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Fitness Check of the Legal Framework for the Type-Approval of Motor Vehicles

Final Report

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Introduction

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Executive summary

Objectives of the Study and Methodology

This study of the motor vehicles type approval legal framework has been commissioned by the Automotive Industry Unit within DG Enterprise and Industry and has taken the form of a 'Fitness Check' on the Framework Directive 2007/46/EC¹ – the primary piece of legislation governing the type-approval of motor vehicles - and the specific acts covered by this Directive, plus additional associated Regulations and Directives on specific safety and environmental issues and their respective implementing measures. The basic aims of the Fitness Check were to:

- evaluate the relevance and coherence, efficiency, and effectiveness and impact of the legal framework for the type-approval of motor vehicles;
- provide recommendations on the need for any future amendments to the legal framework for the type-approval of motor vehicles.

Methodological approach

The methodology merged the standard evaluation framework for an assessment of legislation and the key evaluation questions related to relevance, effectiveness, efficiency, EU added-value, utility and sustainability to the additional requirements, objectives and principles of a Fitness Check and the principles of Smart Regulation. The elements considered were:

- the relationships between different aspects of the legal framework, the synergies but also inconsistencies and overlaps between the different parts of the legal framework that may make the overall framework more or less effective
- the overall compliance and administrative costs arising from the implementation of the legal framework ,and particularly the cumulative effects
- whether the legal framework adopts the basis of the principles of smart regulation
- the coherence with other related pieces of legislation and the EU policy objectives, the potential spillovers to issues related to the competitiveness of the automotive industry
- whether the current legal framework could be simplified and whether certain pieces of legislation or specific provisions are excessive or obsolete
- the capacity of the current structure of the overall framework to adapt to future developments in the sector and up-coming challenges

Research tools

The main research tools used included:

- extensive desk research in relation to the various aspects covered by the type approval framework including studies and reports.
- analysis of official data sources on issues related to the operation of the internal market, trade flows, CO₂ and pollutant emissions, noise, safety etc.
- 77 interviews covering a broad range of stakeholders – Commission officials, Member State authorities, technical service providers, European and national industry associations, manufacturers of motor vehicles, NGOs and consumer groups, experts.
- Three online surveys targeted at Member State authorities, manufacturers and technical service providers that complemented the interview programme and reached a broader audience.

¹ Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive)

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Main Findings of the Study

The overall picture that has emerged from the investigations is that **the EU type approval legal framework is appropriate for achieving the main goals of harmonisation, effective operation of the single market and fair competition**. In general, the TA legal framework has successfully eliminated national differences with positive results, particularly in the segments beyond passenger cars that were not previously covered. Despite certain problems in implementation the extension of its scope to cover non passenger cars has been beneficial in that respect.

There is **no support for the adoption of a radically different approach, such as self-regulation**. Earlier negative experience in relation to CO₂ emissions is seen as evidence that this type of approach is limited in its capacity to attain agreed objectives. There is also **no support for adopting a self-certification system** similar to that of the United States which is seen to create much greater uncertainty, require many more ex-post market controls and involve a higher level of litigation risk, leading to high insurance costs.

In relation to the broader range of objectives covered under the type approval legal framework beyond the harmonisation of the internal market, there is generally **agreement on their relevance and appropriateness and they are mostly seen as complementary**. There are concerns about trade-offs between environmental and safety aspects or the competitiveness of the industry, but they do not appear to be prominent.

The main findings concerning the effectiveness and efficiency of the legislation in meeting a number of specific policy objectives can be summarised as follows:

- In relation to vehicle safety, the applicable requirements are generally considered to have had a positive effect by making the use of certain safety technologies mandatory and applying them more extensively across the vehicle fleet. There has been a decreasing number of road accidents and fatalities across Europe although it is not possible to determine the precise contribution of the legislation to this development, given the large number of considerations in play.
- The introduction of Euro 5 requirements, are generally considered to have had a positive impact on reducing air pollutant emissions and the same is expected of the Euro 6 and the Euro VI requirements for heavy duty vehicles. Existing data on air pollutant emissions indicate positive developments in terms of emissions from some categories of vehicle although the initial targets have not been achieved and there is less evidence of improvement in relation to diesel vehicles.
- It is also generally acknowledged, and this is supported by available evidence, that there are weaknesses in the test cycle that lead to real life NO_x emissions being higher than the regulatory limits and having a knock-on effect on air quality targets.
- The contribution to the reduction of CO₂ from the type approval legislation is largely indirect through its key role in the implementation of the Regulations 443/2009 and 510/2011 on average CO₂ emissions. Again, problems with the test cycle but also the measurements methods have an impact on the effectiveness of the Regulation.
- This divergence between test and real world conditions is of central importance for the type approval framework, threatening to undermine its credibility. A commitment with a timetable for addressing the issue has been set by the recent CARS2020 Communication.
- The provision of repair and maintenance information is an important positive step in the creation of a more level playing field in the aftermarket segments for components and services. There are concerns raised by some stakeholders that the requirement are not properly implemented and that there are gaps as some segments of the motor vehicles market – e.g. trailers - are not covered. The current structure of the legislation in relation to RMI – included in the Euro 5/6 and Euro VI Regulation that

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cover specific types of vehicles - is not particularly accommodating of a fast extension to address additional categories of vehicle.

