reduction in effort to translate EC Directives.

As such, it has been assumed that replacing the technical specification of some existing directives with reference to other relevant documents would not result in any change to the annual cost of translations.

### **4.2.3 Analysis**

When replacing the technical specification of some existing directives with reference to other relevant documents it has been assumed that the magnitude of the initial investment would be the same as described in Option A (section 4.1.2); namely between €18,225 and €3,653,100.

It has also been estimated that there would be no change to the annual costs associated with gaining type approvals or to make translations, as described above.

The only saving estimated for this option was the potential reduction in the effort required to attend regular technical meetings aimed at adapting the European Legislation to technical progress. This reduction is expected because some of the work involved in this process would be eliminated because it currently duplicates effort in other regulatory forums. Table 6 summarises this potential savings and shows that the estimated annual saving from making reference to existing standards is up to €56,754

Table 6 shows the estimated initial investment cost, plus the annual savings from implementing this option. The annual savings are on the basis of a 0% to 10% reduction in the cost to attend meetings.

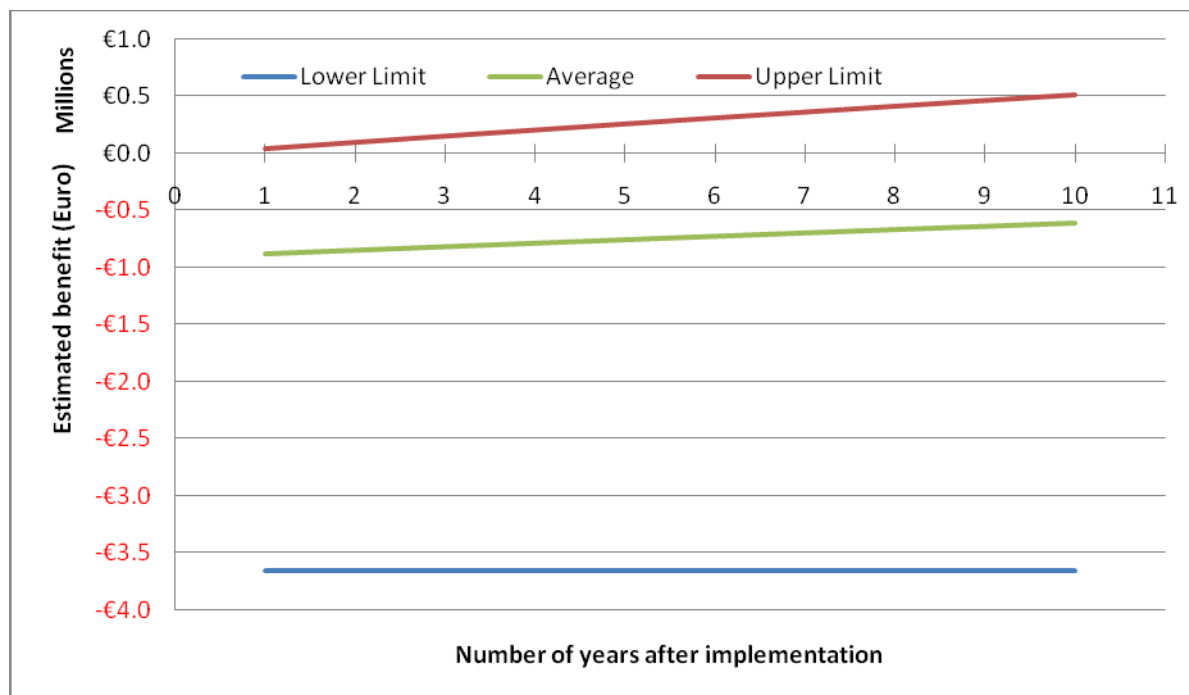
**Table 6: Option B – Estimated annual savings from replacing existing directives with full reference to other relevant documents.**

	Lower Limit	Average†	Upper Limit
Investment cost per Member State	€675	€33,675	€135,300
N° of Member States	27	27	27
<b>Investment cost for EU-27</b>	<b>€18,225</b>	<b>€909,225</b>	<b>€3,653,100</b>

Annual saving from...	Lower Limit	Average†	Upper Limit
Type approval costs	€0		
Attend meetings	€0	€31,054	€56,754
Translations	€0		
<b>Total</b>	<b>€0</b>	<b>€31,054</b>	<b>€56,754</b>

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

Figure 2 shows that, with the magnitude of the investment cost has a significant impact on the estimated cumulative benefit for this option. It has been estimated that ten years after implementation there could be a net cost of €3.6million or a net benefit of up to €0.5million.

**Figure 2: Option B - The cumulative benefit of replacing technical specification of existing directives with full reference to other relevant documents.**

### 4.3 Option C - Completion of the internal market

Directive 2003/37/EC became mandatory on the 1<sup>st</sup> July 2005 for new types of tractor in categories T1, T2 and T3 and will become mandatory for all new T1, T2 and T3 tractors

on the 1<sup>st</sup> July 2009. For the remaining types of agricultural vehicles (category T4, T5, C, R and S) the requirements are currently optional.

In order to further complete the internal market for T4, T5, C, R and S vehicles the Commission proposes to make type approval mandatory for all vehicles that fall under Directive 2003/37/EC.

For this option the following scenarios were considered:

1. *Do nothing* – The legislation remains unchanged
2. *Full Type approval* – all categories of vehicles included

Based on data gathered in the Stakeholder Questionnaire and using input from the Stakeholder Workshop (Appendix C) estimates of the magnitude of costs and benefits for the different vehicle categories have been made.

#### **4.3.1 “Do nothing”**

Vehicles within the specific categories considered for this option are very diverse and can be used in very different markets. Some vehicles are manufactured by large multi-national companies and are sold in the majority of Member States and for these vehicles there might be some benefit to gaining EU type-approval because it could simplify the process of selling these vehicles in different countries. Conversely, other vehicles are produced by small manufacturers for very specific local markets and so requiring these vehicles to gain full EU type-approval could substantially increase the cost of the vehicles. As such, the impact on the different vehicle categories has been considered separately in the following sections.

##### *4.3.1.1 Category T4.1*

These are high clearance tractors mainly used in France and with a small number of manufacturers. On this basis, it has been assumed that these vehicles currently qualify for the existing small series exemptions in Directive 2003/37/EC.

##### *4.3.1.2 Category T4.2*

These are typically large articulated vehicles which currently do not have any requirements for road safety equipment. Stakeholders suggested that in many Member States these vehicles are not allowed on the road and that these vehicles are often sold under the Machinery Directive. It was also reported that Member States usually permit a wide variety of different weights and dimensions for them, meaning that a completely new design of vehicle can be required for every Member State that they are sold in

##### *4.3.1.3 Category T4.3*

These are alpine tractors with a low centre of gravity to allow them to work on steep inclines. These are mainly only used in Austria and Switzerland and some other small regions. As such it has been assumed that these vehicles are currently covered under the small series exemptions.

##### *4.3.1.4 Category T5*

Stakeholders reported that the current technical benchmarks for this type of vehicle are in Germany, where all-round mudguards, wheel chocks and front axle suspension is required, and the UK, where ABS is required.

For the option to “do nothing”, there would be no change to the current requirements and so there would be no additional costs of benefits for this vehicle category.

#### 4.3.1.5 *Category C*

For track-laying vehicles there are analogous types with category T vehicles (e.g. C1, C2 etc). At the Stakeholder Workshop it was indicated that there are many low volume manufacturers selling to small niche markets, and that there are many complex configurations of vehicles. On this basis it has been assumed that these vehicles would be covered under the small series exemptions.

#### 4.3.1.6 *Category R*

Presently there are no Directives that are directly applicable to category R vehicles. Therefore there is likely to be an additional cost per vehicle for them to meet any minimum requirements if they were included under mandatory type-approval. It is understood that there is a wide variety of vehicles ranging from manufacturers producing large numbers of vehicles to bespoke one-off vehicles made by individual farmers to meet their particular needs.

#### 4.3.1.7 *Category S*

Industry representatives indicated that the types of interchangeable towed machinery are very variable with vehicles built to perform a very specific task. Given this diversity it is likely that many of these vehicles would fall under the small series exemptions.

However, given that the small series limit for category S vehicles is only 50 vehicles per type per Member State, and considering the large number of vehicles that are sold each year (~500,000 per year according to Dodd *et al*, [2007]) it has been assumed that 25% to 50% of the 500,000 vehicles would be required to meet the full type approval requirements.

### 4.3.2 ***Complete the internal market***

In response to the questionnaire, one Member State indicated that for categories other than T1-T3 they do not have any form of national approval process and so the cost to include the other vehicle categories would be high. Therefore, unless manufacturers were supplying international markets, implementing this option could be particularly burdensome to them.

The Member State indicated that to implement such a change could cost from €60,000, for the development and consultation involved in changing the legislation, up to €2.3million if national schemes for small series approval (NSSTA) and individual vehicle approval (IVA) were needed.

Using their experience of the Recast Framework Directive (RFD) for passenger and goods vehicles and category-O trailers, the Member State also provided an estimate of the costs to industry associated with the administrative costs of mandatory type approval (i.e. excluding the cost that may be associated with any increase in the technical standards of vehicles). These were an estimated cost of €82,000 per company to set-up for the change in legislative regime, plus a cost of €27,000 per vehicle type. They also estimated that once implemented there would be on-going costs of €18,000 per company and €55 per vehicle.

Using input from stakeholders the estimated costs to industry associated with completing the internal market has been separately considered for each of the vehicle categories.



#### 4.3.2.1 Category T4.1

At the time of writing, the small series limits had not yet been defined for the new proposed type-approval Regulation and the effects of completing the internal market by mandating type approval for these vehicle types could depend on the precise limits that were set and what the requirements were when a vehicle qualified as small series (e.g. approved through existing national schemes or through new small series or individual approval schemes). For the purposes of this analysis, it has been assumed that the small series limits set by the current framework Directive will continue to apply, and that small series vehicles will be approved according to existing Member State National schemes. On this basis, there would be no additional cost or benefit to include these vehicles in the mandatory type approval framework because all are likely to be produced in small series. However, this could change if the market for this type of vehicle grew or consolidated.

#### 4.3.2.2 Category T4.2

Stakeholders suggested that a single EC approval could potentially offer some benefits and it was estimated standardisation could save approximately 2% of the value of the vehicle. Assuming a T4.2 vehicle costs between €100,000 and €150,000 a 2% saving represents approximately €2,000 to €3,000 per vehicle.

However, if these vehicles were required to meet all of the road safety requirements then it is estimated that this could add a substantial cost per vehicle. As part of the stakeholder questionnaire, one respondent estimated that it would cost an additional €15,000 per vehicle to meet the type approval requirements. This gives an overall change in cost per vehicle of +€12,000 to +€13,000.

Dodd *et al* (2007) estimated that in 2005 there were 15,000 T4 vehicles registered in EU-25. Assuming that T4.2 vehicles account for 8,000 to 10,000 of these vehicles, it can be estimated that there would be a net cost to industry of €96m to €130m to require full type approval for this vehicle type.

#### 4.3.2.3 Category T4.3

Stakeholders reported that these are high end vehicles and so there is unlikely to be a significant cost per vehicle to meet an EC approval, and there may be some benefit from doing so because this would allow the manufacturers to sell them in other Member States. It was also suggested that these vehicles are generally produced in low numbers for specific markets and so it is likely they would fall under the small series exemptions, meaning there would be no additional cost or benefit to include these vehicles in the mandatory type approval Regulation.

#### 4.3.2.4 Category T5

This impact assessment has been prepared on the basis that there are no changes to the existing technical requirements because individual impact assessments would be carried out to measure the effect of any specific changes to the requirements. Therefore, based on comments from stakeholders, it has been assumed that requiring mandatory type-approval for T5 tractors would increase the price of a T5 vehicle by 2% to 3%. On the basis that a T5 tractor costs between €100,000 and €150,000 this represents an additional cost of €2,000 to €4,500 per vehicle.

Dodd *et al* (2007) estimated that in 2005 there were 13,000 T5 vehicles registered each year in EU-25. It has therefore been estimated that there would be a net cost to industry of €26m to €59m to require full type approval for this vehicle type.

#### 4.3.2.5 *Category C*

Similarly to category T4.1 tractors, it has been assumed that, if these vehicles fall under the small series exemption and the current small series limits remain in place there would be no additional cost or benefit to include these vehicles in the mandatory type approval framework.

#### 4.3.2.6 *Category R*

It was estimated that it would cost an additional €3,000 per vehicle to meet the type approval requirements. Discussions at the Stakeholder Workshop suggested that there could be a benefit from harmonisation of signs, reflectors, lighting and signals because Member States often have very different and precise requirements for these, preventing proper integration into the design. It has been estimated that a saving of approximately 2% - 3% of the value of the vehicle could be achieved. Assuming a typical category R vehicle costs between €5,000 and €30,000, the saving from standardisation represents approximately €100 to €900 per vehicle.

Dodd *et al* (2007) estimated that in 2005 there were 125,000 category R vehicles registered in EU-25. Responses to the stakeholder questionnaire in this study also estimated that 100% of each type of category R vehicle was produced in a series of less than 200 units. It has not been possible to quantify the exact proportion of these vehicles which are currently produced in quantities covered by the small series exemptions, therefore TRL has assumed that 50% to 75% of these vehicles would not be covered under the small series exemptions, and as such would require modifications, it has been estimated that there would be a net cost to industry of €131m to €272m to require full type approval for this vehicle category.

#### 4.3.2.7 *Category S*

On the basis that similar costs and benefits to those estimated for category R vehicles are applied to this category of vehicle, and that 25% to 50% of the 500,000 vehicles would be required to gain full approval, it has been estimated that this would result in a net cost of €75m to €500m per year.

#### 4.3.2.8 *Potential casualty benefits*

The fact that it has been estimated that the cost per vehicle could increase by such a substantial amount for some vehicles suggests that significant changes to the technical specification and performance would be required. It is, therefore, logical to assume that some improvements in the safety performance of the vehicles would be accrued.

Within the scope of this project it has not been possible to quantify the proportion of these accidents that have been at least partly caused by the vehicle not meeting requirements equivalent to that of full type approval. Therefore, it has been necessary to estimate the effect of requiring mandatory type approval.

Because category R and S vehicles can be towed by any tractor (including T1-T3 vehicles) it was estimated that raising the technical requirements for R and S vehicle could reduce 5% of accidents involving T1-T3 vehicles. It was also estimated that raising the technical requirements of T4, T5 and C vehicles could reduce 10% of the accidents involving these vehicles.

Using an estimated number of casualties in EU-25 per annum (Dodd *et al*, 2007) and applying a casualty valuation to each of these injuries, it has been estimated that an annual safety benefit of approximately €51million could be achieved.

### 4.3.3 Analysis

An estimate of the investment cost has been made using the data supplied by one Member State in the Stakeholder Questionnaire. This Member State estimated they would incur a cost of between €60,000 and €2.3million. However, given the diversity of legal systems in different Member States it is uncertain whether these estimated costs could be applied to all Member States.

Therefore, the lower limit of the investment cost has been estimated on the basis that it would cost the respondent €2.3million to implement the necessary changes, but the other 26 Member States would only incur a cost of €60,000 each. The upper limit of the investment cost has been calculated on the basis that all 27 Member States would incur a cost of €2.3million. This gave a range of €3,860,000 to €62,100,000.

The estimated investment costs to industry of €82,000 per company and €27,000 per vehicle type, as estimated by the respondent, have not been included in the above calculation because it has not been possible to quantify how many companies there are in EU-27 or how many vehicle types are produced each year. For the same reason the estimated on-going cost of €18,000 per company has not been included.

Dodd et al (2007) estimated that there were approximately 658,000 new vehicles of categories T4, T5, C, R and S registered in Europe every year. Using the estimated on-going cost of €55 per vehicle to cover the administrative costs of mandatory type approval (as indicated by one respondent to the Stakeholder questionnaire), it has been calculated that there would be an on-going cost of €36,190,000 per year.

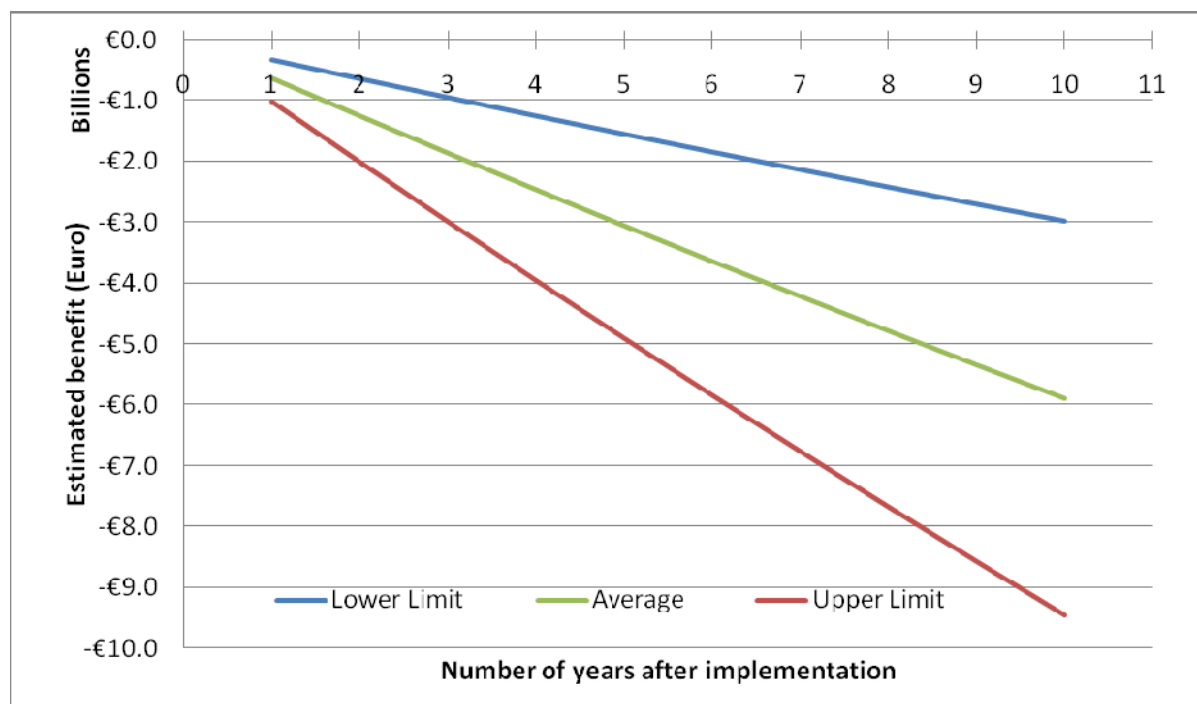
The estimated administrative costs were combined with the estimated costs for each vehicle category described in sections 4.3.2.1 to 4.3.2.7. An annual cost of between €364m to €996m has been calculated. Using these figures it can be seen that if mandatory type approval was applied to the above categories of vehicles, then there would be a year on year cost to society. Table 7 and Figure 3 show the net effect over a ten year period.