- The legal framework appears to make a positive contribution to the development of innovation either by pushing industry to meet more demanding standards (primarily in the environmental area) or, more often, by extending the market base for existing technologies and generating economies of scale (e.g. in relation to advanced safety technology systems). Generally speaking, the requirements can be characterised as technologically neutral and not favouring specific technologies or restricting access to the EU market. There are differences of opinion about how demanding the current requirements are and the significance of trade-offs between environmental, safety and other performance requirements. The evidence does not suggest major problems for manufacturers of passenger cars in meeting the different requirements. This is primarily a reflection of the significant level of investment in R&D by the industry but also the significant lead time.
- The main and key contribution of the legal framework in terms of promoting access to the global markets comes from the direct adoption of the UNECE Regulations.
- The current requirements for tyre noise appear appropriate and have the potential to bring measurable improvements in combination with the Tyre Labelling Regulation. Specific weaknesses include the exclusion of retreaded tyres and concerns about a potential transfer of the burden of future vehicle noise requirements from vehicle to tyre manufacturers.
- It is not possible to assess the contribution of the framework to the promotion of alternative fuels. Existing penetration of alternative fuels is very low but the legal framework has only a small role in this area, along with a range of other policy drivers. For industry the potential in facilitating the harmonisation of the market and increasing confidence appears to be well-recognised.
- Data from Member States indicate an increase in the level of recycling and reuse and recovery and reuse of motor vehicles but with many still missing the targets set by the ELV Directive. The limited information received indicated that the Recyclability, Reusability and Recoverability Directive for motor vehicles is a key mechanism in the achievement of these objectives, but little was said, for instance, on the costs involved.
- In relation to the simplification objective there are legitimate concerns about the growing complexity of a system that is already difficult for some stakeholders to follow. In spite of good intentions, the **changes in recent years to the legal framework – and particularly the introduction of the General Safety Regulation in 2009 – have so far complicated rather than simplified the overall structure**. While we are still in a transition period and there is a certain learning process necessary on all sides, stakeholder comments point to a fundamental feature of the structure created (the ‘framework within a framework’) that appears to cause confusion and increase complexity for a broad range of stakeholders including Member State authorities. This is particularly a problem for small firms with limited resources but more generally for firms in almost all sectors

Specific weak points

A number of weak points of the implementation of the legal framework were also identified. These include:

- **Significant variation in the interpretation of requirements among Member States** primarily in relation to the conformity of production. These differences encourage the practice of “type approval hopping” which is indeed present even though but there is no indication that it is a widespread phenomenon. The degree of strictness with which periodic tests of the CoP are carried out varies and there have been suggestions that in certain cases there is essentially no CoP testing. This can have a negative impact on the level of non-compliant products in the market even though, there has been little reference to any widespread problem, with the possible exception of tyres and components sold in the aftermarket where reported levels of non-compliance relate to around 10% of products.

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The **role of existing coordination structures** – including the TAAM and TAAEG – in promoting a common understanding among Member State authorities and in the resolution of issues. This role is generally recognised, but the committees are not regarded as being a decisive instrument in delivering a uniform approach in the implementation of the framework.

- The **UNECE process, also has implementation problems** that include the slow speed of the adoption process for Regulations which, along with a brief transition period, can have a real impact on time to market. The development of UNECE Regulations is resource intensive and very difficult to follow for national authorities, SMEs and representatives of consumer groups and NGOs.
- **The recall process.** Manufacturers consider the process to be effective and appropriate, but the recall processes applied are not standardised, different criteria are used and vehicles recalled in one country are not recalled in others, leading to different levels of consumer protection. The process can be particularly slow when the type approval has taken place in another country.
- The provisions for the **multi-stage process** appear to be based on the assumption that multi-stage vehicles are developed on incomplete vehicles. In fact, using complete vehicles is common practice. As a result, second stage producers often need to fulfil requirements that the first stage vehicle does not and over which they have very limited, if any, control.
- The implementation and effectiveness of the legal framework is often constrained **by national requirements and practices** mainly related to the vehicle registration process. Data requests that go beyond the information in the Certificates of Conformity cause additional administrative burden in some countries and for certain categories of vehicles. While troubling for the firms affected, the research does not suggest that these are widespread problems and there is no evidence that they lead to serious distortions in the operation of the market. Differences in the tax regimes with different criteria and limit values based on engine size/horse-power or the level of CO₂ emissions also operate against the harmonisation of the market.

Administrative costs to industry and authorities

The administrative costs to industry, an estimated €0.7-1 million per type approval of a single model - including human resources, testing and type approval fees - are a small fraction of the broader compliance costs and do not constitute sizeable costs for large OEMs. The administrative costs for small size producers of trailers or trucks, special purpose vehicles or bodybuilders, which appear to be in the range of €50,000-150,000, are often more important than the costs incurred in ensuring compliance and represent a higher share of their annual turnover.

The flexibility provided by the introduction of alternative EC and national small series and individual vehicle approval systems is, in principle, appropriate to reduce the costs for small firms, many of which often produce only a small number of vehicles and only sell their products in national markets. However, there is so far limited use of the national small series approach which is not always cost-effective. The analysis of cost data indicates that the upper limits set for the use of NSSTA in certain categories (primarily the 75 units for M1 vehicles) makes it preferable to the use multiple individual vehicle approvals.

The analysis also indicates a significant **variation in the resources allocated by Member States**, in ministries and type approval authorities, to supporting the implementation of the type approval legal framework. From a total estimate of 700-1000 FTEs across all EU27, most (over 85%) is allocated in the few countries (DE, IT, FR, UK, NL) that also have the greatest share of type approval activity. The available data indicate an average of 1 FTE allocated to type approval tasks for every 9 ECVTA type approvals. Some Member States reported that they devote appreciable resources to explaining the system to smaller manufacturers. Overall, Member States suggest that additional resources are necessary to support type approval activity but this does not appear to be a major bottleneck or weakness in the system.