**Table 7: Option C - Cumulative benefit of completing the internal market.**

Cumulative benefit *			
Year	Lower Limit	Average †	Upper Limit
1	-€ 317,549,591	-€ 629,552,403	-€ 1,007,914,591
2	-€ 630,497,013	-€ 1,249,980,859	-€ 2,001,221,724
3	-€ 938,908,966	-€ 1,861,417,597	-€ 2,980,133,101
4	-€ 1,242,851,181	-€ 2,463,992,934	-€ 3,944,857,357
5	-€ 1,542,388,436	-€ 3,057,835,295	-€ 4,895,600,102
6	-€ 1,837,584,571	-€ 3,643,071,244	-€ 5,832,563,967
7	-€ 2,128,502,501	-€ 4,219,825,513	-€ 6,755,948,645
8	-€ 2,415,204,229	-€ 4,788,221,025	-€ 7,665,950,936
9	-€ 2,697,750,860	-€ 5,348,378,921	-€ 8,562,764,789
10	-€ 2,976,202,612	-€ 5,900,418,586	-€ 9,446,581,339

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.



**Figure 3: Option C - The cumulative benefit of completing the internal market for T4, T5, R and S category vehicles.**

#### 4.4 Combination of policy options

In the previous sections the effect of Options A, B and C were considered separately. This section describes the effect of implementing more than one of the three options at the same time. Specifically the following combinations have been considered:

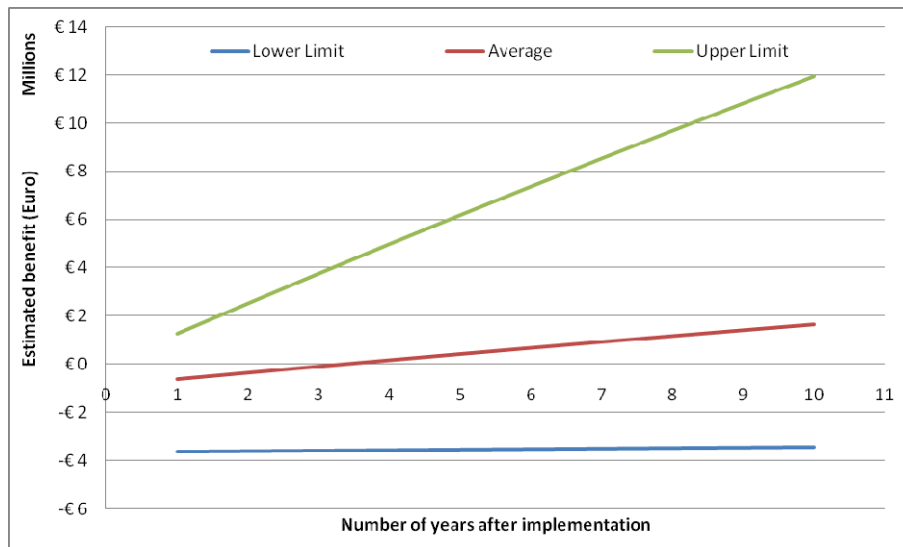
1. Option A + Option B
2. Option A + Option C
3. Option B + Option C
4. Option A + Option B + Option C

For the above combinations it was estimated there would be an overall positive effect if only Option A and Option B were combined. When considered separately, as described earlier in this report, each of the options was considered to have an investment cost followed by an on-going annual cost to maintain the proposed system.

However, it is likely that if Option A and Option B were implemented at the same time then it is likely that the investment cost from only one of these options would be necessary since both options involve re-drafting the same set of Regulations.

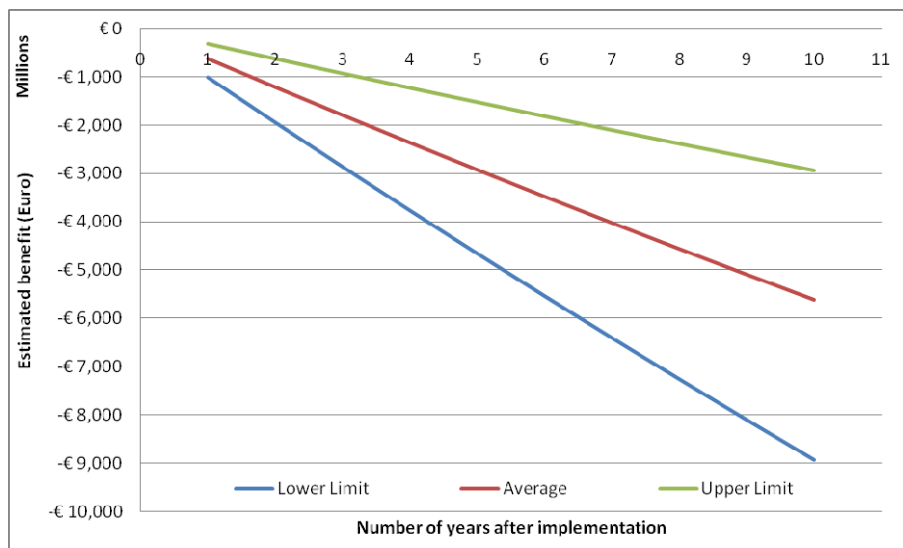
This would not be the case when Option C is considered because this option requires a new set of requirements to be drafted for the vehicles to be included under mandatory type-approval.

Figure 4 shows that for the combination of Option A and Option B the upper limit of benefits was estimated to be €11.9million and for the lower limit it is estimated there could be a net cost to society of €3.4million.



**Figure 4: The cumulative benefit of Option A + Option B**

It was also found that the large cost associated with implementing Option C outweighed any potential benefit from either Option A or Option B, as illustrated in Figure 5 below.



**Figure 5: The cumulative benefit of Option A + Option B + Option C**

## 5 Discussion

Responses to the public consultation carried out by the Commission showed a general support for the proposed changes to the type approval framework, with some concern regarding the costs associated with completing the internal market (Option C in this project). These views show a similar trend to the results calculated in this impact assessment.

For the option to simplify legislation by adopting a “split level” approach (Option A) it was estimated that after an initial one-off cost to implement the proposed changes there is likely to be a reduction in the effort and cost associated with updating and introducing new legislation, resulting in a year on year benefit to society.

Comments from industry representatives suggest that there would be no significant difference between the costs and benefits from having a single implementing Regulation instead of having three implementing Regulations. Industry also indicated that it would be preferable to have three implementing Regulations because it would provide a clear, logical structure.

Although the stakeholder questionnaire was distributed to representative of all Member States, responses were only received from a small number of these and the replies were biased towards smaller Member States in Eastern Europe. In 2006/2007 France, Germany, Italy, Spain and the UK had the largest number of tractor approvals (Landwirt, 2008) yet TRL only received a quantitative response from one (UK) of these larger Member States within the timescale of the project. It is possible that, because several of the Member States that responded to the Stakeholder questionnaire are more recent additions to the European Union, they may need to carry out more work to implement any changes in their National legal framework. On the other hand though, the additional effort could be offset by lower staff rates compared with the larger Member States.

Analysis of the option to replace the technical specification of some directives with reference to other relevant standards (Option B) indicated that it was questionable if there would be any benefit associated with implementing this option.

The annual benefit from implementing Option B was estimated to be quite low and so the overall benefit is heavily influenced by the initial investment cost to implement the proposed changes. The analysis in Option A showed that the range for this investment cost was quite wide, mainly because of the limited number of replies to the stakeholder questionnaire. It is considered that the actual cost is more likely to be closer to the average value than either the upper or lower limits.

On this basis it is estimated that the option to reference to existing standards could yield a positive benefit to cost ratio after ten years but that it is more likely to result in a small overall cost to society.

It is important to recognise that this impact assessment only considered the costs and benefits to Member States and industry organisations. There would be additional cost incurred by the Commission to set-up and implement the proposed changes, however the Commission have indicated that this cost will be considered separately in their own impact assessment. Depending on the magnitude of these costs it is possible that there would be no net benefit associated with referencing existing standards.

However, it is important to recognise that there are several factors that could change this balance:

- The costs and benefits incurred by the Commission have not been included in this assessment because they will be covered by the Commission in their own impact assessment. It is possible there could be an administrative cost to implement the proposed changes. There may also be administrative benefits in terms of reduced effort required to adapt the legislation to technical progress (i.e. writing proposals, amendments, hosting and attending meetings etc.)

- Stakeholders indicated that although there are often different standards to which manufacturers can gain type approval (e.g. currently ROPS can be approved to either OECD Codes or EC ROPS Directives), in general they would only select the single most appropriate standard for each approval. However, it is possible that there could be a small reduction in the number of multiple approvals because some components (e.g. headlamps) are approved to multiple standards so that they satisfy the requirements of the different markets they are sold in. If so, this would increase the benefits of the proposal compared with that estimated here
- The investment cost of this option has been assessed as if it were implemented in isolation. It is possible that the costs could be substantially reduced if implemented at the same time as Option A

For Option B, anecdotal evidence from stakeholders at the workshop indicated that they didn't expect the proposed changes to the type approval framework to change the overall number, and therefore cost, of approvals on an annual basis.

For Option C, the impact assessment indicated that there would be a substantial cost to society if mandatory type approvals were required for all vehicle categories. Approximately half of the estimated annual cost was associated with modifications to category R & S vehicles which, based on data from the questionnaire and information gathered during the workshop, was estimated to be between €1,500 and €2,400 per vehicle. This cost per vehicle for categories R & S is less than the estimated additional cost for each T4.2 and T5 vehicle, however the large number of category R vehicles sold on an annual basis in EU-27 means that the total costs associated with this vehicle type was very large.

It is considered that Option C could have a significant impact on small and medium enterprises (SMEs). Small vehicle/equipment manufacturers and farmers are likely to be affected by this option because any additional cost associated with the type approval requirements, which adds to the end price of the vehicle, would probably have to be passed on to their customer. This could affect their competitiveness and might lead to market distortion in favour of larger companies that might be better equipped to absorb some of the additional cost.

Assuming that the SMEs only produce low volumes of vehicles then it is likely that they would be covered under the small series exemptions. These vehicles would be subject to less stringent type approval requirements which may reduce any additional cost. Whilst this may be of some benefit to companies operating well within these limits, it could hinder a small company from expanding their business to produce volumes just above the small series limits. This is because once they exceed the small series limits they are likely incur a substantial increase in cost from having to meet the more stringent requirements of full type approval.

It was not possible to quantify the proportion of accidents involving agricultural vehicles which would have been at least partly caused because the vehicle was as not capable of meeting full type approval requirements. Therefore it was necessary to estimate this proportion. Because category R and S vehicles can be towed by any tractor (including T1-T3 vehicles) it was estimated that raising the technical requirements for R and S vehicle could reduce the number of accidents involving T1-T3 vehicles by 5%. It was also estimated that raising the technical requirements of T4, T5 and C vehicles could reduce the number of accidents involving these vehicles by 10%. On this basis the potential savings from reducing casualties by improving the technical standard of agricultural vehicles was estimated to be ten times lower than the estimated costs associated with implementing these more stringent requirements.

In order for the potential casualty savings to balance out the cost to implement the improvements to the technical requirements to all vehicles, it is estimated that around 75% of all accidents involving agricultural vehicles would need to be at least partly caused by the vehicle only meeting a lower standard of requirements. This is extremely

unlikely because accident statistics show that accidents are caused by many different factors including defects to a vehicle, agricultural vehicle driver error or, frequently, by the actions of the other vehicle/driver involved in the accident.

An alternative to mandating type approval for all vehicle categories covered under Directive 2003/37/EC might be to only mandate type approval for category T and C vehicles, with optional compliance for category R & S vehicles. If it was assumed that optional compliance for R & S vehicles meant that there would not be any additional cost associated with gaining type approval for these vehicles, then it can be estimated that the annual cost to industry would fall from €345m-€992m to approximately €148m-€210m.

However, if R & S vehicles maintain their current level of technical requirements then there would still be an overall net cost to society because as well as a reduction in costs there is likely to be a proportional reduction in the potential casualty savings. On this basis it is estimated that there would still remain a net costs to society however the magnitude of this cost over ten years would fall from €298m-€945m per year to an annual net cost of approximately €140m-€203m per year.

A further option might be to permit optional type approvals for T4, T5, C, R & S vehicles. If it were assumed that manufacturers would only pursue full type approval if it offered some benefit to them, and there would be no additional cost to them if they chose not to obtain full type approval, then this could result in a net benefit to society. It has not been possible to quantify the magnitude of this potential benefit because the proportion of vehicle types where the manufacturer would benefit from a European approval is not known.



## 6 Conclusions

1. A cost benefit analysis was completed for the following options:
  - A. Replacing current directives with a “split level approach” legislation
  - B. Replace existing technical provisions with reference to other standards
  - C. Completion of the internal market for T4, T5, C, R & S
2. Information on current and likely future costs was obtained from stakeholders. The cost benefit analysis found that:
  - a. Ten years after implementation, the option to replace the current type approval framework with “split level approach” legislation was introduced (Option A) was likely to produce a net benefit to society of between €0.2m and €7.8m.
  - b. The benefits of option B were found to be relatively small in monetary terms and the overall benefit was heavily influenced by the initial investment cost. The estimated benefits suggest that it is more likely to result in a small overall cost to society although the results were uncertain.
  - c. Option C, as proposed, was likely to have a benefit to cost ratio substantially lower than 1 such that the costs outweighed the benefits. However, much could depend on the details of the implementation and it is possible that a positive outcome could be achieved if the system were optional at least for some of the categories considered.
  - d. The effect of implementing more than one of the three options at the same time showed that combining Option A and Option B would likely result in an overall positive effect. However, the net costs from the inclusion of Option C, as proposed, was found to outweigh any potential net benefit from Option A and Option B.
3. This impact assessment only considered the costs and benefits to individual Member States and to industry organisations. The costs and benefits that accrue to the Commission when implementing the proposed changes and, in future, when adapting the new system to technical progress will be dealt with by the Commission in their own impact assessment report.
4. The confidence in the estimates could be improved if additional responses and data were available from stakeholders. The lack of data has meant that some of the estimates made in this impact assessment have relied heavily on assumptions made by TRL or on anecdotal evidence from stakeholders.

## Acknowledgements

The work described in this report was carried out in the Vehicle Engineering Department of the Transport Research Laboratory. The author is grateful to Iain Knight who carried out the technical review and auditing of this report.

## References

**BCC (2008)**, *Burdens Barometer 2007*, British Chamber of Commerce, [www.britishchambers.org.uk](http://www.britishchambers.org.uk)

**Dodd M, Bartlett R & Knight I (2007)**, *Provision of information and services on the subject of the performance requirements, testing methods and limit values for braking systems of agricultural and forestry tractors, their trailers and interchangeable towed machinery – final report, UPR/VE/064/07, Unpublished Project Report*. Wokingham, Berkshire: Transport Research Laboratory (TRL).

**Elvik R, Christenson P, & Olsen SF (2003)**. *Daytime running Lights Interim Report 2: A systematic review of effects on road safety*. TOI report 688/2003. TOI, Norway

**European Commission (2003)**. *Directive 2003/37/EC of the European Parliament and of the council of 26 May 2003 on type-approval of agricultural or forestry tractors. Their trailers and interchangeable towed machinery, together with their systems, components and separate technical units and repealing Directive 74/150/EEC*, Brussels.

**European Commission (2008)**, *Commission Staff Working Document (SEC (2008) 1908. Accompanying the proposal for a Regulation of the European Parliament and of the Council concerning type-approval requirements for the general safety of motor vehicles*, Brussels.

**Landwirt (2008)**, [www.landwirt.com](http://www.landwirt.com), *Traktorzulassungen\_Europa\_2007.pdf*

## **Appendix A Stakeholder questionnaire**

October 2<sup>nd</sup> 2008

Direct Tel: +44 (0)1344 770699  
Fax: +44 (0)1344 770356  
Email: mdodd@trl.co.uk

Dear Sir/Madam,

**Re: Assessing the impact of proposed changes to type approval for agricultural and forestry tractors and their trailers and interchangeable towed machinery**

Following the 'CARS 21' initiative, the European Commission (EC) have proposed simplifying the legislation on agricultural vehicles by replacing the current type approval framework with one, or a small number of, Regulations. It is also proposed that, where suitable, these regulations would refer to existing international technical standards such as UNECE Regulations, OECD codes, ISO standards or their equivalent. This is intended to improve the quality of EU legislation and to streamline it, by reducing the administrative burdens and costs related to its implementation.

At the same time the EC also propose to complete the internal market for agricultural vehicles by applying the requirements to all categories of vehicles currently defined by 2003/37/EC; this would then also allow for various tractor types, i.e. high-rise, wide or low tractors, crawler tractors, trailers etc. to be sold all over Europe after being (EU) type-approved once.

As part of this process, the EC has contracted TRL to undertake a formal assessment of the costs and benefits of a number of different approaches to this proposal, in order to provide information for use in the Commission's Impact Assessment.

We are aware that you may have contributed to the Commission's formal public consultation (which closed on the 12<sup>th</sup> September 2008) and we will be using the information provided to assist our study. However, in order to undertake our cost benefit analysis we consider that further information, particularly with respect to costs and financial quantification of benefits will be necessary. As such, we would be very grateful if you could supply answers to the following questions, in as much detail as is possible. **The time frame permitted for this study is very short and as such, we would be grateful if you could supply the requested information by Friday 17th October 2008.**

As part of the project we will also be organising workshops with key stakeholders to explore the issues raised in both the EC's consultation and this request for information in more detail. Fixed dates have not yet been arranged, but workshops are likely to be held in Brussels in week commencing 20th October. Please let us know if you would be interested in attending one of these workshops.

Any information that you provide will be treated anonymously and we will not attribute any views to specific organisations or individuals.

Should you have any questions regarding this enquiry, please do not hesitate to contact me. Thank you for your co-operation.

Yours faithfully,

For and on behalf of TRL Ltd,

Martin Dodd  
Senior Research Engineer

## **Impact Assessment**

### **Requested information relating to the cost benefit analysis**

#### **About you:**

1. Your Name
2. Your organisation
3. Country

#### **Simplification part one: replacement of Directives with Regulations**

**(This section is primarily intended for representatives of the member states. Other stakeholders are encouraged to add relevant comments if they wish).**

4. If the type approval system was to remain in its current form.
  - a. When one of the current 24 directives is amended what is your procedure for implementing it within your national legal framework?
  - b. How many person hours/days does the above take, and
  - c. How much time would normally (on average) pass between the time when the amendment is signed off by the EU and national implementation?
  - d. What are typical labour rates (€/hour, €/day, or €/year) for the personnel involved in transposing the requirements to national law?
  - e. What action is required for the EC to register/approve the national implementation
5. If the current type approval framework was to be replaced by one co-decision (parent) regulation and one implementing regulation:
  - a. Will it be necessary to repeal or amend existing national legislation as a direct result of the change?
  - b. Will it be necessary to introduce new legislation to recognise or implement the new EU Regulations?
  - c. If the answer to 5(a) or (b) is Yes, how much effort (in terms of person hours/days and costs) will you need to invest to make the necessary changes?
  - d. When amendments to the technical requirements of the new regulations are made in future, what action would now be required within your Member State to implement the changes within your national law?
  - e. How much effort (person hours/days and cost) would be required for the actions described in (d) above?
  - f. Part of the change proposed in this option is that certain technical requirements and limit values considered very important to wider EU policy would be contained in the co-decision regulation, whilst less important criteria

and technical details (such as test procedures) would be included in the implementing (comitology) regulation:

- i. What are the advantages and disadvantages of this approach?
- ii. Would this speed up the process of adapting regulations to technical progress?
- iii. If so, by how much?
- iv. Can any cost savings or increases be attributed to this change?
- v. If so, how much?

6. If the current type approval process was to be replaced by one co-decision regulation and three implementing regulations (e.g. one each for environmental requirements, road safety requirements and work safety requirements):

- a. Would the initial effort required to implement the change be any different to that described in your answer to 5(a) and (b) above? If so, how would it differ and what implication would there be on the effort/costs involved?
- b. Would there be any difference to the process, effort, or cost involved when the regulations were, in future, amended or adapted to technical progress? If so, by how much?
- c. In your opinion what advantages and/or disadvantages would there be to having three implementing regulations rather than one?
- d. Would this increase or decrease the effort involved in adapting the regulations to technical progress and why would it have this effect?

7. Would there be any further advantages or disadvantages if the current type approval process was to be replaced with one co-decision regulation and a larger number of separate implementing (comitology) regulations, similar to the current number of separate Directives?

**Simplification part two: The use of international regulations or standards instead of EU Directives, where appropriate**

**(To be completed by all stakeholders, although some questions may not be relevant to all parties)**

8. If the current range of Directives, Regulations and Standards were retained:

- a. What proportion of vehicles of each category will be approved to just one of the requirements?

Vehicle Category	N° or % of vehicles approved
T1	
T2	
T3	
T4	
T5	
C	
R	
S	

- b. What proportion would be approved to more than one, nominally equivalent, requirement?

Vehicle Category	N° or % of vehicles approved
T1	
T2	
T3	
T4	
T5	
C	
R	
S	

- c. On average, how much does each approval cost, including approval authority fees and the effort involved in preparing a vehicle for test?
- d. Does the existence of these different but equivalent standards necessitate different designs to meet the different requirements (please consider differences within the EU markets separately to differences between the EU and the rest of the world)?
- e. How many person hours per year are consumed discussing the requirements for agricultural vehicles at UNECE (e.g. GRRF, GRSG, informal technical groups etc)?
- f. How many person hours per year are consumed in attending EC (e.g. WGAT) meetings related to agricultural vehicles? Please include informal meetings?
- g. How many person hours per year are consumed discussing the requirements for agricultural vehicles at OECD meetings?



9. 2003/37/EC specifies a number of international regulations and standards that are considered equivalent to certain of the implementing Directives that it references. If, where this is the case, the relevant implementing Directive was repealed and only the equivalent standard was required:

- a. What proportion of vehicles would now be approved to just one regulatory standard?

Vehicle Category	N° or % of vehicles approved
T1	
T2	
T3	
T4	
T5	
C	
R	
S	

- b. By how much would any change in the number of vehicles only needing one approval (i.e. difference between 8a and 9a) change the costs associated with gaining approvals (fees and preparation effort)?
- c. Would any further standardisation of vehicle design be likely?
- d. If so, how much could cost be reduced due to economies of scale?
- e. If only one international standard was required, which would you prefer it to be (for each of the technical areas where equivalents are considered in 2003/37/EC)? – See overleaf:

Subject	Base Directive	Alternative Directive	UNECE Regulation	OECD Code	No preference
Audible Warning Device	74/151/EEC V	70/388/EEC	R28	-	
Sound Level (external)	74/151/EEC VI	70/157/EEC	R51	-	
Field of Vision & Windscreen Wipers	74/347/EEC	77/649/EEC	R71	-	
Steering	75/321/EEC	70/311/EEC	R79	-	
Electromagnetic Compatibility	75/322/EEC	72/245/EEC	R10	-	
Braking Devices	76/432/EEC	71/320/EEC	R13	-	
ROPS	77/536/EEC	-	-	Code 3	
Lighting and Light Signalling Devices	79/532/EEC	76/757/EEC to 76/762/EEC and 76/539/EEC	R3,7,6,4,1,8,20,98,19,38	-	
ROPS (Static)	79/622/EEC	-	-	Code 4	
Rear Mounted ROPS	86/298/EEC	-	-	Code 7	
Front Mounted ROPS	87/402/EEC	-	-	Code 6	
Glazing	89/173/EEC III	92/22/EEC	R43	-	
Pollutant Emissions	2000/25/EC	88/77/EEC	R49, R96	-	

Please circle or mark your preferred options in the table or put a tick in the final column if you have no preference.

- f. If only one international standard was required (and therefore required future adaptation to technical progress), by how much would you expect your effort to reduce in terms of discussing agricultural vehicle requirements at:
- i. EC Committees (e.g. WGAT)
  - ii. UNECE committees (e.g. GRSG etc)
  - iii. OECD committees

10. Are there any requirements to comply with Directives in 2003/37/EC, where equivalent standards are not currently offered but could be in future? If so, please identify the equivalent standards and explain their advantages and disadvantages.

**Completion of the internal market:- compulsory approval for vehicles of category T4, T5, C, R and S (applicable to all stakeholders):**

11. Under the currently applicable type approval requirements (2003/37/EC):

- a) what proportion of vehicles of categories T4, T5, C, R and S voluntarily gain EU approval (please estimate if no hard data is available):

Vehicle Category	N° or % of vehicles voluntarily approved
T4	
T5	
C	
R	
S	

- b) Where vehicles do not gain an EU approval, how many member states are they typically sold in (i.e. how many national approvals do they typically require)?

Vehicle Category	Typical number of national approvals required
T4	
T5	
C	
R	
S	

- c) On average, how much does it cost to obtain Type Approval in an individual Member State, including approval authority fees and the effort involved in preparing a vehicle for test?
- d) Do the national requirements vary in different Member States? If so, please provide details of these differences.
- e) Do these variations necessitate differences in design or performance of vehicles to be sold in different EU markets?
- f) What proportion of vehicles are produced in small series such that sales across Europe are less than the limits indicated in the table below:

Vehicle category	Proportion of all vehicles of each category with EU-27 sales less than...		
	200	500	1,000
T4			
T5			
C			
R			
S			

12. The EC propose to complete the internal market for agricultural vehicles by extending the mandatory type approval to all categories of vehicles currently defined by

2003/37/EC; (that is to include vehicle types T4, T5, C, R and S). This would then also allow for various tractor types, e.g. high-rise, wide or low tractors, crawler tractors, trailers etc. to be sold throughout Europe after being (EU) type-approved just once. If such an approach were to be implemented:

- a) How much would the cost of producing a vehicle intended for sale in more than one market reduce as a result of:
  - i. The reduced number of individual approvals required?
  - ii. Standardisation of design and economies of scale?
- b) If as proposed each vehicle only needed one EC type approval, how many vehicles would be required to gain fewer approvals?

Vehicle Category	N° or % of vehicles affected
T4	
T5	
C	
R	
S	

- c) Would the mandatory application of the existing technical requirements in 2003/37 and the separate technical Directives that it references, require significant changes to the design and performance of vehicles of each category? If so, please provide details and estimates of the change in the cost per vehicle of implementing these changes

Vehicle category	Significant changes required? (Yes/No)	Description of changes	Estimated cost per vehicle (±€xx)
T4			
T5			
C			
R			
S			

**Would these changes bring any road safety, work safety or environmental benefits? If so, please quantify wherever possible.**

## **Appendix B Stakeholder responses**

The following is the correlated results from the Impact assessment questionnaire sent to stakeholders on the 2<sup>nd</sup> October

Quantitative responses were received from the following:

Member States representatives	Industry representatives
Finland	Case New Holland
Greece	CEMA*
Latvia	
Hungary	
Slovenia	
UK	
Romania	
Slovakia	
Austria	
Estonia	

\*: CEMA reported that there was no real consensus on these data, and as such the responses do not represent a common CEMA position

#### **Q1. If the type approval system was to remain in its current form.**

##### **a): When one of the current 24 directives is amended what is your procedure for implementing it within your national legal framework?**

Answers:

- *We have to amend at least one decree. In most cases we have to amend two decrees.*
- *We have to modify our relevant decree(s).*
- *We have to prepare a new technical specification (consolidated text of the separate directive) and the new list of valid technical specifications in our country. After the legal evaluations the list has to go to the minister for signing and then into the publication to the Slovene official journal. (Additional remark: We transpose the directives into the national legislation through technical specifications through technical specifications for vehicles (TSV). Annexes to the TSV are the same as annexes in the directive.)*
- *We have to amend appropriate Regulations issued by the Cabinet of Ministers: first we make the project of amendments, then harmonise this project with other involved ministries and only then it can be adopted.*
- *All EU Directives implement in our national Legislation by Ministerial Degree.*
- *This would require changes to our approval regulations, currently 1998 Approval Regulations, and these would be taking through a standard procedure of instructing lawyers, receiving drafts, assessing impact on existing primary and secondary legislation, quality assurance, ministerial approval and laying before Parliament.*

**b): How many person hours do the above take?**

Answers:

- *Minor changes take about 100 person hours if we amend two decrees, which is generally the case.*
- *Altogether 2 person months.*
- *This work for one person is about 5 – 20 days (depending on the size of the amendment)*
- *It depends on the amount of amendments and if other ministries have/don't have any objections.*
- *Two persons, three days/person eight hours per day.*
- *Estimated 20 person days of experienced legal resources, 20 person days of experienced technical resources to issue instructions, check drafts, etc, and 5 days of policy advisor and QA of products.*

**c): How much time would normally (on average) pass between the time when the amendment is signed off by the EU and national implementation?**

Answers:

- *About 3 months.*
- *On Average 3 months.*
- *Normally 6 – 8 weeks.*
- *Usually from 3 – 6 months for amendments (for new framework directive it can be a longer period).*
- *Two months minimum*

**d): What are typical labour rates (€/hour, €/day, or €/year) for the personnel involved in transposing the requirements to national law?**

Answers:

- *30 €/hour.*
- *On Average 2000 €/month.*
- *Approx 14 €/hour.*
- *There are many personnel involved from different ministries and also from our EC type-approval authority, so it is hard to answer this question, besides it is only one of our duties so it is even harder to calculate costs for transposing such amendments.*
- *45 €/day/person*
- *Legal resource is €550/day, technical resource is €264/day and Policy advisor and QA is €352/day.*

**e): What action is required for the EC to register/approve the national implementation?**

Answers:

- *The implementation is notified to the EC.*
- *As it is written in the directives.*
- *If you mean "member states shall communicate to the Commission the main provisions of national law which they adopt in the field covered by this directive" then yes we do it after each amendment is adopted.*

**Q5. If the current type approval framework was to be replaced by one co-decision (parent) regulation and one implementing regulation:**

**a): Will it be necessary to repeal or amend existing national legislation as a direct result of the change?**

Answers:

- *We could repeal one national decree and we would have to amend another national decree.*
- *Yes.*
- *We will have to repeal the existing national legislation.*
- *Yes, existing national legislation should be repealed.*
- *Yes, it will be necessary to repeal the existing national legislation and this will cause a gap, related to the characterization and inspection of the vehicle before its registration.*
- *Same changes required as in Q1.*

**b): Will it be necessary to introduce new legislation to recognise or implement the new EU Regulations?**

Answers:

- *No*
- *No.*
- *We will have to adopt new national legislation system.*
- *Only in case if regulation provides any possibilities for Member states to choose something. If there are any options for member states, we have to make regulations issued by the Cabinet of Ministers to make concrete limits.*
- *Yes.*

**c): If the answer to 5(a) or (b) is Yes, how much effort (in terms of person hours/days and costs) will you need to invest to make the necessary changes?**

Answers:

- *About 200 person hours.*
- *Altogether 2 person months.*
- *This will work for two persons in about 5 months.*
- *See answer to 4(d).*



- *Eight persons, thirty days/person, eight hours/day.*
- *5-10 times the effort of Q1, depending on the scale of changes, their complexity and impact on existing Regulations.*

**d): When amendments to the technical requirements of the new regulations are made in future, what action would now be required within your Member State to implement the changes within your national law?**

Answers:

- *We would still have to amend one national decree, the decree on use of tractors on roads, a decree with many references to the present tractor directives.*
- *We think that no action is required to implement the changes in the Hungarian legal system, but we had to monitor the changes and operate an information system for the parties interested.*
- *This is work for one person in about five days*
- *In the case that the regulation provides any possibilities for Member States to choose something, we have to make the concrete limits in our legislation (by amendments of existing legislation or making a new one).*
- *New ministerial degree and circular letters with instructions for the Prefectures.*
- *Same as Q1.*

**e): How much effort (person hours/days and cost) would be required for the actions described in (d) above?**

Answers:

- *About 50 person hours.*
- *Altogether 1 person month.*
- *About €600.*
- *Three persons, five days/person, eight hours/day.*
- *It may not require changes to national law. If changes are required they could be up to 50% of the effort required for Q1.*

**f): Part of the change proposed in this option is that certain technical requirements and limit values considered very important to wider EU policy would be contained in the co-decision regulation, whilst less important criteria and technical details (such as test procedures) would be included in the implementing (comitology) regulation:**

**i): What are the advantages and disadvantages of this approach?**

Answers:

- *It would be rather difficult to decide which technical requirements are important and which are minor. The test procedures are now better updated than the requirements of the tractors.*
- *Advantages: There is no efforts to implement the regulations and their changes in our legal system. Disadvantage: Less transparency in the whole system of regulation.*
- *On the national level this is a disadvantage, because we will have two documents on each issue and that is less transparent and user friendly.*

**ii): Would this speed up the process of adapting regulations to technical progress?**

Answers:

- *Not very much except for test procedures in those cases where the parliament is not included.*
- *No.*

**iii): If so, by how much?**

Answers:

- *In the best case about half a year.*

**iv): Can any cost savings or increases be attributed to this change?**

Answers:

- *Perhaps some work in the parliament.*
- *No.*

**v): If so, how much?**

No response

**Q3. If the current type approval process was to be replaced by one co-decision regulation and three implementing regulations (e.g. one each for environmental requirements, road safety requirements and work safety requirements):**

**a): Would the initial effort required to implement the change be any different to that described in your answer to 2 (a) and (b) above? If so, how would it differ and what implication would there be on the effort/costs involved?**

Answers:

- *No not in principle as long as we are talking about regulations.*
- *No.*
- *No.*
- *It would be the same as 4 (a) and (b).*
- *Same administrative expenses.*
- *No response!!*

**b): Would there be any difference in the process, effort or cost involved when the regulations were, in future, amended or adapted to technical progress? If so by how much?**

Answers:

- *No*
- *No.*

- *The same as answer 4(d).*
- *I guess not, it would be like in answer 4(a).*
- *One person, two days eight hours/day.*

**c): In your opinion what advantages and/or disadvantages would there be to having three implementing regulations rather than one?**

Answers:

- *As there would always be minor changes in some of the regulations, we would have to change our national decree more often if there are four regulations instead of one or two.*
- *See under point 4(f).*
- *No influence on the national level.*
- *Don't know. Probably 3 Regulations issued by the Cabinet of Ministers instead of 1.*
- *Three implementing regulations is an advantage, because they will provide us with more and detailed technical data.*

**d): Would this increase or decrease the effort involved in adapting the regulations to technical progress and why would it have this effect?**

Answers:

- *The number of regulations as such does not have a great influence on the effort needed.*
- *No.*
- *No influence on the national level.*
- *Don't know*

**Q7. Would there be any further advantages or disadvantages if the current type approval process was to be replaced with one co-decision regulation and a larger number of separate implementing (comitology) regulations, similar to the current number of separate Directives?**

Answers:

- *In principle there are not great advantages in changing from directives to regulations if the number of separate implementing regulations is the same as the number of separate directives now. If the number of implementing regulations could be reduced to one or two the simplification would be evident.*
- *No.*
- *This would be the best solution.*
- *I think that it would be almost the same like it is now, the only difference would be that we have to make national legislation only for the options but not for all texts.*
- *The change from directives to regulation will not influence the cost of implementation to our country. The problem we face today and will continue to have even after a possible replacement of the directives, is that the existing European Laws don't cover the entire requirements for agricultural and forestry tractors (i.e. three point system, P.T.O. output, minimum velocity etc which can*

*be considered as basic characteristics of a tractor intended to use for agriculture), requirements that otherwise are fulfilled from OECD codes.*

**Q8. If the current range of Directives, Regulations and standards were retained:**

General comment:

- *Compulsory approval should only apply for T1, T2 and T3. For the other categories the choice between EC type approval and national type approval should remain.*

**a): What proportion of vehicles of each category will be approved to just one of the requirements?**

Answers:

- *T1 tractors are approved according to the directive 2003/37, T5 to noe national decree as well as trailers, towed machines are placed on market according the machinery directive (95/16).*
- *100% of all categories*
- *100% of T1-T3 vehicles*
- *0% of all categories*
- *Until now they did not grant any type approval for tractors.*
- *Unfortunately I can't answer these questions because in [Member State] we don't have tractor manufacturers and only one trailer manufacturer and our EC type approval authority has approved only a couple of tractor types so it is impossible to make calculations which way is better and cheaper.*
- *EC type approval or OECD code are adequate for issuing our national type approval.*

**b): What proportion would be approved to more than one, normally equivalent, requirement?**

Answers:

- *Only one test result is needed if the test is done according to the directive or an equivalent standard.*
- *100% of all vehicle categories*
- *100% of T1-T5 vehicles*
- *Same as 8(a).*
- *0% of all vehicle categories*

**c): On average, how much does each approval cost, including approval authority fees and the effort involved in preparing a vehicle for test?**

Answers:

- *The approval authority fee is €7,156.*
- *This is a difficult question to answer because it all depends on the test in question. An EMC approval to 75/322/EEC would cost in the order of £17,000. A Cab structure approval to 79/622/EEC would cost in the order of £6,000. A simple*

approval to say 86/415/EEC would only cost around £400. We do not do the minor approvals as these are always covered within the EEC FTA test/approval inspections. A typical EEC FTA cost approx €15,000. This does not include various system approvals such as EMC, ROPS Engine Emissions, rear coupling devices etc which in some cases are destructive testing.