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Market surveillance is generally accepted by stakeholders as a necessary mechanism in addressing the presence of non-compliant products in certain market segments. However, concerns about the availability of resources to implement market surveillance properly and the recognition that the problem with non-compliant products tends to be specific to certain product categories, leads a number of Member State authorities to suggest that targeted campaigns that are co-ordinated by the European Commission represent the most appropriate market surveillance solution. On the other hand, there are also concerns that market surveillance may undermine the type approval system, create co-ordination issues and lead to additional requirements.

Looking into the **longer term viability** of the system, there is generally confidence that there is sufficient flexibility in the type approval system will be able to address technological developments, even taking into account the complicated nature of the automotive sector and the various policy objectives.

Recommendations

The analysis suggests that there is **clearly no need for a major overhaul of the type approval legal framework structure**. The basic principles of the legal framework appear appropriate and fit-for-purpose in achieving the major objective of the harmonisation and effective operation of the Internal Market. The framework also has the capacity and the mechanisms to adapt to technological developments. What is important is that there is a stable framework – including the measurement and monitoring methods - with long term targets and appropriate transition periods and provisions that they are technology neutral.

The more specific recommendations are aimed at improving the existing overall framework and approach. They include:

- Improve the architecture of the type approval framework.
 - At the practical level there is a **certain amount of ‘tidying up’ of the provisions** within the type approval framework that is necessary, so that all core provisions of the legislation are found within the Framework Directive and subsidiary legislation clearly addresses applications in particular areas.
 - The objective of simplifying the legislation should continue to be pursued, but lessons should be learned from the experience of developing the General Safety Regulation. In particular, simplification is more than simply repealing existing legislation. It requires the perspective of the user to be central to the provisions that are made. The feasibility of gradually moving to a thematic approach with multiple Directives or Regulation under the single umbrella of the Framework Directive should be considered.
 - At a policy level there **could also be a clearer statement of the respective roles of the range of policy instruments used**, so that the requirements of the major supply-side instrument – the type approval legislation can be seen alongside the demand-side measures within the integrated policy framework called for by CARS 2020.
- With legislation as complex as the type approval framework, effective communication is essential, to help users, and especially smaller manufacturers being brought into the scope of the legislation for the first time, to understand what is required. Improving the structure of the legislation can contribute to this effective communication by making it easier to explain.
- There is acknowledgement of a need for a reform of testing procedures so that they reflect real world experience more closely. Given that these procedures are central to the credibility of the type approval system, a high priority should be given to achieving a satisfactory reform.
- Similarly, parallel efforts need to be made to resolve related issues such as taking account of the NO_x and CO₂ emissions resulting from air conditioning and other electrical systems
- The practical implementation of the legal framework should be improved by **ensuring consistency in the approaches adopted by Member State authorities and agencies**. It is necessary to strengthen the

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coordination between the TAAEG and TAAM and ensure that the issues raised are properly addressed within a reasonable timeframe.

- It may also be helpful to have a **guidance document** developed jointly by the Commission and the type approval authorities that will clarify the basic principles to be followed in each process.
- The weaknesses of the recall system need to be addressed, in particular by making it easier for vehicles recalled in one Member State to be recalled elsewhere.
- Given the importance for the industry of the UN ECE process and its Regulations the Commission and the Member State authorities should develop ways to keep interested parties informed and make their participation more effective. The Commission should also actively promote proposals aiming to reduce delays, especially those relating to non-essential parts of the process.
- While most of the above are areas where a more hands-on role for the Commission appears necessary, it is still important to maintain a certain level of flexibility to accommodate national circumstances with no evident EU wide impact.
- The introduction of the national type approval scheme (NSSTA) and individual vehicles approval provides the necessary flexibility and this can be particularly useful for many SMEs. It is important to monitor more closely the use of alternative schemes and possibly re-examine the upper limits set for some categories to make them more attractive for some categories of manufacturers.
- The need to re-examine and revise the multi-stage type approval process is already recognised. This could include a review of the possible scenarios that are applicable to the different sectors that make use of the multi-stage approach, identifying areas where administrative or compliance demands are posed to second-stage manufacturers and whether these are disproportionate or unrealistic.
- In relation to the expected adoption of market surveillance, its practical implementation should give priority to targeted pan-European cooperation projects with Commission coordination, focusing on areas where there are acknowledged problems and supporting enforcement with facilities for exchanging information and developing good practice. A tool or mechanism whereby firms or other stakeholders can effectively report cases of non-compliance should also be considered.
- Finally, the Commission needs to develop a monitoring and reporting tool that will include certain key output and result indicators that will help measure progress towards key policy objectives and help flag problem areas. An initial proposal has been included in the final section of this study.

Introduction

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This document contains the Final Report of the study 'Motor Vehicle Type-Approval Fitness Test'. The introduction section presents the aims of the assignment and the structure of the Report.

1.1- Resume of Assignment Aims

This evaluation has been commissioned by the Automotive Industry Unit within DG Enterprise and Industry. Other Commission services from both within and outside the DG have been involved with the project and a dedicated Steering Group has overseen the management of the project.

This evaluation has taken the form of a 'Fitness Check', a relatively new development in the European Commission's evaluation strategy. Fitness Checks have been given a high profile as a significant part of the European Commission's response to the challenges of the 'new era for the European Union' highlighted in the Commission's Work Programme for 2010². The nature of Fitness Checks will be considered subsequently, but initially it should be noted that in operational terms they are characterised by the assessment of a set of related regulatory instruments rather than the more usual focus on a particular piece of legislation.