- See answer for 8(a).
- Fee for EC type approval €500.
- Full Type Approval for a complete range of tractors with the same basic model= €100.000. This is without the prototyping cost.
- T1-T3: new EC-WVTA= ~€420; extension EC WVTA= ~€210.  
T5,C: new national TA= ~€840; extension national TA= ~€300  
R: new national TA= ~€830; extension TA= ~€300  
EC-TA for components= ~€200.  
These prices depend on the number of test reports and other documents attached to the application and the number of different main characteristics
- Granting the EC type-approval of road vehicle = 400 EUR, granting the EC type-approval of system, component or separate technical unit of road or special vehicle = 150 EUR.

**d): Does the existence of these different but equivalent standards necessitate different designs to meet the different requirements (please consider differences within the EU markets separately to differences between the EU and the rest of the world)?**

Answers:

- Yes.
- For Europe, common designs are used. For ROW and USA different legal requirements exist so the product has to be different (such as lighting and signalling for the USA)
- See answer to 8(a).
- In EU: Hitches are not harmonized in EU e.g. CUNA hitches Italy. Different trailer braking systems for EU and rest of the world: large differences for all aspects. Only OECD codes are used globally.

**e): How many person hours per year are consumed discussing the requirements for agricultural vehicles at UNECE (e.g. GRRF, GRSG, informal technical groups etc)?**

Answers:

- 20 person hours.
- Altogether 1 person month.
- Nil.
- see 8(a).
- Agricultural machinery manufacturers are only for engine emissions present in UNECE. All other regulations are not appropriate or not adapted to agricultural vehicles. On average 9 days are spent per year on UNECE meetings by industry representatives.

**f): How many person hours per year are consumed in attending EC (e.g. WGAT) meetings related to agricultural vehicles? Please include informal meetings?**

Answers:

- *40 person hours.*
- *Altogether 1 person month.*
- *250/300 hours (included ISO standards meetings).*
- *4 man days per year*
- *There are usually 1-2 WGAT (last on 3 October 2007) and 1 CATP-AT (last on 5 June 2007) meeting per year and it takes 1-2 (depends on meeting times) day to get there and back.*
- *One person 4 days/year.*
- *20 days per year are spent by CEMA representatives for informal meetings and 5 days for the WGAT meeting. For the preparation of these meetings these numbers must be multiplied 10.*

**g): How many person hours per year are consumed discussing the requirements for agricultural vehicles at OECD meetings?**

Answers:

- *40 person hours.*
- *Altogether 1 person month.*
- *Nil.*
- *see 8(a).*
- *One person 2 days/year.*
- *Around 20 days a year are spent by industry representatives for attending meetings. The preparation accounts for the same amount of days.*

**Q9. 2003/37/EC specifies a number of international regulations and standards that are considered equivalent to certain of the implementing Directives that it references. If where this the case, the relevant implementing Directive was repealed and only the equivalent standard was required:**

**a): What proportion of vehicles would now be approved to just one regulatory standard?**

Answers:

- *100% of all vehicle categories*
- *100% of T1-T5 vehicles*
- *100% of T1-T3*

**b): By how much would any change in the number of vehicles only needing one approval (i.e. difference between 5a and 6a) change the costs associated with gaining approvals (fees and preparation effort)?**

Answers:

- *No Data.*

- *I cannot foresee any change because of the different requirements between EU tractors and ROW tractors (ref National legal requirements)*
- *There would be no difference.*

**c): Would any further standardisation of vehicle design be likely?**

Answers:

- *Yes.*
- *No*
- *Questionable as differences in design are of historical nature: e.g. hitches, trailer braking systems.*

**d): If so, how much could cost be reduced due to economies of scale?**

Answers:

- *No Data.*
- *Zero*

**e): If only one international standard was required, which would you prefer it to be (for each of the technical areas where equivalents are considered in 2003/37/EC)?**

Answers: (Preferences highlighted in **bold red text**)

Subject	Base Directive	Alternative Directive	UNECE Regulation	OECD Code	No pref
Audible Warning Device	74/151/EEC V	70/388/EEC	<b>R28</b>	-	
Sound Level (external)	74/151/EEC VI	70/157/EEC	<b>R51</b>	-	

Subject	Base Directive	Alternative Directive	UNECE Regulation	OECD Code	No pref
Audible Warning Device	74/151/EE C V	70/388/EEC	R28	-	<b>x</b>
Sound Level (external)	74/151/EE C VI	70/157/EEC	R51	-	<b>x</b>
Field of Vision & Windscreen Wipers	74/347/EE C	77/649/EEC	R71	-	<b>x</b>
Steering	75/321/EE C	70/311/EEC	R79	-	<b>x</b>
Electromagnetic Compatibility	75/322/EE C	72/245/EEC	R10	-	<b>x</b>
Braking Devices	76/432/EE	71/320/EEC	R13	-	<b>x</b>

	C				
ROPS	77/536/EEC	-	-	<b>Code 3</b>	
Lighting and Light Signalling Devices	79/532/EEC	76/757EEC to 76/762/EEC and 76/539/EEC	R3,7,6,4,1,8,20,98,19,38	-	<b>x</b>
ROPS (Static)	79/622/EEC	-	-	<b>Code 4</b>	
Rear Mounted ROPS	86/298/EEC	-	-	<b>Code 7</b>	
Front Mounted ROPS	87/402/EEC	-	-	<b>Code 6</b>	
Glazing	89/173/EEC III	92/22/EEC	R43	-	x
Pollutant Emissions	<b>2000/25/EC</b>	88/77/EEC	R49, R96	-	

Subject	Base Directive	Alternative Directive	UNECE Regulation	OECD Code	ISO or EN
Audible Warning Device	74/151/EEC V	70/388/EEC	R28	-	
Sound Level (external)	74/151/EEC VI	70/157/EEC	R51	-	<b>ISO 7216</b>
Field of Vision & Windscreen Wipers	74/347/EEC	77/649/EEC	R71	-	<b>ISO 5721</b>
Steering	75/321/EEC	70/311/EEC	R79	-	<b>ISO 10998</b>
Electromagnetic Compatibility	75/322/EEC	72/245/EEC	R10	-	<b>ISO 14982</b>
Braking Devices	76/432/EEC	71/320/EEC	R13	-	<b>ISO CD 12933</b>
ROPS	77/536/EEC	-	-	<b>Code 3</b>	<b>ISO 3463</b>
Lighting and Light Signalling Devices	79/532/EEC	76/757EEC to 76/762/EEC and 76/539/EEC	R3,7,6,4,1,8,20,98,19,38	-	<b>ISO 16154 (refers to equivalent R (in annex F))</b>
ROPS (Static)	79/622/EEC	-	-	<b>Code 4</b>	<b>ISO 5700</b>
Rear Mounted ROPS	86/298/EEC	-	-	<b>Code 7</b>	<b>ISO 12003-2</b>



Front Mounted ROPS	87/402/EEC	-	-	Code 6	ISO 12003-1
Glazing	89/173/EEC III	92/22/EEC	R43	-	-
Pollutant Emissions	2000/25/EC C (97/68/EC when applicable for all vehicles)	88/77/EEC	R49, R96	-	-
hitches	98/173/EEC annex VI				ISO 5692 series; ISO 6489 series; ISO 20019; ISO 21244; ISO 24347

- *This list mainly refers to aspects for road regulation. We are of the opinion that ROPS requirements are in the scope of occupational safety and not road safety. We also believe that hitches should be included in that list (as we did here) and that pollutant emissions should be seen as an environmental requirement and not a road safety requirement.*

**f): If only one international standard was required (and therefore required future adaptation to technical progress), by how much would you expect your effort to reduce in terms of discussing agricultural vehicle requirements at:**

**i): EC Committees (e.g. WGAT)**

Answers:

- *Overview-(The effort would be approximately the same but the discussion would take place in UNECE committees and in OECD, not in EC committees) Answer to i – 20 person hours.*
- *There will be no reduction, because there is no parallel efforts (applies to ii and iii aswell).*
- *Increase*
- *If only OECD standards will be in force there will be no need to participate in other meetings.*
- *Will not reduce but should speed up the progress.*

**ii): UNECE committees (e.g. GRSG etc)**

Answers:

- *40 person hours*
- *Will remain at the same very low level.*

**iii): OECD committees**

Answers:

- *40 person hours*
- *Reduction of 100% due to the memorandum of understanding between OECD and ISO TC23/SC2*

**Q10. Are there any requirements to comply with Directives in 2003/37/EC, where equivalent standards are not currently offered but could be in future? If so, please identify the equivalent standards and explain their advantages and disadvantages.**

Answers:

- *2003/37/EC has some requirements that are totally inappropriate for agricultural vehicles such as spray suppression, rear protection and lateral protection. These are automotive requirements and the design of the vehicles do not lend themselves to these directives. We are talking off road working vehicles. Seat belt anchorages and seat belts could be replaced by ISO 3776 series of standards.*
- *ISO/CEN standards do exist, are published or are in drafting stage for about 90 % for the single directives under 2003/37/EC. Some new ISO standards may be needed to cover all requirements, including occupational safety. The advantages for using standards are the fact that more dedicated experts are present and that progress is achieved faster.*

**Q11. Under the currently applicable type approval requirements (2003/37/EC):**

**a): What proportion of vehicles of categories T4, T5, C, R and S voluntarily gain EU approval (please estimate if no hard data is available):**

Answers:

- *None for all categories*
- *0% for all categories.*
- *None for all categories*
- *For T4 category we require either EC type approval or OECD. For C category where EC type approval is not granted, we require either OECD type approval or national type approval of other member state. Category T5 is not accepted in Greece because there is from national legislation, the limit of 40km/h for agricultural machinery.*

**b): When vehicles do not gain an EU approval, how many member states are they typically sold in (i.e. how many national approvals do they typically require)?**

Answers:

- *4 Member States for categories R & S*
- *12 Member States for Categories T4 & T5*
- *Varies from 1 to 27 depending on the size of the company and the type of machinery.*

**c): On average, how much does it cost to obtain Type Approval in an individual Member State, including approval authority fees and the effort involved in preparing a vehicle for test?**

Answers:

- *Fees for the national Type Approval is €200 and for any extension is €100*
- *Between 0 and 50.000 € depending on the application in each individual member state.*

**d): Do the national requirements vary in different Member States? If so, please provide details of these differences.**

Answers:

- *Front mudguards, full width mudguards, coupled brake pedals, fixed rims (not adjustable), speedometer, trailer hitch certified for G.T 40kph use, speed decal, higher brake performance.*
- *Yes, e.g. marking on the machine, lighting and signalling, wheel wedges, hitches, braking, max perm axle loads, crawler allowance...*

**e): Do these variations necessitate differences in design or performance of vehicles to be sold in different EU markets?**

Answers:

- *Most items are optional and brakes are designed to meet higher limits.*
- *Yes.*

**f): what proportions of vehicles are produced in small series such that sales across Europe are less than the limits indicated in the table?**

Answers:

- *100% of category R < 500 & 100% of category S < 100*
- *100% of T4 < 100*
- *No data available: It is highly dependable of company size and number of production. Then there are the SME's mostly active in niche products that will produce everything in small series.*

**Q12. The EC propose to complete the internal market for agricultural vehicles by extending the mandatory type approval to all categories of vehicles currently defined by 2003/37/EC; (that is to include vehicle types T4, T5, C, R and S). This would then also allow for various tractor types, e.g. high-rise, wide or low tractors, crawler tractors, trailers etc. to be sold throughout Europe after being (EU) Type-Approved just once. If such an approach were to be implemented:**

General response:

- *Compulsary approval should only apply for T1, T2 and T3. For the other categories the choice between EC type approval and national type approval should remain. The size and the mission of the company and the type of the*

*product will drive the decision for going for EC type approval or national approval(s).*

*General response regarding costs to industry and government:*

- *For categories other than T1-T3, there is currently no approval process and so the increase in cost of the CION proposal is high. Therefore, other than for manufacturers supplying international markets, a move to ECWVTA for the remaining categories of agricultural vehicle would be particularly burdensome. There is also the cost to Government which would depend on the final form of the Regulation and the extent to which any national regime might be provided.*

#### **Areas of additional cost to UK industry**

- Involvement in development process, consultations etc
- Requirements to meet technical requirements
- Set up costs re conformity of production or document collection
- Cost of gaining type or individual vehicle approval, fees etc
- Administration of applications and process management
- Cost of enforcement (registration, point of sale record, DfT Agency check)

#### **Cost to UK Government**

- Engagement in regulation development process and consultations
- Development of technical requirements for *any* national schemes
- Development of inspection manuals and procedures for new categories of vehicle
- Investment in inspection facilities (Training, equipment, manpower)
- Cost of developing enforcement regimes
- Development of regulations for ECWVTA and *possibly* national schemes and revision of existing regulations
- Consultations and evaluation
- Communications
- Stakeholder engagement/management
- Impact assessment and evaluation
- Management of process

As discussed, we have looked at these costs, and based on our experience with the RFD for passenger and goods vehicles and O category trailers, our best initial estimate [for the above costs] is as follows:

#### **Cost to UK Government**

- EC legislation – development (negotiation) and consultation = £55k, i.e. representing around 1myr of effort.
- Transposition and Implementation – EC regime only = £285k (+ £250k if new facilities required), i.e. representing around 4myrs of effort.
- Transposition and Implementation – EC regime + Small Series National Approval and IVA schemes = £1427k (+ £650k if new facilities required), i.e. representing around 21myrs of effort.
- *i.e. 5 (1+4) or 22(1+21) man years of effort in total*

#### **Cost to UK Industry per company**

- Set up costs for legislative regime = £75k
- Set up costs per vehicle type = £25k
- Ongoing costs per annum = £16.5k
- Ongoing costs per vehicle = £50

**a): How much would the cost of producing a vehicle intended for sale in more than one market reduce as a result of:**

**i): The reduced number of individual approvals required?**

**ii): Standardisation of design and economies of scale?**

Answers:

- *All tractors have to meet all requirements*
- *For (i) Is not included in production but in developing cost. For (ii) 0-10 %*

**b): If as proposed each vehicle only needed one EC type approval, how many vehicles would be required to gain fewer approvals?**

Answers:

- *We have no information.*

**c): Would the mandatory application of the existing technical requirements in 2003/37 and the separate technical directives that it references, require significant changes to the design and performance of vehicles of each category? If so, please provide details and estimates of the change in the cost per vehicle of implementing these changes.**

Answers:

Vehicle category	Significant changes required? (Yes/No)	Description of changes	Estimated cost per vehicle (±€xx)
R		Improved brakes	3000
S		Approved brakes	3000

Vehicle category	Significant changes required? (Yes/No)	Description of changes	Estimated cost per vehicle (±€xx)
T4.2	Yes	Steering, Brakes, Lighting & signalling, Noise, Guarding, EMC, Coupling devices etc etc.	+ €15,000
T5	Yes	Stability, Seat belts, speedometer, Spray suppression, Rear & Lateral protection	+ €5,000
C4.2	N/A	Steering, Brakes, lighting & Signalling, Noise, Guarding, EMC, Coupling devices etc, etc.	+ €15,000
R	Yes		
S	N/A		

- *Many requirements are not yet defined. But we do not expect other or more severe requirements than the most severe requirements now applicable in one member state. Therefore manufacturers are already producing for the worst case scenario. The necessary changes would therefore be 0.*

**d): Would these changes bring any road safety, work safety or environmental benefits? If so, please quantify wherever possible.**

Answers:

- *Improved brakes on trailers could bring some improvements in road safety but the changes in the requirements for towed machines would not bring any benefits.*
- *Yes because it will form unified and clear requirements system.*
- *Spray suppression, rear and lateral protection would hinder the operation of the tractor in it working environment thus making it less safe.*
- *Yes, standardized/harmonized technical solutions will be better integrated in vehicles than the current add-on variants applicable today (e.g. difference in sizes and formats and position of striped signalling plates). There will be less confusion among users and bystanders related to signalisation (rotating beacon). The best/optimal technical solution will be used all over EU27 as the best solution used in one member state. Standardization of interfaces between vehicles will obviously improve road and occupational safety and environment. By applying international standards, drafted by experts in the specific field, we can assume that the performance level in the three areas will be higher.*

Overall comment from one respondent regarding the proposed changes:

- *I can not foresee any savings for industry as we will still need inspections for the EEC TFA approvals, so weather standards or Directives are used the end cost to the manufacturer will not change.*
- *The only advantage could be that standards can be updated quicker than the current system of amending Directives which takes years and once agreed by the WGAT they disappear into the DGE black hole never to see the light of day.*

## **Appendix C Meeting Report – 21<sup>st</sup> November 2008**

These are the minutes of an informal meeting held on the afternoon of 21<sup>st</sup> November to discuss the proposed simplification to the type approval legislation for agricultural vehicles.

### **C.1 List of attendees**

CEMA

TRL

AEA

UK Department for Transport

### **C.2 General introduction**

TRL offered a brief overview of the project and clarified that the scope of the project was to consider only the costs associated with changing the structure of the type-approval framework, on the basis that there are no changes to the existing technical requirements.

It was agreed that the structure of the workshop would follow the three separate options that TRL have been asked to consider.

### **C.3 Option A – Split level approach**

TRL explained that this option was to consider replacing the existing type-approval framework with one Regulation adopted by co-decision, and one or a small number of implementing Regulations adopted by comitology.

One representative indicated that a major tractor manufacturer put 1.5 man years per annum into dealing with multiple approvals in one Member State. It was suggested that money (un-quantified) could be saved on the administrative process by eliminating the individual approvals, but this might create compatibility problems with the existing fleet.

TRL explained it had estimated that there were 1-2 amendments to EC Directives per year, based on the number of published documents on the EC website. Representatives suggested that this number was more likely to be 4-5 amendments per year if changes to the Machinery Directive and other hidden/associated amendments were also considered.

TRL asked if there would be any benefit to have a single implementing Directive or three implementing Directives (one each for road safety, work safety and environmental safety issues). The consensus was that there would not be any particular financial benefit in having three implementing Directives (one each for road safety, work safety and environmental safety issues), instead of a single Directive containing all three. However, it was indicated that it would be preferable to have three implementing Directives because it would provide a clear, logical structure.

### **C.4 Option B – Reference to equivalent standards**

TRL explained that this option was to consider simplification by reference to equivalent standards so that, where appropriate, the technical provisions of some EC Directives, can be replaced with reference to other standards such as UNECE Regulations, OECD Codes or ISO Standards.

TRL explained that the current “do nothing” option was based on the assumption that, where multiple approvals exist, manufacturers obtain more than one approval. Thus meaning if only a single approval method was offered, there would be a cost saving to the manufacturer.

Representatives explained that most manufacturers only ever gain approval to the most appropriate type approval standard and so the action of repealing Directives is unlikely to have any substantial benefit because industry do not currently gain multiple approvals for the same item.

It was also highlighted that permitting fewer approval options might have a negative effect for industry. For example if manufacturers were only permitted to get ROPS approval through OECD there would be less competition which might mean that test fees could increase or that it could take longer to obtain the test certificate. It was reported that currently it can take over three months from the time the test report is issued to when the test certificate of conformity is issued which, in the opinion of industry, is already too long.

It was commented that speeding up the progress to market would be very beneficial because manufacturers are often bound by a phasing-in-date (e.g. engine emission in 2010) which can further increase delays because the test houses become extra busy at these times.

Representatives also stated that they would welcome a system that has fewer standards but still allows competition in the testing and approval authorities.

TRL requested clarification of the cost of a type-approval because replies to the stakeholder questionnaire had suggested that the typical cost of an approval was €10k - €15k. However the replies also stated that other tests such as EMC would cost approximately €17k, plus some tests may also result in the destruction of the vehicle, which would substantially increase the cost of approval.

Representatives explained that type-approvals are gained using a “family approach” whereby some test results from a particular type of vehicle can be re-used for another vehicle type. For example, if a new engine was introduced then this would require a separate type-approval, however if this vehicle used the same cab structure as another type of vehicle then it might not be necessary to obtain a new ROPS approval. Therefore whilst it may cost substantially more than €10k - €15k to approve some vehicles, it will also cost much less than this for other vehicles, thereby averaging out to this figure.

TRL explained that they had made estimates for the effort required to attend UNECE, EC and OECD meetings based on responses from the stakeholder questionnaire and the attendee lists for previous meetings published on the EC website.

Representatives asked if TRL’s estimates for the number of person-days spent attending European meetings included ISO/CEN meeting because it was estimated that about 200 days per year were spent at these meetings. It was noted that not all of these meetings were associated with only T1-T3 tractors and so it would be hard to calculate a precise figure for these categories of vehicles alone.

One representative stated that they believed that any benefits from changing the type approval structure to make reference to equivalent standards would only be achieved through technical improvements rather than from savings as a direct result of the different structure.

It was also mentioned that some Member States are still making new non-harmonised regulations for their own country and that this should be forbidden.

TRL explained that they had not found any data on the exact number of type approvals obtained in EU-27 each year and that the figures used in the first draft of the impact assessment were an estimate. TRL asked if stakeholders had any data on the number of type approvals granted per year for T1, T2 and T3 tractors. It was explained that the



number of approvals changed every year as it was partly dependant upon the implementation dates for different standards. As an example, it was stated that for vehicles over 130hp, one manufacturer would need approximately 150 different types approved (including machinery) in 2011. It was estimated that approximately half of these would be tractors.

Representatives explained that the OECD co-ordination centre produces an annual report which summaries the activity of their testing stations and could be used to estimate the number of OECD approvals granted each year.

### **C.5 Option C – Completion of the internal market (T4, T5, C, R & S)**

TRL explained that this option was to apply mandatory type approval to all categories of vehicles covered under Directive 2003/37/EC.

On representative explained that there are many different types of vehicles and whilst mandatory type approval might offer benefits for some of these vehicle types, there may be a dis-benefit associated with other. Representatives provided the following overview of the different vehicle categories:

**Category T4.1:** These are high clearance tractors mainly used in France and with a small number of manufacturers. These vehicles are rarely exported and so it is estimated that EC approval would always cost about three times as much as a national approval.

**Category T4.2:** These are typically big articulated vehicles which do not have any road safety equipment and so there would be a substantial cost (~€15k per vehicle) to meet these requirements. However, these vehicles are sold in about ten Member States and so a single EC approval could offer some standardisation of design which could save approximately 2% of the value of the vehicle.

**Category T4.3:** These are alpine tractors with a low centre of gravity to allow them to work on steep inclines. These are mainly only used in Austria and Switzerland and some other small regions. It was reported that these are high end vehicles and so there is unlikely to be a significant cost per vehicle to meet an EC approval, and there may be some benefit from doing so as this would allow the manufacturers to sell them in other Member States.

**Category T5:** The current technical benchmark for this type of vehicle is in Germany where all-round mudguards, wheel chocks and front axle suspension is required on all T5 vehicles. It was estimated there would be an investment cost to complete the requirements for this vehicle type because many Directives do not currently have any requirements for category T5 vehicles. The magnitude of this cost would depend upon where the minimum technical level was set. For example, if the current German requirements were used then the cost per vehicle could increase by approximately 2-3%, whereas if the technical requirements were improved (e.g. ABS was required on all T5 vehicles) then the vehicle cost could increase by as much as 10% - 20%.

**Category C:** There are niche markets for these vehicles with many complex configurations of vehicles. Vehicles with steel tracks are not permitted to travel for long distances on the road to reduce noise and the risk of damage to the road surface. There are many low volume manufacturers selling to specific local markets. The costs associated with implementing mandatory type approval are hard to quantify because they would depend on the size of company.

**Category R:** There would be an investment cost to complete the requirements for these vehicle types because many Directives do not currently have any requirements. Category R4 vehicles are big and heavy and so improvements in road safety might justify this change, however the number of these vehicles is low. It was considered that there could be a benefit from harmonisation of signs, reflectors, lighting and signals as Member States often have very different and precise requirements for these.

**Category S:** The thoughts for this category of vehicle were similar to category R vehicles. It was also highlighted that some vehicles (e.g. sprayers) have very high diameter wheels which would require huge brake drums to achieve a brake efficiency of 50%. It was suggested by representatives that a requirement of 35% with a speed limitation would be a more practical and feasible option.

One representative explained that there is a wide spectrum of different vehicle types within categories R & S and so costs may not apply to some vehicles making it hard to quantify an exact figure. In general, it would be preferable to have more speed categories for vehicles and to apply different requirements based on these categories.

TRL acknowledged the concerns about the potential additional approval requirements for small volume manufacturers, but questioned whether a small series exemption would apply in these cases which could relieve some of this burden. It was discussed that the small series exemption could offer some relief however; this might lead to some market distortion and prevent smaller manufacturers expanding. For example, when selling vehicles within the small series limits a manufacturer would be exempt from type-approval requirements. If they looked to expand and now exceeded the small series limits then they may encounter financial or technical problems which might prevent them from obtaining full EC approval.

A comment was made that meeting the environmental requirements should not be a problem because engines are already required to meet the environmental Directives. As such it is expected that this would not have any effect on the cost benefit analysis.

Similarly, for the work safety aspects, it is expected that some benefits could arise from standardisation although it was acknowledged that this would come in the future and did not form part of this impact assessment.

## **Appendix D Impact Assessment – Simplification of Type Approval requirements for agricultural vehicles**

### **D.1 Introduction**

In direct response to the Commission's Service Request, TRL have considered the following options in this cost benefit analysis:

- Option A - Replacing current directives with a "split level approach" legislation
- Option B - Replace existing technical provisions with reference to other standards
- Option C - Completion of the internal market for T4, T5, C, R & S

This impact assessment only considers the costs and benefits to individual Member States and to industry organisations. The Commission has indicated that the costs and benefits incurred by them when implementing the proposed changes, and adapting the new system to technical progress will be dealt with by the Commission in their own impact assessment report.

#### ***D.1.1 Overview of respondents***

A questionnaire was submitted on 3<sup>rd</sup> October 2008 to representatives from 27 Member States governmental organisations and industrial organisations.

A total of 22 responses were received, however only 11 respondents attached a completed questionnaire; the remaining 11 only commented on their availability to attend future meetings.

From these 11 responses; nine were from representatives of Member States and two were from industry organisations. The Member States that responded were:

- Finland
- Greece
- Latvia
- Hungary
- Slovenia
- UK
- Romania
- Slovakia
- Austria
- Estonia

The information provided in the completed questionnaires (Appendix B) and the comments received during a Stakeholder Workshop held on 21<sup>st</sup> November (Appendix C) have been used as the basis for this cost benefit analysis.

### **D.2 Option A – Split level approach**

This option is to simplify the current legislative framework for agricultural vehicles and replace the 24 directives by "split-level" legislation: a Regulation adopted by co-decision and a coherent, limited number of implementing Regulations adopted by Comitology.

For this option the following scenarios were considered:

4. *Do nothing* - retaining the agricultural vehicle Type Approval in its current form.
5. *Replace the EC Framework with two Regulations* (one by co-decision & one by comitology)
6. *Replace the EC Framework with four Regulations* (one by co-decision & three by comitology [environmental, road safety and work safety])

#### **D.2.1 “Do nothing” - Retaining the agricultural vehicle Type Approval in its current form**

For this scenario, Directive 2003/37/EC would remain in its current form with all Member States retaining reference to the existing 24 implementing directives.

Stakeholders were asked what their procedure is, within their national legal framework, when one of the current 24 directives is amended. The responses were varied with some needing to prepare technical specifications and others modifying one or two “decrees”.

Each respondent provided an estimate of the staff time required to make the necessary changes as well as an estimated labour rate for the staff that would be involved in the process. Based on this information, the cost for an individual Member State to make the necessary changes to their National Legal Framework was estimated to be between €270 and €18,040 per amended directive, with an average cost of €4,4,395 per change.

The Enterprise and Industry section of the European Commission’s website contains a chronological list of directives and Regulations<sup>5</sup>. This list was used to calculate that there has been, on average, between one and two changes/amendments to EC directives on wheeled agricultural or forestry tractors per year for the last 20 years. However, feedback from the Stakeholder Workshop (Appendix C) suggested that if the changes to the Machinery Directive and other associated amendments (for example to the engine emissions directives, which are required by Directive 2003/37/EC but are not specifically an agricultural vehicle directive) were also considered it was more likely that there were between four and five amendments per year.

This means that the annual administrative cost to EU-27 Member States to maintain the type approval system in its current format would be between €1,080 and €90,200 per Member State, with an average of €19,778 based on the person hours required to make the necessary changes and estimated staff costs. Multiplying these costs by the 27 Member States gives a total estimated cost to EU-27, as shown in

**Table D8: Summary of estimated “do nothing” costs.**

	Lower Limit	Average†	Upper Limit
Cost per change for individual Member State	€270	€4,395	€18,040
N° of amendments per year	4	4.5	5
Annual cost per Member State	€1,080	€19,778	€90,200
N° of Member States	27	27	27
<b>Annual cost for EU-27</b>	<b>€29,160</b>	<b>€533,993</b>	<b>€2,435,400</b>

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

<sup>5</sup> <http://ec.europa.eu/enterprise/automotive/directives/tractors/index.htm>

It can be seen that there was a substantial difference between the highest and lowest values provided by the six Member States that responded. The response from the UK showed a much higher cost compared with the other Member States that responded to the questionnaire. The UK response provided a breakdown of the costs which included technical and legal resources as well as policy advisors. The responses from other Member States did not include such detail and so it is unclear if their estimates are directly comparable.

It is possible that this variation is because of differences in the way each respondent estimated the costs and effort required (i.e. the actual costs are the same in each Member State but the respondents did not have the necessary data to provide an accurate figure, and provided variable estimates). If this is the case, then the most appropriate method of estimating the cost across the EU-27 is to multiply the lowest and highest values by 27 to produce a range of results.

However, it is also possible that the costs stated by the respondents are accurate but there is a genuine disparity in the level of effort required to implement the proposed changes and/or the difference in labour rates for the different Member States. If this is the case then the appropriate method of estimating the cost to the whole EU-27 would be to take an average of the cost provided by the six Member States that responded and multiply this by 27.

The written comments from respondents suggest that there are genuine differences in the effort required to implement changes to directives in each Member States. This means that the true cost is likely to be closer to the average value quoted in

than either the extreme upper or lower values. However, only eight Member States responded quantitatively to the questionnaire so it is possible that the costs in these Member States are not fully representative of the whole EU. This could lead to the actual costs varying to some extent from the average value.

#### ***D.2.2 Replace the EC Framework with two Regulations (one by co-decision & one by comitology)***

For this scenario, Directive 2003/37/EC and its 24 implementing directives would be replaced by one "Mother" Regulation adopted by co-decision and one implementing Regulation adopted by Comitology.

If this scenario was selected then there would be an initial administrative investment to Member States to replace the current type approval framework with the two Regulations discussed, followed by a regular annual cost to adapt the new Regulations to technical progress.

Responses from the stakeholders suggested that the costs of the initial investment of administrative effort could range from €675 to €135,300 per Member State. This represents substantial variation which, again, incorporates differing labour rates in different Member States and differences in the amount of effort each Member State reported necessary to complete the change. The majority of respondents reported that they would not need to introduce any new legislation but one Member State reported that they would have to adopt a completely new national legislation system. Another also specified that they would be required to make changes to their approval regulations, which would include checking drafts, carrying out impact assessments, quality assurance, gaining ministerial approval and laying the proposal before Parliament.

Multiplying the above range by the 27 Member States gave an estimated initial investment cost ranging from €18,225 to €3,653,100 with an average of €909,225. Again, the written comments about the effort required suggest a genuine difference in the costs in each Member States. However, the low number of responses allows the potential for some bias in the answer such that the true cost for the EU-27 is likely to be closer to the average than the extreme values quoted.

In addition to the initial investment to change the legislation, there would still remain a regular need to adapt the new framework to technical progress. The EC has stated that using a Regulation rather than a Directive would remove the need for Member States to transpose the requirements into their national legislation. However, stakeholders from the Member States reported that they would still have to take some action to implement changes, with each change reported to cost them between €70 and €9,020, with an average cost of €2,635. These figures reflect the comments of some Stakeholders which estimated a 50% reduction in effort compared with the “do nothing” scenario.

Based on the assumption that there would still be four to five amendments per year, the annual cost per Member State has been estimated to be between €280 and €45,100. Multiplying this range by 27 Member States gave an estimated annual cost of between €7,560 and €1,217,700 with an average cost of €320,153, as shown in Table D9.

**Table D9: Summary of costs to replace the EC Framework with two Regulations.**

	Lower Limit	Average†	Upper Limit
Investment cost per Member State	€675	€33,675	€135,300
N° of Member States	27	27	27
<b>Investment cost for EU-27</b>	<b>€18,225</b>	<b>€909,225</b>	<b>€3,653,100</b>

Cost per Member State to amend new Regulation	€70	€2,635	€9,020
N° of amendments per year	4	4.5	5
Annual cost per Member State	€280	€11,858	€45,100
N° of Member States	27	27	27
<b>Annual cost for EU-27</b>	<b>€7,560</b>	<b>€320,153</b>	<b>€1,217,700</b>

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

Combining the initial cost to amend the framework and the amendments in year one, it is therefore estimated that there would be a minimum expenditure of €25,785 and a maximum of €4,870,800; the average being €1,229,378.

### ***D.2.3 Replace the EC Framework with four Regulations (one by co-decision & three by comitology [environmental, road safety and work safety])***

For this option, the results from the questionnaire showed no significant cost differences from the option to replace the EC Framework with two Regulations, therefore the above figures have been used to estimate a one-off cost of €18,225 to €3,653,100, and an annual cost between €7,560 and €1,217,700 with an average cost of €320,153 for EU-27 Member States.

At the Stakeholder Workshop on the 21<sup>st</sup> November 2008, industry representatives suggested that there would not be any particular financial benefit in having three implementing Regulations (one each for road safety, work safety and environmental safety issues), instead of a single Regulation containing all three. However, they indicated that it would be preferable to have three implementing Regulations because it would provide a clear, logical structure.

### D.2.4 Option A - Analysis

Since no significant difference was highlighted between cost to implement and operate one comitology Regulation and three comitology Regulations, a comparison has been made between 'no change' and 'replacing the EC framework with two Regulations'. The analysis has been undertaken for a period of ten years, assuming that the costs of implementing any change are incurred in year one. This analysis will be equally valid for the option to replace the existing framework with four Regulations.

The estimated costs for all option in this cost benefit analysis have been uplifted by 2% per annum to reflect inflation<sup>6</sup>. In addition the total costs for future years have been adjusted to estimate the 'net present value' by applying a constant discount factor of 3.5%. This reflects the fact that current benefits have greater value in the present than in the future.

**Table D10: Option A - The Annual and cumulative cost in making no changes to the type approval framework.**

Year	Annual Cost*			Cumulative Cost*		
	Lower Limit	Average†	Upper Limit	Lower Limit	Average†	Upper Limit
1	€ 29,160	€ 533,993	€ 2,435,400	€ 29,160	€ 533,993	€ 562,302
2	€ 28,737	€ 526,253	€ 2,400,104	€ 57,897	€ 1,060,246	€ 1,116,455
3	€ 28,321	€ 518,627	€ 2,365,320	€ 86,218	€ 1,578,873	€ 1,662,576
4	€ 27,910	€ 511,110	€ 2,331,040	€ 114,129	€ 2,089,983	€ 2,200,783
5	€ 27,506	€ 503,703	€ 2,297,257	€ 141,635	€ 2,593,686	€ 2,731,189
6	€ 27,107	€ 496,403	€ 2,263,963	€ 168,742	€ 3,090,089	€ 3,253,909
7	€ 26,714	€ 489,209	€ 2,231,152	€ 195,457	€ 3,579,297	€ 3,769,053
8	€ 26,327	€ 482,119	€ 2,198,817	€ 221,784	€ 4,061,416	€ 4,276,731
9	€ 25,946	€ 475,131	€ 2,166,950	€ 247,730	€ 4,536,547	€ 4,777,051
10	€ 25,570	€ 468,245	€ 2,135,545	€ 273,299	€ 5,004,793	€ 5,270,121

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

Table D10 above shows the annual and cumulative costs in making no change to the EC framework. The lower limit is derived from the lowest answer given by the stakeholders multiplied by the 27 Member States; and similarly the upper limit is given by the highest answer given multiplied by the 27 potential adoptions.