The Fitness Check of the regulatory framework for the type-approval of motor vehicles was performed on the Framework Directive 2007/46/EC³ – the primary piece of legislation governing the type-approval of motor vehicles - and the specific acts covered by this Directive⁴, plus additional associated regulations and directives on specific safety and environmental issues and their respective implementing measures. It also observes requirements arising from the specific legal commitments in the existing legislation, such as those contained in review clauses or in announcements of future initiatives.

The exercise assessed the effectiveness of the current legal framework⁵ for the type-approval of motor vehicles (after the introduction of recent changes) in achieving simplification objectives and conforming to smart regulation principles. The Final Report of the CARS 21 High Level Group⁶ has identified these objectives as an essential contribution for ensuring a favourable business environment in the automotive industry sector and for strengthening of the EU's Internal Market.

As part of this assessment, it was necessary to take into account the tiered structure of the legislation and especially to examine the cumulative effects of the different pieces of legislation affecting the automotive sector in order to have an overall ex-post assessment of their economic, social and environmental impacts.

² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Commission Work Programme 2010. Time to act' COM (2010) 135 final of 31.3.2010.

³ Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive)

⁴ Listed in Annex IV of the Framework Directive

⁵ In the initial stages of the study the steering committee of the project indicated that parts of the legal framework that are currently in a review process – such as the Vehicle Noise Directive or discussions related to the development of a new driving cycle - were not expected to be examined as part of the study. On the basis of this advice CSES did not give priority to these aspects even though it did take them into account in examining relevant aspects and for assessing the overall fitness of the legal framework.

⁶ CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union, Final Report 2012

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It was also essential to ensure that the legitimate interests of all parties involved were taken into account and that the different ways forward could be carefully considered so as to fully reflect the full range of the economic, social, environmental and safety aspects of the different pieces of legislation affecting the automotive sector.

The basic aims of the evaluation were defined as follows:

- identify, test and apply methodologies for evaluating the relevance and coherence, efficiency, and effectiveness and impact of the legal framework for the type-approval of motor vehicles;
- based on this evaluation, provide recommendations on the need for any future amendments to the legal framework for the type-approval of motor vehicles.

In meeting these aims, the Fitness Check has made use of the normal framework established by the European Commission for conducting evaluations. This has required an assessment of the operation of the Directive against the standard evaluation criteria - relevance, effectiveness, efficiency, utility, sustainability and European value added. A review of the coherence of the Framework Directive's Intervention Logic and its relationship with the related legislation has been undertaken, examining the links between expressed objectives and the means for implementing them, especially in the context of evolving markets and the international trade in the relevant products. The observable results and impacts arising from the implementation of the legislation, have been assessed, particularly in evaluating the effectiveness and utility of the Directive. Here it has been a matter of collecting, analysing, assessing and presenting both primary and secondary data with a view to answering the key evaluation questions. After drawing together the main conclusions of this analysis, recommendations relating to the fitness of the legislative framework have been formulated.

Evaluation Tasks

The evaluation process has been carried out within a defined methodology and has required the collection and appraisal of both primary and secondary data, a broader analysis of the evidence and the formulation of conclusions and recommendations.

Specific tasks have been to:

- To validate and refine the proposed methodological approach to the evaluation work. The final approach has been submitted for consideration by the steering group and the approval by the competent DG Enterprise and Industry services.
- In collaboration with the competent DG Enterprise and Industry services, identify the means to address the evaluation questions and to elaborate further evaluation questions, as necessary for the purpose of evaluating to what extent and how well the objectives of the legislation have been achieved and how well the legislation will be able to face current and future challenges stemming from the rapidly changing automotive industry and markets.
- To collect, analyse and present the necessary data to answer the evaluation questions in relation to the selected evaluation criteria.
- Develop a set of appropriate indicators to assess the effectiveness of the legislation, selected from the data analysis.
- Answer all evaluation questions, and thereby provide robust and useable conclusions

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- On the basis of the evaluation findings, formulate recommendations in line with the purpose of the exercise and the evaluation questions – in particular to improve the implementation of the legal framework for the type-approval of motor vehicles, taking into account current and future developments in this industry sector.
- To present findings and recommendations in a final evaluation report.

1.2 - Structure of the report

The report is structured as follows:

- **Section 2: Background** – presents the background of the study analysing the structure of the automotive industry, the broader policy context and the motor vehicles type approval legal framework
- **Section 3: Methodological framework** – presents the methodological framework used in the study
- **Section 4: Presentation of findings** – present the analysis of the findings of the study on the basis of data and other information collected and the responses to the evaluation questions set in the terms of reference;
- **Section 5: Conclusions and recommendations**

Annexes

- **Annex 1** : Interview programme
- **Annex 2** : Draft Case studies
- **Annex 3** : List of references

Study background

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2.1 - Automotive sector background

Introduction - Key data on the automotive sector and its role in the EU economy

The automotive industry is one of Europe's key industrial sectors with extensive and complex value chain linkages with large number of sectors inside and outside the EU. The total automotive sector – manufacturers of vehicles, bodies, trailers and components - had a turnover of €740 billion in 2010 with a value added of around €140 billion, representing about 8% of European manufacturing value added. Motor vehicles manufacturers reached a total turnover of €526 billion and employed around 1 million people in 2009. The components sector occupied 1.1 million with a turnover of around €190 billion in 2010 and the bodies and trailers sub-sector occupied around 175,000 with a turnover of €25 billion. In addition, another 4.2 million indirect jobs are generated in sectors related to the use of motor vehicles (sale, distribution, maintenance and repair, retail sale of fuel), and 4.9 million jobs in the road transport sector. In total, in 2010 it accounted for 13 million jobs, 5.6% of the total EU employed population in 2010. Furthermore, according to data from 14 Member States for the period 2009-2010, vehicles generated around €414 billion in tax revenues for the whole of the EU (including VAT, sales and registration taxes, excise duties on fuels), and this represented around 4% of EU GDP⁷.