Table D11 shows similar figures for the option to replace the existing framework with two Regulations. Once again for the first year of this option the initial investment cost and the estimated annual cost are combined.

<sup>6</sup> In January 2008, Eurostat (the Statistical Office of the European Communities) reported that annual inflation in the Euro area was 3.4%. This had fallen to 1.7% by January 2009. It is impossible to predict if the downward trend will continue or if it will stabilise or increase. Therefore an average value of 2% has been used for the analyses in this study.

**Table D11: Option A - The Annual and cumulative cost in replacing with two Regulations.**

Year	Annual Cost*			Cumulative Cost*		
	Lower Limit	Average†	Upper Limit	Lower Limit	Average†	Upper Limit
1	€ 25,785	€ 1,229,378	€ 4,870,800	€ 25,785	€ 1,229,378	€ 4,870,800
2	€ 7,450	€ 315,513	€ 1,200,052	€ 33,235	€ 1,544,890	€ 6,070,852
3	€ 7,342	€ 310,940	€ 1,182,660	€ 40,578	€ 1,855,830	€ 7,253,512
4	€ 7,236	€ 306,434	€ 1,165,520	€ 47,814	€ 2,162,264	€ 8,419,032
5	€ 7,131	€ 301,993	€ 1,148,629	€ 54,945	€ 2,464,256	€ 9,567,661
6	€ 7,028	€ 297,616	€ 1,131,982	€ 61,973	€ 2,761,872	€ 10,699,643
7	€ 6,926	€ 293,303	€ 1,115,576	€ 68,899	€ 3,055,175	€ 11,815,219
8	€ 6,826	€ 289,052	€ 1,099,408	€ 75,725	€ 3,344,226	€ 12,914,627
9	€ 6,727	€ 284,863	€ 1,083,475	€ 82,451	€ 3,629,089	€ 13,998,102
10	€ 6,629	€ 280,734	€ 1,067,772	€ 89,080	€ 3,909,823	€ 15,065,875

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

By subtracting the cumulative costs associated with replacing the existing framework with two Regulations (Table D11) from the cumulative costs associated with maintaining the current framework (Table D10) it is possible to estimate the net cost effect of simplifying the regulatory framework by replacing the 24 directives with a system of “split-level” legislation. Negative values imply a net increase in costs (cost) and positive values imply a net decrease in costs (benefit)

Table 5 and Figure 1 below shows, for the first year, an initial cost of between €25,785 and €4,870,800 is required. For subsequent years the estimated cost to amend the new Regulation is less than the estimated cost to amend the current Framework, resulting in a year on year saving.

It is estimated that it would take between zero and three years to achieve a benefit to cost ratio of one (i.e. break even) and ten years after the scheme is implemented it is estimated that a benefit to cost ratio of between 4:1 and infinity could be achieved.

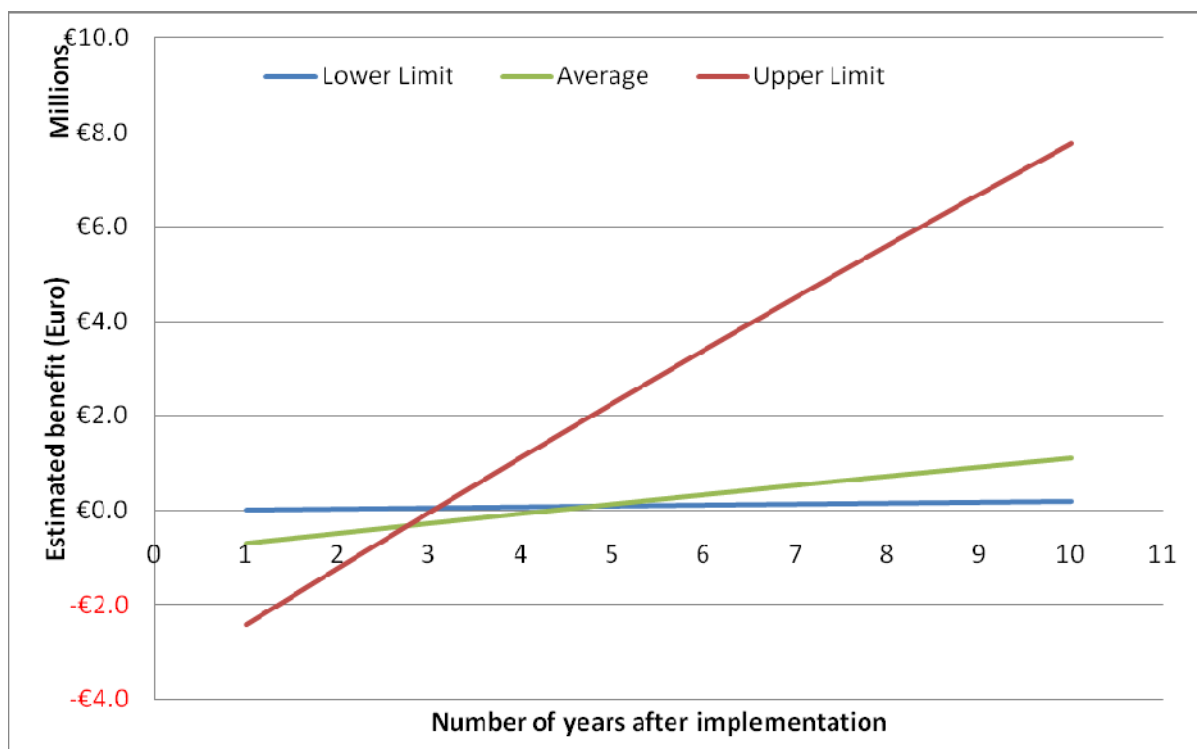


**Table D12: Option A - The cumulative benefit of simplifying the regulatory framework with “split-level” legislation.**

Cumulative benefit *			
Year	Lower Limit	Average †	Upper Limit
1	€ 3,375	-€ 695,385	-€ 2,435,400
2	€ 24,662	-€ 484,644	-€ 1,235,348
3	€ 45,640	-€ 276,957	-€ 52,688
4	€ 66,315	-€ 72,281	€ 1,112,832
5	€ 86,690	€ 129,430	€ 2,261,461
6	€ 106,769	€ 328,217	€ 3,393,443
7	€ 126,558	€ 524,123	€ 4,509,019
8	€ 146,059	€ 717,190	€ 5,608,427
9	€ 165,278	€ 907,458	€ 6,691,902
10	€ 184,219	€ 1,094,970	€ 7,759,675

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.



**Figure D6: Option A - The cumulative benefit of simplifying the regulatory framework with “split-level” legislation.**

It is possible that the actual benefit to cost ratios could differ from these estimates because they will be influenced by some factors which could not be quantified in this analysis. For example:

- The Commission will incur costs in developing and implementing the new Regulatory framework, thus increasing costs and lowering the benefit to cost ratio
- Under the current type approval system, the Commission must check that each Member State has correctly transposed the requirements of each new Directive or amendment and, if necessary, start infringement procedures. If the proposed Regulation were to be implemented this checking and enforcing activity would not be required, thus reducing costs and increasing the benefit to cost ratios

These costs and benefits will be considered by the Commission in their own impact assessment report.

Also, the Commission has made an assessment of the ongoing administrative savings that could be made in future if Regulations replaced Directives as part of their impact assessment for the General Safety Regulation (European Commission, 2008). This document stated that:

*“much of the administrative effort required by Member States to transpose Directives into national legislation will be avoided. Assuming that one full-time official per Member State is required to transpose these Directives (including any necessary consultation process) then elimination of this task could represent a saving of around €50,000 per Member State.”*

It can be seen that the predicted saving of €50,000 per Member State per year is considerably greater than the average of approximately €12,000 predicted by this analysis, and slightly greater than the maximum €45,000. However, one major difference between the proposals for motor vehicles is the number of separate Directives and thus the number of amendments required each year. For example, the Commission's website provides a list of Directives for agricultural and motor vehicles, listed by the date of adoption. This data shows that over the last 11 years there have been, on average, less than two new or amended Directives adopted per annum for agricultural vehicles, compared with approximately six new or amended Directives for motor vehicles. It would, therefore, be expected that the annual saving associated with motor vehicles would be at least three times greater than that for agricultural vehicles. Thus, if the survey responses analysed here were applied to motor vehicles there would still be some discrepancy between the average (€36k) and the Commission estimate (€50k) but the commission estimate would still fall comfortably within the range of predictions (€1k to €135k). Overall this comparison increases confidence in the estimates derived from the survey results.

It should be noted that the number of directives has little effect on the investment cost required to make the initial change because all would be repealed at the same time with a single action.

### **D.3 Option B – Reference to existing standards**

To replace the existing technical provisions in the current implementing EU directives by reference to relevant international/European standards, such as Regulations by UNECE, Codes by OECD or standards by CEN/CENELEC or ISO.

For this option the following scenarios were considered:

3. *Do nothing* - retaining the agricultural vehicle Type Approval in its current form.
4. *Replace technical specification* of existing directives with reference to other relevant documents

#### **D.3.1 Do nothing**

With this option, the current EU directive 2003/37/EC would remain in its current form with all Member States retaining the 24 directives.

##### *D.3.1.1 Type approval costs*

Stakeholders reported that the cost for type approval is very dependent on the test being carried out. One stakeholder reported that the approval authority fees could range from €200 for a component type approval to €300 for an extension to national type-approval or up to €840 for a new national type approval. Other stakeholder also reported approval authority fees of between €500 and €7,156, with the test costing between €465 and €21,000.

One response reported that the cost for a typical type approval cost was approximately €15,000, but this did not include various system approvals such as electromagnetic compatibility (EMC), rollover protective structure (ROPS), engine emissions and rear coupling devices, which in some cases involve destructive testing. If all of these tests were to be carried out and one or more vehicles were destroyed as a result the actual cost of type approval could be much higher, possibly in excess of €100,000 (as reported by a second respondent).

Industry representatives at the Stakeholder Workshop explained that whilst the cost of full type approval could be in excess of €100,000, most manufacturers use a "family approach" to gain approvals such that some test results from one particular type of vehicle can be re-used for another vehicle type. For example, if a new engine was introduced then this would require a separate type-approval, however if this vehicle used the same cab structure as another type of vehicle then it might not be necessary to obtain a new ROPS approval. Therefore whilst it may cost substantially more than €10,000 - €15,000 to approve a small number of types, it will also cost much less than this for other vehicles, thereby averaging out to the figure of approximately €15,000.

Further evidence was gained from the cost benefit analysis carried out by TRL during a project for the European Commission investigating the effect of amending Directive 76/432/EEC (Dodd *et al*, 2007). In this study stakeholders estimated that the average cost for a type approval was €10,000 for a trailed vehicle and €15,000 for a tractor.

Annex II of Directive 2003/37/EC includes a list of standardised OECD codes (3, 4, 6, 7 & 8) which may be used in place of the test reports drawn up in compliance with the corresponding separate directives. These codes relate to the protective structures of the vehicle and if they are used as an alternative test method the cost of the EC or UNECE approval would be replaced with this alternative standard. One response from the stakeholder consultation estimated that the approval cost for ROPS was approximately €7,500.

**Table D13: Option B – Estimated type approvals costs.**

	Lower Limit	Average†	Upper Limit
EC or UNECE Type-Approval	€10,000	€15,000	€100,000
OECD Approval	€7,500	€7,500	€7,500

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

### D.3.1.2 Attend meetings

In addition to the cost of gaining type approval, there is also a cost for Member State and industry representatives to attend regular meetings, such as GRRF, GRSG, WGAT and OECD, to discuss proposed changes and other issues.

The European Commission's website publishes a list of representatives that have attended previous meetings. Based on the attendee lists for WGAT and WP.29 meetings held over the past five years it has been estimated that between 36 and 46 representatives attend each meeting.

At the Stakeholder Workshop, Industry representatives also suggested that attendance at ISO/CEN meetings required about 10 times as much effort as attending EC or UNECE meetings, at about 200 days per year. It was, however, highlighted that not all of these meetings were related to T1-T3 tractors and so it would be difficult to quantify the effort required for these vehicles alone.

Respondents to the consultation provided estimates for the annual effort required to attend meetings. Using these estimates, and the labour rates identified earlier in section D.2.1, it was possible to calculate that the annual cost associated with attending such meetings was between €310,536 and €2,608,200; with an average of €1,135,085 (Table D14).

**Table D14: Option B - Estimated annual cost to attend EC, UNECE, OECD, ISO & CEN meetings.**

Annual staff cost for one attendee at...	Lower	Average	Upper
...UNECE Meetings	€ 600	€ 1,300	€ 2,000
...EC Meetings	€ 180	€ 2,090	€ 4,000
...OECD Meetings	€ 90	€ 645	€ 1,200
...ISO/CEN Meetings	€6,756	€22,400	€48,000
Annual travel & subsistence costs	€ 1,000	€1,250	€1,500
N° of attendees per meeting	36	41	46
<b>Annual cost to attend meetings</b>	<b>€ 310,536</b>	<b>€1,135,085</b>	<b>€ 2,608,200</b>

### D.3.1.3 Translations

Currently when an amendment is made to a directive the document will be translated from English to the languages of each individual Member States. If an amendment is a co-decision Regulation then the document must be translated from its original language into the 22 other languages of the Member States. For other proposals there is an exemption for Irish, meaning that just 21 languages are required. Also when reference is made to UNECE or OECD documents, these documents already exist in two languages (English & French) and so translation is only required into 20 or 21 languages. Therefore

it has been assumed that each change in directive could be translated into 20 to 22 languages with four to five amended directives per year.

In addition, since the EU joined the UNECE system in 1998 the Commission has been required to translate documents such as UNECE Regulations when they are referenced in EU legislation. If the “do nothing” option was selected then there would remain a need to continue with these translations.

### ***D.3.2 Replace technical specification of existing directives with reference to other relevant documents***

This approach consists of repealing the EC directives where equivalent approvals from different standardisation bodies exist, and creating one regulatory standard.

#### *D.3.2.1 Type approval costs*

The “do nothing” option in section D.3.1 stakeholders indicated that although there are often different standards to which manufacturers can gain type approval in general they would only select the single most appropriate standard for each approval. This means that they do not expect there to be a change to the number and annual cost of type approvals.

For example, currently ROPS can be approved to either OECD Codes or EC ROPS Directives and will still qualify for EU whole vehicle type approval. Stakeholders have indicated that when they submit a vehicle for whole vehicle type approval they choose the standard which suits them best and only gain approval to that one standard. Therefore, if whole vehicle type approval was changed so that only one standard for ROPS is permitted, it is unlikely to offer any cost saving to the manufacturer although it might reduce the choice available to them, which could have a negative effect on competition between test houses. The magnitude of this impact could not be quantified.

However, it is possible that there could be a small reduction in the number of multiple approvals because not all components are made by the OEM. For example, approval for headlamps is likely to be sought by the manufacturer of the lamp rather than the vehicle manufacturer and, since their aim would be to sell a single lighting product to as many vehicle manufacturers as possible, it is possible that they might choose to get a component approved to multiple standards so that it satisfies the requirements of the different markets they sell to.

In this case, if there were fewer standards applicable in Europe there may be a reduction in the approval costs for these companies, even if the tractor manufacturer only submits the documents for one of those component standards as part of their submission for whole vehicle type approval. This means that this analysis might be an underestimate of the true situation.

#### *D.3.2.2 Attend meetings*

From the stakeholder questionnaire two Member State representatives indicated that they did not expect the proposed changes to the type approval framework to change the level of effort required to attend regular meetings. Another Member State representative suggested there could be a reduction in the effort required, but only if the use of a single standard (e.g. OECD) meant that there was no longer any need to attend other meetings such as CE or UNECE committee meetings. One industry representative suggested there could be an increase in the effort required although this was not quantified.

Feedback at the stakeholder workshop also suggested that a small reduction in the effort to attend meetings might be possible. It was suggested, for example, if all ROPS requirements were based on OECD Codes then there would still be a need to attend OECD meetings and EC committee meetings but the effort involved in updating the EC directives would be reduced because it would only be necessary to agree to an updated

OECD code and to change the version number of the OECD code referenced in the directive.

Industry representatives also suggested that a bigger reduction would be possible if ISO standards were given un-dated references. In this case updates to the technical requirements would be carried out in ISO committees that representatives already attended.

TRL considers that it is unlikely that un-dated references would be acceptable to EC or Member States because this would mean that there is no governmental control over the technical content. Therefore, for the purpose of this assessment it has been assumed that dated references would be required, and this would have the effect of reducing the effort required to attend regular meetings by 0% to 10%. This equates to an annual saving of up to €56,754, as shown in Table D15.

**Table D15: Option B - Estimated saving for the annual cost to attend meetings with reference to existing standards.**

	Lower Limit	Average†	Upper Limit
Estimated current annual cost to attend meetings	€ 310,536	€1,135,085	€ 2,608,200
Estimated saving from reference to existing standards	10%	5%	0%
Annual cost to attend meetings with reference to existing standards	€ 279,482	€ 1,078,331	€ 2,608,200

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

### D.3.2.3 Translations

If the technical specifications of some existing directives were replaced with reference to other equivalent documents then it could be expected that there would be a reduction in the number of new EC Directives, or amendments to existing EC Directives, that would need to be translated into the different Member States languages.

However, since the Commission are already required to translate other documents such as UNECE Regulations when they are referenced in EC Directives, increasing the frequency that alternative standards are referenced is likely to offset the potential reduction in translating EC Directives.

As such, it has been assumed that replacing the technical specification of some existing directives with reference to other relevant documents would not result in any change to the annual cost of translations.

### D.3.3 Analysis

When replacing the technical specification of some existing directives with reference to other relevant documents it has been assumed that the magnitude of the initial investment would be the same as described in Option A (section 4.1.2); namely between €18,225 and €3,653,100.

It has also been estimated that there would be no change to the annual costs associated with gaining type approvals or to make translations, as described above.

The only saving estimated for this option was the potential reduction in the effort required to attend regular technical meetings aimed at adapting the European Legislation to technical progress. This reduction is expected because some of the work involved in this process would be eliminated because it currently duplicates effort in other regulatory

forums. Table 6 summarises this potential savings and shows that the estimated annual saving from making reference to existing standards is up to €56,754

**Table D16: Option B – Estimated annual savings from replacing existing directives with full reference to other relevant documents.**

	Lower Limit	Average†	Upper Limit
Investment cost per Member State	€675	€33,675	€135,300
N° of Member States	27	27	27
<b>Investment cost for EU-27</b>	<b>€18,225</b>	<b>€909,225</b>	<b>€3,653,100</b>

Annual saving from...	Lower Limit	Average†	Upper Limit
Type approval costs	€0		
Attend meetings	€0	€31,054	€56,754
Translations	€0		
<b>Total</b>	<b>€0</b>	<b>€31,054</b>	<b>€56,754</b>

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.