Table 2.1.1 – Basic figures of the automotive sector in the EU (data for 2010 or most recent year available)

| Sector | Turnover (€ billion) | Number of persons employed (millions) | Value added (€ billions) |
|--|-------------------------|--|-----------------------------|
| Motor vehicles | 526 | 1.1 | 88 |
| Bodies for motor vehicles, trailers and semi-trailers | 25 | 0.17 | 6.6 |
| Parts and components | 188 | 1.0 | 46 |
| Total | 740 | 2.2 | 141 |

In 2010, a total of 17.1 million motor vehicles (passenger cars, trucks and buses) were produced in Europe, representing 22% of motor vehicles production worldwide⁸. In the passenger cars market segment European manufacturers represented 26% of the worldwide production in 2010, with a total of 15.3 million produced. In the commercial vehicles segment (vans, trucks, buses and coaches), EU is the third larger producer (1.8 million in 2010) behind US and China with a share of 9.3% of the total global production.

The financial crisis had a significant impact on the market for motor vehicles with a significant reduction in the level of cars registration and important production cutback measures adopted and capacity utilisation falling to 65% at the beginning of 2009. The total production of motor vehicles decreased by more than 30% of the pre-2007 levels in 2009, although it has picked up again since.

⁷ ACEA (2011), ACEA tax guide 2011 highlights,
http://www.acea.be/images/uploads/files/20110330_TaxGuide2011Highlights_update.pdf

⁸ ACEA (2011), The European automobile industry pocket guide,
http://www.acea.be/images/uploads/files/20110921_Pocket_Guide_3rd_edition.pdf

Study background

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Table 2.1.2 – Evolution of production, registrations of motor vehicles in the EU27 (number of units in millions)

| | 2001 ⁹ | 2005 ¹⁰ | 2007 | 2008 | 2009 | 2010 | 2011 |
|-----------------------------------|-------------------|--------------------|------|------|------|------|------|
| Total Production | 17.2 | 20.8 | 19.7 | 18.4 | 15.3 | 17.1 | 17.7 |
| Passenger cars | 14.9 | 15.8 | 17.1 | 16.0 | 14.0 | 15.3 | 15.7 |
| Commercial vehicles ¹¹ | 2.3 | 3.0 | 2.6 | 2.4 | 1.3 | 1.8 | 2.0 |
| Total registrations | 16.6 | 17.3 | 18.2 | 16.7 | 15.8 | 15.1 | 15.1 |
| Passengers cars | 14.4 | 14.9 | 15.6 | 14.3 | 14.2 | 13.4 | 13.1 |
| Commercial vehicles | 2.3 | 2.4 | 2.6 | 2.4 | 1.6 | 1.9 | 2.0 |

Source: ACEA and OICA statistics, various years

Overall structure of the automotive sector

The degree of integration of the sector into the European economy is indicated by the statistics on the structural characteristics of the sector:

- There were 16 major car, truck and bus original equipment manufacturers (OEMs) in Europe operating in 2012 and 177 vehicle assembly and engine production plants, in 16 Member States¹². The main car producers present in the European market are Volkswagen, PSA, Ford, Renault, GM, Fiat, Daimler and BMW, Nissan, Toyota, Honda, Hyundai. The six main producers for the European commercial vehicle market are DaimlerChrysler, MAN, Volvo, DAF, Scania, and Iveco.
- Smaller size firms can be found in certain smaller or niche segments of the automotive market including luxury cars, motor homes, trailers and semi-trailers, etc.
- The European automotive supply sector includes around 3,000 companies, of which 2,500 are small or medium-sized enterprises that together employ over 3 million people. Typically, around 75% of a vehicle's original equipment, components and technology are sourced from automotive suppliers.
- In the tyres segment, 10 global tyre companies represent close to 66% of the total tyre production. 3 of these firms have their headquarters in the EU and they operate 82 manufacturing plants that produced 4.5 billion tyres in 2010, representing 26.5% of the world tyre production. According to data from the European Tyre and Rubber Manufacturers Association, from the total global sales of tyres of €150billion in 2010, 25% represented new motor vehicles tyres and around 75% replacement tyres.

Structure of the supply chain

The automotive industry has a 'tiered' supply chain structure. Upstream from the small number of global car manufacturers (OEMs) are the so-called Tier 1 suppliers. They typically supply some of the largest components or sub-systems for the cars (e.g. powertrain systems, suspension assemblies, transmission and steering systems). Tier 1 firms are still rather large size firms with multiple production plants and in some cases they are active not only in the manufacturing of motor vehicles, but also in other sectors (electronics, mechanical and electrical engineering, information technology, steel, chemicals, plastics, metals and rubber, etc). SMEs can be found in certain niche segments of the automotive market at this tier (e.g. body builders).

⁹ Data for EU15

¹⁰ Data for EU25

¹¹ vans, trucks, buses, coaches

¹² ACEA (2013), Automobile assembly & engine production plants in Europe,

http://www.acea.be/news/news_detail/automobile_assembly_engine_production_plants_in_europe/

Study background

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Tier 1 automotive suppliers are increasingly producing complex components or "modules" instead of mere spare parts, and are commonly developing components and share R&D costs jointly with motor vehicle manufacturers. In general there has been an increasing level of outsourced components and nowadays, according to CLEPA around 75% of every vehicle is made by automotive suppliers. Still, while there is an increasing trend for disintegration of the supply chain, in certain cases OEMs maintain control of the Tier 1 suppliers or develop their own proprietary hardware and software (e.g. powertrain management systems). Tier-1 suppliers typically have a plant close to the car manufacturers to support Just-In-Time type production processes although this is also determined by the balance between transport and production costs. In contrast, suppliers further upstream may be based anywhere in the world and the same generally applies to firms that offer specialised services like R&D and vehicle design.

Further upstream, Tier 2 suppliers typically provide components to the Tier 1 suppliers (e.g. pump units, electric motors or bearing assemblies) A significant proportion of SMEs are generally found in Tier 2. Tier 3 (4 etc.) suppliers provide the Tier 2 suppliers with anything from brackets and seals through to machined components etc. Raw material suppliers are also considered as Tier 3 suppliers although in many cases the supply directly to OEMs, representing an important share of the total spending of OEMs.

Downstream from the OEMs are the third party logistics providers that distribute finished vehicles to storage compounds and vehicle distribution hubs located around the world. These deliver to the franchised authorised dealers of cars.

Aftermarket industry sector

The motor vehicle sector is completed by the industry sector, known as the automotive aftermarket. According to data from the independent aftermarket association – FIGIEFA - this includes 765,000 companies with around 4 million employees and a total turnover in 2010 of around €890 million. It includes the authorised or independent manufacturers of spare parts and the relevant traders, the providers of maintenance and repair services– around one third linked to manufacturers and the remaining independent – and also vehicle repair companies, garage equipment manufacturers and engine remanufacturers and rebuilders. Table 2.1.3 summarises the data on the key segments of the motor vehicles aftermarket.

Table 2.1.3 – Main data on the aftermarket sector (2010)

| | Number of enterprises | Employees | Turnover (million €s) |
|--|-----------------------|------------------|-----------------------|
| Manufacturers of spare parts and accessories for motor vehicles ¹³ | 10,525 | 244,518 | 37,172 |
| Garage equipment manufacturers | 178 | 22,826 | 3,423 |
| Trade of motor vehicle parts and accessories | 103,468 | 659,769 | 141,097 |
| Maintenance and repair of motor vehicles (garages) | 407,389 | 1,448,204 | 122,055 |
| Sale of motor vehicles (new + used) | 195,125 | 1,518,702 | 559,957 |
| Sale, maintenance and repair of <u>motorcycles</u> and related parts and accessories | 36,166 | 100,633 | 21,803 |
| Fleet garages/state owned garages | 12,063 | 59,873 | 4,962 |
| Total | 764,914 | 4,054,525 | 890,469 |

Source: FIGIEFA

¹³ Includes only manufacturers of spare parts

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Adopting a broader classification, the components manufacturers association (CLEPA) refers to a total size of the automotive spare parts' aftermarket of around €100 million in sales. However, a more important aspect is that the aftermarket structure is split into two main distribution channels: Original Equipment Sales and the Independent Aftermarket. These are shared among Original Equipment Manufacturers, Parts Manufacturers and Independent Operators. Parts manufacturers often serve both parts of the market, producing components under the OEMs' brands but also selling in the independent market. Recent analysis of the automotive parts aftermarket suggests that original equipment sales and the authorised repair providers dominate (>75%) the market related to newer vehicles (<4 years). The 4-8 year segment is shared relatively equally while parts and services for older vehicles are dominated by the independent aftermarket (85%)¹⁴.

Characteristics of the firms in the different segments of the sector

Data from Eurostat refer to individual enterprises rather than business groups of manufacturers. This is particularly important for the automotive sector, where large OEMs control a large number of enterprises operating in different countries. Still, the analysis of available data helps to illustrate the differing nature of the firms that dominate the various sub-sectors. Motor vehicle enterprises are predominantly large firms in comparison to body builders and trailer manufacturers that are dominated by small size enterprises with an average of 24 employees and €3.5 million average annual turnover. The parts and components sector – that includes all Tiers – has an average size of close to 100 employees. In the aftermarket segment the size of enterprises is much smaller - less than 10 employees per enterprise on average. Productivity and turnover levels are also markedly different in the motor vehicles sector in comparison to the other segments of the automotive market.

Table 2.1.4 – Eurostat data on average size of enterprises in the automotive sector (most recent data available)

| | Manufacture of motor vehicles | Manufacturers of bodies, trailers and semitrailers | Manufacture of parts and accessories for motor vehicles | Maintenance & repair of motor vehicles | Wholesale trade of motor vehicle parts & accessories |
|---|-------------------------------|--|---|--|--|
| Number of individual enterprises | 2,260 | 7,000 | 10,596 | 419,493 | 43,840 |
| Turnover (million €s) | 526,000 | 24,934 | 188,849 | 119,183 | 90,107 |
| Number of persons employed | 1,016,438 | 170,000 | 1,036,259 | 1,523,600 | 376,600 |
| Average firm size (no. of employees) | 449.8 | 24.3 | 97.8 | 3.6 | 8.6 |
| Average firm turnover (million €s) | 232.743 | 3.562 | 17.823 | 0.284 | 2.055 |
| Apparent labour productivity (Gross value added/person employed - €s) | 90 | 41.4 | 45.5 | 25.8 | 38.2 |