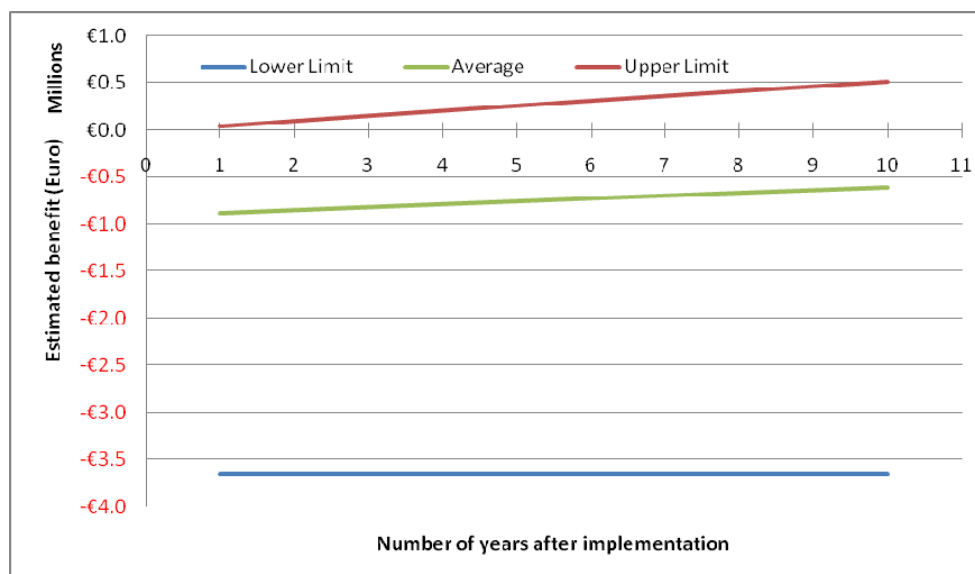
Table D17 and Figure 2 show that the magnitude of the investment cost has a significant impact on the estimated cumulative benefit for this option. It has been estimated that ten years after implementation there could be a net cost of €3.6million or a net benefit of up to €0.5million.

**Table D17: Option B - The cumulative benefit of replacing technical specification of existing directives with reference to other relevant documents.**

Cumulative benefit *			
Year	Lower Limit	Average†	Upper Limit
1	-€ 3,653,100	-€ 878,171	€ 38,529
2	-€ 3,653,100	-€ 847,568	€ 94,461
3	-€ 3,653,100	-€ 817,408	€ 149,582
4	-€ 3,653,100	-€ 787,685	€ 203,904
5	-€ 3,653,100	-€ 758,393	€ 257,439
6	-€ 3,653,100	-€ 729,525	€ 310,198
7	-€ 3,653,100	-€ 701,076	€ 362,193
8	-€ 3,653,100	-€ 673,039	€ 413,434
9	-€ 3,653,100	-€ 645,408	€ 463,932
10	-€ 3,653,100	-€ 618,178	€ 513,699

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.



**Figure D7: Option B - The cumulative benefit of replacing technical specification of existing directives with reference to other relevant documents.**

It should be noted that the above analysis does not consider the costs that would be incurred by the EC when implementing the change (i.e. repealing the existing directives where equivalents exist and amending the reference to equivalent standards).

#### D.4 Option C - Completion of the internal market

Directive 2003/37/EC became mandatory on the 1<sup>st</sup> July 2005 for new types of tractor in categories T1, T2 and T3 and will become mandatory for all new T1, T2 and T3 tractors on the 1<sup>st</sup> July 2009. For the remaining types of agricultural vehicles (category T4, T5, C, R and S) the requirements are currently optional.

In order to further complete the internal market for T4, T5, C, R and S vehicles the Commission proposes to make type approval mandatory for all vehicles that fall under Directive 2003/37/EC.

For this option the following scenarios were considered:

3. *Do nothing* – The legislation remains unchanged
4. *Full Type approval* – all categories of vehicles included

Based on data gathered in the Stakeholder Questionnaire and using input from the Stakeholder Workshop (Appendix C) estimates of the magnitude of costs and benefits for the different vehicle categories have been made.

##### D.4.1 "Do nothing"

Vehicles within the specific categories considered for this option are very diverse and can be used in very different markets. Some vehicles are manufactured by large multi-national companies and are sold in the majority of Member States and for these vehicles there might be some benefit to gaining EU type-approval because it could simplify the process of selling their vehicles in different countries. Conversely, other vehicles are produced by small manufacturers for very specific local markets and so requiring these vehicles to gain full EU type-approval could substantially increase the cost of the vehicles. As such, the impact on the different vehicle categories has been considered separately in the following sections.



#### D.4.1.1 New vehicle registrations

Dodd *et al* (2007) estimated that there were approximately 165,000 T1-T5 tractors and 630,000 category C, R and S vehicles sold in EU-25 in 2005. A breakdown of these registrations by vehicle category is shown in Table D18.

**Table D18: Number of tractors and trailers sold in 2005 (EU-25)**

Vehicle Type	Number sold (2005)
T1	120,000
T2	15,000
T3	1,650
T4	15,000
T5	13,000
<b>Subtotal (T1-T5)</b>	<b>164,650</b>
C	5,000
R	125,000
S	500,000
<b>Total</b>	<b>789,650</b>

The website [www.Landwirt.com](http://www.Landwirt.com) publishes annual statistics on the number of tractor registrations from different European countries. The most recent publication contained data for 17 of the 27 Member States<sup>7</sup> and estimated there were 160,098 tractor registrations in 2006 and 159,483 registrations in 2007. These figures are similar to those estimated by Dodd *et al* (2007). Therefore the breakdown of vehicles shown in Table D18 has been used for the calculations in this option.

#### D.4.1.2 Category T4.1

Industry representatives suggested that these are high clearance tractors mainly used in France and with a small number of manufacturers. On this basis, it has been assumed that these vehicles currently qualify for the existing small series exemptions in Directive 2003/37/EC.

These exemptions allow individual Member States to approve the use of a vehicle with less stringent requirements than are required by full EC type approval. If a vehicle is approved in this way, the Member State which approves the use of the vehicle is required to send the Commission, and all other Member States, a list of these approvals so that the other Member States can decide if they also accept the approval.

To be covered under a small series exemption the number of vehicles registered, offered for sale or put into service each year in each Member State, is limited to a maximum number as defined in Directive 2003/37/EC. These limits are reproduced in Table D19 below.

<sup>7</sup> The following EU-27 Member States were not included in the data: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Luxemburg, Malta, Poland, Romania, and Slovakia.

**Table D19: Small series limits defined in Directive 2003/37/EC.**

Vehicle category	Units (for each type)
T	150
C	50
R	75
S	50

*D.4.1.3 Category T4.2*

These are typically large articulated vehicles which currently do not have any requirements for road safety equipment. Stakeholders suggested that in many Member States these vehicles are not allowed on the road, or are only permitted to travel for limited distances. In addition it was suggested that these vehicle are often sold under the Machinery Directive and that Member States usually permit a wide variety of different weights and dimensions for them, meaning that a completely new design of vehicle can be required for every Member State that they are sold in.

*D.4.1.4 Category T4.3*

These are alpine tractors with a low centre of gravity to allow them to work on steep inclines. These are mainly only used in Austria and Switzerland and some other small regions. As such it has been assumed that these vehicles are currently covered under the small series exemptions.

*D.4.1.5 Category T5*

Stakeholders reported that the current technical benchmarks for this type of vehicle are in Germany, where all-round mudguards, wheel chocks and front axle suspension is required, and the UK, where ABS is required.

It was also highlighted that many directives do not currently have any requirements for category T5 vehicles and so there would likely be an additional cost per vehicle for them to meet any minimum requirements if they were included under mandatory type approval.

*D.4.1.6 Category C*

For track-laying vehicles there are analogous types with category T vehicles (e.g. C1, C2 etc). At the Stakeholder Workshop it was indicated that there are many low volume manufacturers selling to small niche markets, and that there are many complex configurations of vehicles. It was also highlighted that vehicles with steel tracks are not permitted to travel for long distances on the road to reduce noise and the risk of damage to the road surface. On this basis it has been assumed that these vehicles would be covered under the small series exemptions.

*D.4.1.7 Category R*

Presently there are no Directives that are directly applicable to category R vehicles. Therefore there is likely to be an additional cost per vehicle for them to meet any minimum requirements if they were included under mandatory type-approval. It is understood that there is a wide variety of vehicles ranging from manufacturers producing large numbers of vehicles to bespoke one-off vehicles made by individual farmers to meet their particular needs.

#### *D.4.1.8 Category S*

Industry representatives indicated that the types of interchangeable towed machinery are very variable with vehicles built to perform a very specific task. Given this diversity it is likely that many of these vehicles would fall under the small series exemptions and as such there would be no additional cost or benefit to include these vehicles in the mandatory type approval framework.

However, given that the small series limit for category S vehicles is only 50 vehicles per type per Member State, and considering the large number of vehicles that are sold each year (~500,000 per year according to Dodd *et al*, [2007]) it is possible that a proportion of these vehicle would have to meet the full type approval requirements.

It has not been possible to quantify this proportion so it has been assumed that 25% to 50% of the 500,000 vehicles would be required to meet the full type approval requirements.

#### ***D.4.2 Complete the internal market***

In response to the questionnaire, one Member State indicated that for categories other than T1-T3 they do not have any form of national approval process and so the cost to include the other vehicle categories would be high. Therefore, unless manufacturers were supplying international markets, implementing this option could be particularly burdensome to them.

The Member State indicated that to implement such a change could cost from €60,000, for the development and consultation involved in changing the legislation, up to €2.3million if a national scheme for small series approval (NSSTA) and an individual vehicle approval (IVA) scheme were needed.

Using their experience of the Recast Framework Directive (RFD) for passenger and goods vehicles and category-O trailers, the Member State also provided an estimate of the costs to industry associated with the administrative costs of mandatory type approval (i.e. excluding the cost that may be associated with any increase in the technical standards of vehicles). These were an estimated cost of €82,000 per company to set-up for the change in legislative regime, plus a cost of €27,000 per vehicle type. They also estimated that once implemented there would be on-going costs of €18,000 per company and €55 per vehicle.

Using input from stakeholders the estimated costs to industry associated with completing the internal market has been separately considered for each of the vehicle categories.

##### *D.4.2.1 Category T4.1*

At the time of writing the small series limits had not yet been defined for the new proposed type-approval Regulation and the effects of completing the internal market by mandating type approval for these vehicle types could depend on the precise limits that were set and what the requirements were when a vehicle qualified as small series (e.g. approved through existing national schemes or through new small series or individual approval schemes). For the purposes of this analysis, it has been assumed that the same small series limits set by the current framework Directive will continue to apply, and that small series vehicles will be approved according to existing Member State National schemes. On this basis, there would be no additional cost or benefit to include these vehicles in the mandatory type approval framework because all are likely to be produced in small series. However, this could change if the market for this type of vehicle grew or consolidated.

#### D.4.2.2 Category T4.2

These vehicles are typically sold in about ten Member States and widely varying national requirements mean that substantially different designs can be required for each. Stakeholders suggested that a single EC approval could potentially offer some benefits from a standardisation of design. At the Stakeholder Workshop, industry representatives estimated standardisation could save approximately 2% of the value of the vehicle. Assuming a T4.2 vehicle costs between €100,000 and €150,000 a 2% saving represents approximately €2,000 to €3,000 per vehicle.

However, if these vehicles were required to meet all of the road safety requirements then it is estimated that this could add a substantial cost per vehicle. As part of the stakeholder questionnaire, one respondent estimated that it would cost an additional €15,000 per vehicle to meet the type approval requirements. This gives an overall change in cost per vehicle of +€12,000 to +€13,000.

Dodd *et al* (2007) estimated that in 2005 there were 15,000 T4 vehicles registered in EU-25 (Table D18). Assuming that T4.2 vehicles account for 8,000 to 10,000 of these vehicles, it can be estimated that there would be a net cost to industry of €96m to €130m to require full type approval for this vehicle type (Table D20).

**Table D20: Option C –Estimated annual benefit of mandatory type approval of category T4.2 vehicles.**

	Lower Limit	Average	Upper Limit
Cost from additional requirements	€15,000	€15,000	€15,000
Estimated price of T4.2 vehicle	€100,000	€125,000	€150,000
Benefit from standardisation (2% of vehicle price)	€2,000	€2,500	€3,000
Overall cost per vehicle*	€12,000	€12,500	€13,000
N° vehicle registrations per year	8,000	9,000	10,000
<b>Estimated annual cost</b>	<b>€96,000,000</b>	<b>€112,500,000</b>	<b>€130,000,000</b>

\*: Lower limit = Upper limit of benefit from standardisation – lower limit of benefit from additional requirements, and Upper limit = Lower limit of benefit from standardisation – upper limit of benefit from additional requirements.

#### D.4.2.3 Category T4.3

Similarly to category T4.1 tractors, it has been assumed that, if these vehicles fall under the small series exemption and the current small series limits remain in place there would be no additional cost or benefit to include these vehicles in the mandatory type approval framework.

#### D.4.2.4 Category T5

Industry representatives suggested that, for these vehicles to meet the mandatory type-approval requirements, modifications would be necessary to the vehicles, and the cost of these changes would be very dependent upon where the minimum technical level was set. For example, if the current German requirements were used then the cost per vehicle could increase by approximately 2-3%, whereas if the technical requirements were improved (e.g. ABS was required on all T5 vehicles) then the vehicle cost could increase by as much as 10% - 20%.

This impact assessment has been prepared on the basis that there are no changes to the existing technical requirements because individual impact assessments would be carried out to measure the effect of any specific changes to the requirements. Therefore it has been assumed that requiring mandatory type-approval for T5 tractors would increase the price of a T5 vehicle by 2% to 3%. On the basis that a T5 tractor costs between €100,000 and €150,000 this represents an additional cost of €2,000 to €4,500 per vehicle.

Dodd *et al* (2007) estimated that in 2005 there were 13,000 T5 vehicles registered each year in EU-25. It has therefore been estimated that there would be a net cost to industry of €26m to €59m to require full type approval for this vehicle type (Table D21).

**Table D21: Option C – Estimated annual benefit of mandatory type approval of category T5 vehicles.**

	Lower Limit	Average	Upper Limit
Estimated price of T5 vehicle	€100,000	€125,000	€150,000
Cost from additional requirements	+2%	+2.5%	+3%
Overall cost per vehicle	€2,000	€3,125	€4,500
N° vehicle registrations per year	13,000	13,000	13,000
<b>Estimated annual cost</b>	<b>€26,000,000</b>	<b>€40,625,000</b>	<b>€58,500,000</b>

#### D.4.2.5 Category C

Similarly to category T4.1 tractors, it has been assumed that, if these vehicles fall under the small series exemption and the current small series limits remain in place there would be no additional cost or benefit to include these vehicles in the mandatory type approval framework.

#### D.4.2.6 Category R

As part of the stakeholder questionnaire, one respondent estimated that it would cost an additional €3,000 per vehicle to meet the type approval requirements. Discussions at the Stakeholder Workshop suggested that there could be a benefit from harmonisation of signs, reflectors, lighting and signals because Member States often have very different and precise requirements for these, preventing proper integration into the design. It has been estimated that a saving of approximately 2% - 3% of the value of the vehicle could be achieved. Assuming a typical category R vehicle costs between €5,000 and €30,000, the saving from standardisation represents approximately €100 to €900 per vehicle.

Dodd *et al* (2007) estimated that in 2005 there were 125,000 category R vehicles registered in EU-25. Responses to the stakeholder questionnaire in this study also estimated that 100% of each type of category R vehicle was produced in a series of less than 200 units. It has not been possible to quantify the exact proportion of these vehicles which are currently produced in quantities covered by the small series exemptions, therefore TRL has assumed that 50% to 75% of these vehicles would not be covered under the small series exemptions, and as such would require modifications, it has been estimated that there would be a net cost to industry of €131m to €272m to require full type approval for this vehicle category (Table D22).

**Table D22: Option C – Estimated annual benefit of mandatory type approval of category R vehicles.**

	Lower Limit	Average	Upper Limit
Cost from additional requirements	€3,000	€3,000	€3,000
Estimated price of category R vehicle	€5,000	€17,500	€30,000
Benefit from standardisation (%)	2%	2.5%	3%
Benefit from standardisation (€)	€100	€438	€900
Overall cost per vehicle*	€2,100	€2,563	€2,900
N° vehicle registrations per year	125,000	125,000	125,000
Vehicles not covered by Small series limits	50%	62.5%	75%
	62,500	78,125	93,750
<b>Estimated annual cost</b>	<b>€131,250,000</b>	<b>€200,195,313</b>	<b>€271,875,000</b>

\*: Lower limit = Upper limit of benefit from standardisation – lower limit of benefit from additional requirements, and Upper limit = Lower limit of benefit from standardisation – upper limit of benefit from additional requirements.

#### D.4.2.7 Category S

On the basis that similar costs and benefits to those estimated for category R vehicles are applied to this category of vehicle, and that 25% to 50% of the 500,000 vehicles would be required to gain full approval, it has been estimated that this would result in a net cost of €75m to €500m per year (Table D23).

**Table D23: Option C – Estimated annual benefit of mandatory type approval of category S vehicles.**

	Lower Limit	Average	Upper Limit
Cost from additional requirements	€3,000	€3,000	€3,000
Estimated price of category S vehicle	€50,000	€65,000	€80,000
Benefit from standardisation	2%	2.5%	3%
Benefit from standardisation	€1,000	€1,625	€2,400
Overall cost per vehicle*	€600	€1,375	€2,000
N° vehicle registrations per year	500,000	500,000	500,000
% of fleet to get full approval	25%	37.5%	50%
<b>Estimated annual cost</b>	<b>€75,000,000</b>	<b>€257,812,500</b>	<b>€500,000,000</b>

\*: Lower limit = Upper limit of benefit from standardisation – lower limit of benefit from additional requirements, and Upper limit = Lower limit of benefit from standardisation – upper limit of benefit from additional requirements.

#### D.4.2.8 Potential casualty benefits

The fact that it has been estimated that the cost per vehicle could increase by such a substantial amount for some vehicles suggests that significant changes to the technical specification and performance would be required. It is, therefore, logical to assume that some improvements in the safety performance of the vehicles would be accrued.