Source: Own elaboration on the basis of Eurostat data

R&D and innovation

Investment in R&D and development of innovation represent a key aspect of the competitiveness of the EU automotive industry. The sector is Europe's largest private investor in research and development (around €20bn/annum) and this represents about 4% of the industry's turnover and close to 30% of EU industry's

¹⁴ Data provided by CLEPA

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total R&D expenditure. In 2007 the EU automotive industry was the origin of more than 53% of the patents submitted to the European Patent Office, in comparison to the 21%, 15.6% and 0.4% of Japanese, US and Chinese manufacturers respectively¹⁵. About 50% of R&D investment comes from automotive suppliers, as do the majority of the patents. However, there is significant difference in the level of R&D investment among EU countries. German firms spend six times more on R&D than those from France and Italy put together and get more patents than all other EU countries put together.

Green technologies are a particular focus area of the European car industry. European automotive firms are leaders in transitional drive-train and fuel technologies and are investing in various new technologies, such as battery-powered hybrid vehicles, electric vehicles and hydrogen.

National concentration of the sector inside the EU

Examining the distribution of production of motor vehicles and components at the Member State level, Germany is by far the greatest producer (35% of total production in 2010) with 47 production plants. It is followed by Spain (14%) and France (13%). Other important producers include the UK (8% of production volume in 32 plants), the Czech Republic, Poland and Italy. Germany, France, the UK, Italy, Spain and Sweden also accounted for 93% of motor vehicle production in terms of value added with half of this gross value added coming from Germany. The same countries are also the main producers of parts and components (see table 2.1.5) although countries like Slovakia, Slovenia, Hungary and Romania are gradually assuming a higher share of total production, especially in relation to parts and components.

Table 2.1.5 - Volume of production of motor vehicles in the EU in 2010 – number of motor vehicles and number of production plants by Member State

| | Number of motor vehicles produced | Total Number of production plants |
|----------------|-----------------------------------|-----------------------------------|
| GERMANY | 5,905,985 | 47 |
| SPAIN | 2,387,900 | 15 |
| FRANCE | 2,227,374 | 38 |
| UNITED KINGDOM | 1,393,463 | 32 |
| CZECH REPUBLIC | 1,076,385 | 11 |
| POLAND | 869,376 | 16 |
| ITALY | 857,359 | 20 |
| SLOVAKIA | 556,941 | 3 |
| ROMANIA | 350,912 | 1 |
| BELGIUM | 338,290 | 9 |
| SWEDEN | 217,084 | 15 |
| SLOVENIA | 205,711 | 1 |
| HUNGARY | 167,890 | 6 |
| PORTUGAL | 158,723 | 5 |
| NETHERLANDS | 115,487 | 9 |
| AUSTRIA | 104,814 | 6 |
| FINLAND | 6,500 | 2 |

Source: ACEA

¹⁵ ACEA (2010), European automobile industry report

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Concerning the segment of trailers and semi-trailers, it is again more or less the same countries that dominate the market (Germany, France, UK, Italy, Spain and Netherlands), representing 80% of the annual turnover in the sector, 75% of employment and around 55% of the enterprises (see Table 2.1.6).

The industry has been plagued by worldwide overcapacity and a number of manufacturers have been forced to close plants in Europe. However, certain manufacturers have also opened new manufacturing sites in the EU – mainly in Central and Eastern Europe - taking advantage of the favourable cost situation in the newer Member States and their geographic proximity to Western European markets. Although still comparatively small, automotive production in the newer Member States increased by 25% in 2007 compared to the previous year and represented 15.2% of EU production (12.8% in 2006). This was driven by Foreign Direct Investment (FDI), which in 2006 represented around 22% of the total FDI stock of the manufacturing sectors for the countries of Central and Eastern Europe (CZ, HU, PL, SK, SL)¹⁶. While the majority of the investments originate from manufacturers of European origin, overseas investors have also been attracted with new plants in the Czech Republic (Hyundai), Hungary (Suzuki) and Poland (Toyota).

As component suppliers tend to follow vehicle manufacturers into a region this has also led to the development of industrial clusters, in particular in Southern Poland, the Eastern Czech Republic, Western Slovakia and the North of Hungary.

Table 2.1.6 - Production of motor vehicles, bodies (coachwork) and trailers and components in the EU27 in 2010 – number of individual legal units (enterprises), production value and number of employees (main producing countries in bold)

| | Manufacture of motor vehicles | | | Manufacturers of bodies, trailers and semitrailers | | | Manufacture of parts and accessories for motor vehicles | | |
|-------------|-------------------------------|--------------------|------------------|--|----------------|------------------|---|-----------------|------------------|
| | Enterprises | Turnover (million) | persons employed | Enterprises | Turnover | persons employed | Enterprises | Turnover | persons employed |
| EU27 | 2,260 | 526,000 | 1,016,438 | 7,680 | 25,300 | 161,192 | 10,596 | 188,848 | 1,036,259 |
| BE | 38 | 10,722 | 18,955 | 346 | 1,099.5 | 4,978 | 156 | 5,041 | 11,032 |
| BG | 0 | 0 | 0 | 25 | 7.3 | 408 | 85 | 393.9 | 9,756 |
| CZ | 120 | 12,431 | 33,291 | 287 | 226.6 | 3,252 | 984 | 15,027.7 | 103,822 |
| DK | 17 | 79 | 336 | 77 | 236.0 | 1,290 | 75 | 639.7 | 2,773 |
| DE | 284 | 252,205 | 464,357 | 1,318 | 7,869.4 | 40,148 | 1,323 | 65,798.8 | 244,990 |
| EE | 4 | : | : | 24 | : | : | 21 | 99.8 | 2,316 |
| IE | 4 | 28 | 154 | 26 | 43.6 | 304 | 18 | 480.5 | 2,108 |
| EL | 40 | 63 | 1,130 | 150 | 119.1 | 1,236 | 158 | 97.4 | 1,804 |
| ES | 168 | 34,476 | 63,377 | 851 | 1,416.5 | 10,796 | 1,017 | 15,217.6 | 66,736 |
| FR | 189 | 78,969 | 137,554 | 1,161 | 4,056.7 | 25,157 | 639 | 16,056.1 | 61,906 |
| IT | 105 | 31,680 | 68,424 | 618 | 2,286.6 | 15,530 | 1,531 | 15,190.1 | 91,778 |
| CY | 0 | 0 | 0 | 25 | 8.3 | 97 | 59 | 5.9 | 117 |
| LT | 4 | : | 105 | 7 | : | 224 | 18 | 54.4 | 660 |