Within the scope of this project it has not been possible to quantify the proportion of these accidents that have been at least partly caused by the vehicle not meeting requirements equivalent to that of full type approval. Therefore, it has been necessary to estimate the effect of requiring mandatory type approval. Because category R and S vehicles can be towed by any tractor (including T1-T3 vehicles) it was estimated that raising the technical requirements for R and S vehicle could reduce 5% of accidents involving T1-T3 vehicles. It was also estimated that raising the technical requirements of T4, T5 and C vehicles could reduce 10% of the accidents involving these vehicles.

As part of the cost benefit analysis carried out by Dodd, *et al* (2007), it was estimated that there were 530 fatalities, 3,345 serious and 12,461 slightly injured casualties in accidents involving agricultural vehicles in EU-25 on an annual basis. This figure included both on-road and in-field accidents. Dodd, *et al* (2007) also estimated that new vehicle sales of T4, T5 and category C vehicles represent 19% of all category T and C sales.

Assuming that T4, T5 and C vehicles account for a proportionate number of casualties then Table D24 shows that 101 fatalities, 636 seriously injured casualties and 2,558 slightly injured casualties occur from using T4, T5 and C vehicles.

**Table D24: Option C - Estimated number of casualties per annum as a result of involvement of different vehicle types.**

	Total	T1 – T3*	T4, T5 & C*
New vehicle sales		81%	19%
Fatal casualties	530	429	101
Serious casualties	3,345	2,709	636
Slight casualties	13,461	10,903	2,558

\*: Estimated assuming all vehicle types have an equal risk of accident per new vehicle sold

On the assumption that raising the technical requirements of T4, T5 and C vehicles could reduce 10% of casualties involving these vehicles, and that raising the technical requirements for T1-T3 vehicles could reduce 5% of all other casualties, it has been estimated that 31 fatalities, 199 serious and 801 slightly injured casualties could be prevented per annum (Table D25).

**Table D25: Option C - Estimated casualty savings per annum from completing the internal market.**

Total	T1-T3	T4, T5 & C	Total
Fatal	21	10	31
Serious	135	64	199
Slight	545	256	801

Using published casualty valuations for the UK and applying a "country factor" (Elvik *et al* (2003), Dodd, *et al* (2007) estimated valuations for fatal serious and slight casualties. Using this same principle an estimated valuation for 2009 has been calculated and, when multiplied by the estimated number of casualties that could be saved, it has been estimated that an annual safety benefit of approximately €51million could be achieved (Table D26)

**Table D26: Option C - Estimated casualty savings from mandatory type approval for T4, T5, C, R & S vehicles.**

	Fatal	Serious	Slight
Casualty valuation	€ 841,655	€ 94,571	€ 7,290
N° of casualties	31	199	801
Estimated annual saving	€ 26,091,312	€ 18,819,687	€ 5,839,410
<b>Total</b>	<b>€50,750,409</b>		

**D.4.3 Analysis**

An estimate of the investment cost has been made using the data supplied by one Member State in the Stakeholder Questionnaire. This Member State estimated they would incur a cost of between €60,000 and €2.3million. Given the diversity of legal systems in different Member States it is uncertain whether these estimated costs could be applied to all Member States.

Therefore, the lower limit of the investment cost, shown in Table D27, has been estimated on the basis that it would cost the respondent €2.3million to implement the necessary changes, but the other 26 Member States would only incur a cost of €60,000 each.

The upper limit of the investment cost has been calculated on the basis that all 27 Member States would incur a cost of €2.3million.

**Table D27: Option C – Estimated investment cost for completing the internal market.**

	Lower Limit	Average	Upper Limit
Investment cost for respondent	€2,300,000	€2,300,000	€2,300,000
Investment cost for other Member States	€60,000	€1,180,000	€2,300,000
<b>Investment cost for EU-27</b>	<b>€3,860,000</b>	<b>€32,980,000</b>	<b>€62,100,000</b>

The estimated investment costs to industry of €82,000 per company and €27,000 per vehicle type, as estimated by the respondent, have not been included in the above calculation because it has not been possible to quantify how many companies there are in EU-27 or how many vehicle types are produced each year. For the same reason the estimated on-going cost of €18,000 per company has not been included.

Dodd et al (2007) estimated that there were approximately 658,000 new vehicles of categories T4, T5, C, R and S registered in Europe in 2005. Using the estimated on-going cost of €55 per vehicle to cover the administrative costs of mandatory type approval (as indicated by one respondent to the Stakeholder questionnaire), it has been calculated that there would be an on-going cost of €36,190,000 per year.

Table D28 shows that combining the estimated administrative cost and the estimated costs for each vehicle category described in section D.4.2, an annual cost of between €364m to €996m could be expected.



**Table D28: Estimated annual cost of mandatory type approval for T4, T5, C, R & S vehicles.**

Cost category		Lower Limit	Average	Upper Limit
Administrative cost		€36,190,000	€36,190,000	€36,190,000
Change in total cost of vehicles sold as a result of technical changes	T4.1	€ 0	€ 0	€ 0
	T4.2	€ 96,000,000	€ 112,500,000	€ 130,000,000
	T4.3	€ 0	€ 0	€ 0
	T5	€ 26,000,000	€ 40,625,000	€ 58,500,000
	C	€ 0	€ 0	€ 0
	R	€ 131,250,000	€ 200,195,313	€ 271,875,000
	S	€ 75,000,000	€ 257,812,5000	€ 500,000,000
<b>Total Cost</b>		<b>€ 364,440,000</b>	<b>€ 647,322,813</b>	<b>€ 996,565,000</b>

By comparing the estimated annual cost in Table D28 with the estimated annual casualty benefit in Table D26 it can be seen that if mandatory type approval was applied to the above categories of vehicles, then there would be a year on year cost to society, in addition to the estimated investment cost in Table D27.

Table D29 and Figure 3 show the net effect over a ten year period. For this analysis the estimated costs and benefits have been uplifted by 2% per annum to reflect economic growth<sup>8</sup>. In addition the costs and benefits have been discounted at a rate of 3.5% to calculate a net present value reflecting the fact that current costs/benefits have greater value in the present than in the future.

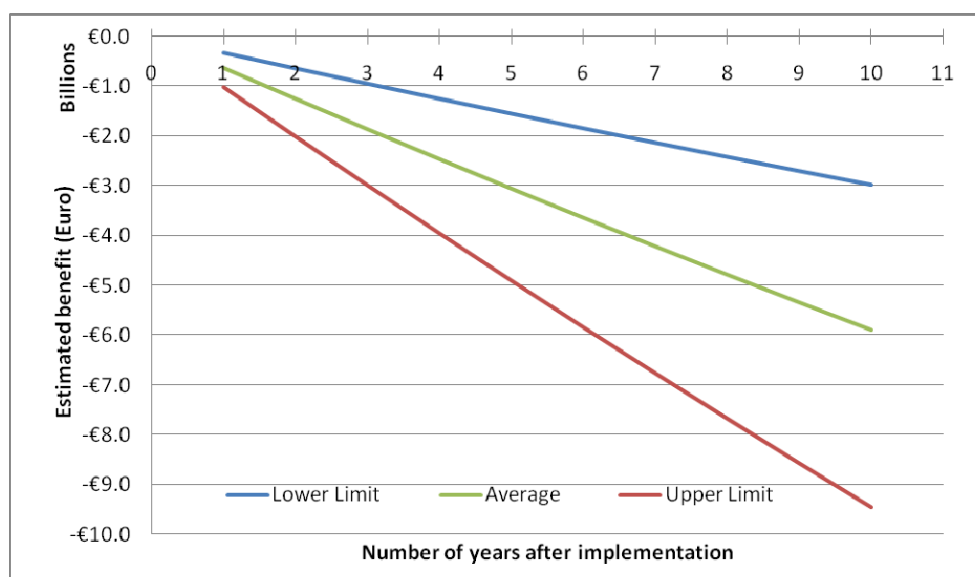
<sup>8</sup> In January 2008 Eurostat, the Statistical Office of the European Communities, reported that annual inflation in the Euro area was 3.4%. This had fallen to 1.7% by January 2009. It is impossible to predict if the downward trend will continue or if it will stabilise or increase. Therefore an average value of 2% has been used for the analyses in this study.

**Table D29: Option C - Cumulative benefit of completing the internal market.**

Cumulative benefit*			
Year	Lower Limit	Average†	Upper Limit
1	-€ 317,549,591	-€ 629,552,403	-€ 1,007,914,591
2	-€ 630,497,013	-€ 1,249,980,859	-€ 2,001,221,724
3	-€ 938,908,966	-€ 1,861,417,597	-€ 2,980,133,101
4	-€ 1,242,851,181	-€ 2,463,992,934	-€ 3,944,857,357
5	-€ 1,542,388,436	-€ 3,057,835,295	-€ 4,895,600,102
6	-€ 1,837,584,571	-€ 3,643,071,244	-€ 5,832,563,967
7	-€ 2,128,502,501	-€ 4,219,825,513	-€ 6,755,948,645
8	-€ 2,415,204,229	-€ 4,788,221,025	-€ 7,665,950,936
9	-€ 2,697,750,860	-€ 5,348,378,921	-€ 8,562,764,789
10	-€ 2,976,202,612	-€ 5,900,418,586	-€ 9,446,581,339

\*: Costs include an uplift of 2% per annum and a discount rate of 3.5%

†: The average is based on the mean of all responses, not the mean of the upper and lower limits.



**Figure D8: Option C - The cumulative benefit of completing the internal market for T4, T5, R and S category vehicles.**

## D.5 Combination of policy options

In the previous sections the effect of Options A, B and C were considered separately. This section describes the effect of implementing more than one of the three options at the same time. Specifically the following combinations have been considered:

5. Option A + Option B
6. Option A + Option C
7. Option B + Option C
8. Option A + Option B + Option C

The effect of combining more than one option has been calculated by summing the cumulative benefit of the individual options as shown in Table 5 (Option A), Table D17 (Option B) and Table D29 (Option C).

### D.5.1 Option A + Option B

For this combination it has been assumed that the investment cost from only one of the options is applicable. This is because implementing both of these options involves re-writing the same set of regulations at the same time. This investment cost has been added to the on-going annual cost for both options to calculate an overall estimated benefit.

Figure D9 shows the estimated cumulative benefit over a ten year period from replacing current directives with a Mother regulation (Option A) and replacing some directives with reference to equivalent standards (Option B).

Figure D9 shows that overall it is likely there would be a positive effect from implementing these two options. The upper limit of benefits is estimated to be €11.9million and for the lower limit it is estimated there could be a net cost to society of €3.4million.

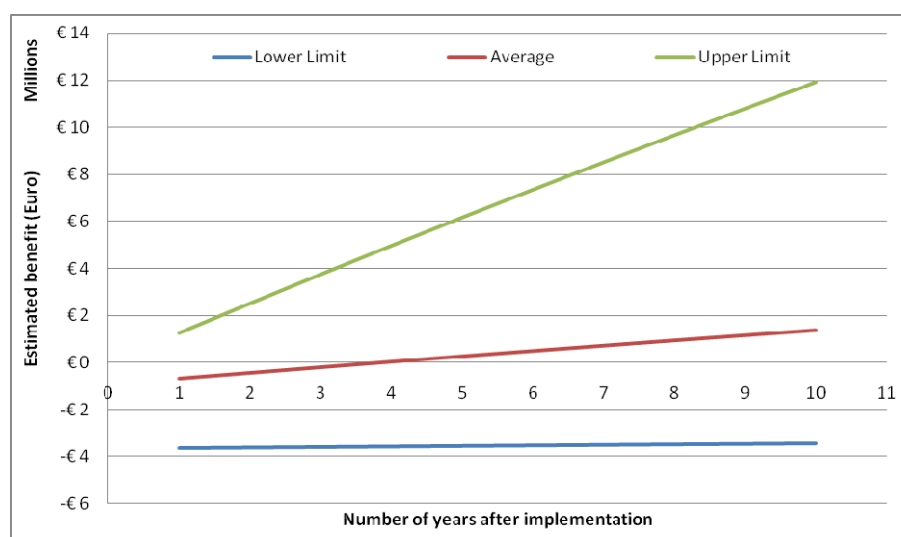


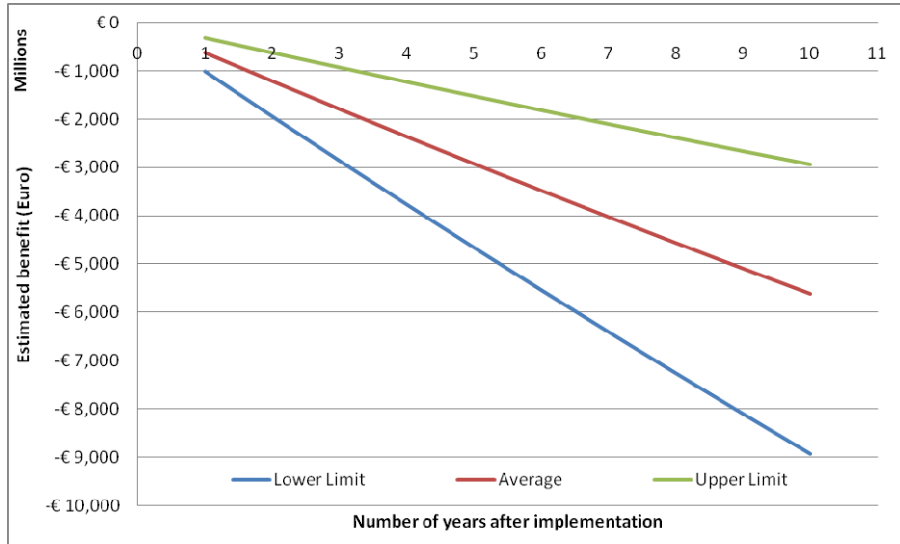
Figure D9: The cumulative benefit of Option A + Option B.

### D.5.2 Option A + Option C

For this combination it has been assumed that the investment cost from both options is applicable. This is because implementing Option A involves re-writing the Regulations and Option C involves creating a new set of requirements for vehicles to be included under mandatory type approval.

Figure D10 shows the estimated cumulative benefit over a ten year period from replacing current directives with a Mother regulation (Option A) and completing the internal market by mandating type approval for all vehicle categories (Option C).

Figure D10 shows that the overall effect is dominated by the net cost to society of Option C, which is an order of magnitude greater than the estimated benefit of Option A, resulting in an overall net cost to society.



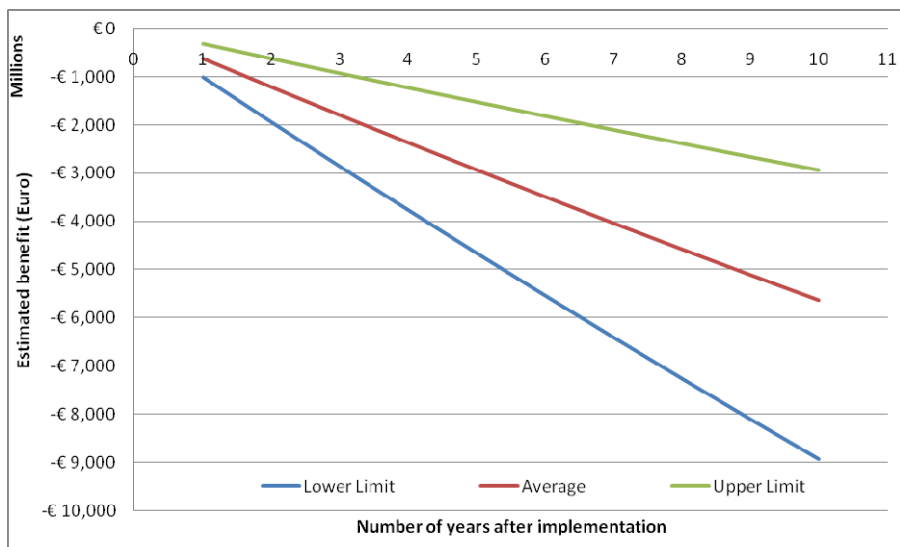
**Figure D10: The cumulative benefit of Option A + Option C.**

### D.5.3 Option B + Option C

Similarly to the previous combination, it has been assumed that the investment cost from both options is applicable.

Figure D11 shows the estimated cumulative benefit over a ten year period from replacing some directives with reference to equivalent standards (Option B) and completing the internal market by mandating type approval for all vehicle categories (Option C).

Figure D11 shows a similar pattern to the above combination with an overall cost to society resulting from the large cost of implementing Option C.



**Figure D11: The cumulative benefit of Option B + Option C.**

#### D.5.4 Option A + Option B + Option C

For this combination it has been assumed that there is a single investment cost for Option A and Option B, in addition to the investment cost for Option C.

Figure 5 shows the estimated cumulative benefit over a ten year period from replacing current directives with a Mother regulation (Option A), replacing some directives with reference to equivalent standards (Option B) and completing the internal market by mandating type approval for all vehicle categories (Option C).

Figure 5 shows that the overall effect is a net cost to society. The estimated benefit of Option A and the marginal benefit of Option B are offset by the large cost of Option C.

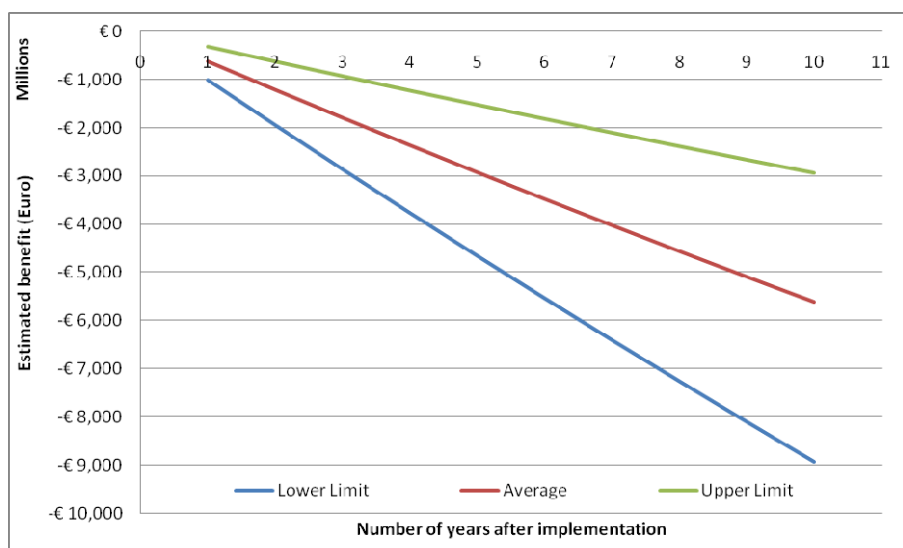


Figure D12: The cumulative benefit of Option A + Option B + Option C.