¹⁶ E. Kawecka-Wyrzykowska, Evolving Pattern of Intra-industry Trade Specialization of the New Member States of the EU: The Case of the Automotive Industry, http://ec.europa.eu/economy_finance/publications/publication_summary14307_en.htm

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| | Manufacture of motor vehicles | | | Manufacturers of bodies, trailers and semitrailers | | | Manufacture of parts and accessories for motor vehicles | | |
|-----------|-------------------------------|--------------------|------------------|--|----------------|------------------|---|-----------------|------------------|
| | Enterprises | Turnover (million) | persons employed | Enterprises | Turnover | persons employed | Enterprises | Turnover | persons employed |
| LT | 5 | 5 | 86 | 13 | 90.5 | 506 | 13 | 12.0 | 703 |
| LU | 7 | 126 | 492 | 7 | 81.2 | 409 | 4 | - | - |
| HU | 51 | 6,644 | 11,080 | 99 | 228.0 | 2,371 | 335 | 6,859.0 | 51,702 |
| NL | 126 | 3,568 | 9,183 | 474 | 1,420.1 | 7,846 | 147 | 1,088.8 | 5,046 |
| AT | 26 | 7,727 | 13,444 | 199 | 587.3 | 3,570 | 81 | 3,512.0 | 11,972 |
| PL | 107 | 12,137 | 32,096 | 299 | 639.3 | 9,369 | 980 | 11,743.7 | 107,251 |
| PT | 26 | 2,199 | 5,410 | 199 | 195.3 | 2,818 | 304 | 3,562.3 | 21,499 |
| RO | 24 | 2,869 | 17,472 | 73 | 57.6 | 1,632 | 332 | 4,840.5 | 97,487 |
| SL | 14 | 1,300 | 3,009 | 35 | 249.4 | 1,495 | 92 | 1,034.3 | 8,516 |
| SK | 28 | 8,146 | 12,318 | 45 | 155.4 | 1,473 | 131 | 5,069.5 | 37,291 |
| FI | 26 | 527 | 2,081 | 150 | 455.4 | 3,107 | 94 | 205.7 | 1,381 |
| SE | 180 | 17,424 | 44,926 | 272 | 694.1 | 4,042 | 615 | 3,828.8 | 17,488 |
| UK | 649 | 40,826 | 77,075 | 790 | 2,926.1 | 19,134 | 1,357 | 10,245.4 | 76,125 |

Source: Eurostat Structural Business Statistics

Trade and trade partners

The automotive industry had a positive extra-EU trade balance of around €57 billion in 2010. The positive trade balance comes primarily from the passenger cars (€55 billion) and the heavy commercial vehicles segments (€2.9 billion). In the case of light commercial vehicles, the EU has a small trade deficit (€241 million in 2010), with most imports coming from Japan and the USA. The EU is also a net exporter of automotive parts and accessories, with a trade surplus of €17 billion in 2010. Germany is responsible for more than half (60%) of the total EU exports followed by the UK (13%).

The United States and China are the two main export markets representing, respectively, 26.6% and 11.5% of the total value of exports of the EU passenger car market. In terms of imports, in 2009, over three quarters of EU passenger cars came from Japan, Turkey, the USA and South Korea (ACEA).

Intra-EU trade in motor vehicles and parts has significantly increased since the introduction of whole vehicle type approval and the removal of technical requirements in 1992 and represents an important element in the overall level of intra-EU trade. The significant amount of FDI in Central and Eastern Europe – particularly since joining the EU – has also led to increased intra-industry trade in the automotive sector, that also suggests an increasing level of specialisation by the newer Member States and a gradual convergence of the structure of the automotive sector in the newer Member States with that of the older Member States.

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Developments in the automotive sector and challenges for the EU automotive industry

The automotive manufacturing industry is facing a period of unprecedented change which has been accentuated by the financial crisis. The CARS 21 final report¹⁷ points to a number of key challenges:

- Growth of markets outside of Europe assuming increasing shares in the total global sales of motor vehicles. This has already led to an increasing number of new production facilities belonging to EU manufacturers being located in the emerging economies and this is followed by manufacturers of components. As a result there are significant changes in the structure of the automotive supply and value chain with significant logistical challenges for EU manufacturers.
- There is increasing competition for the EU automotive industry on a worldwide scale, particularly from India and China that already have significant shares in their domestic markets and in other Asian markets. In these new markets low-costs cars are considered to have a significant growth potential. So far, there is only a limited presence of these manufacturers in EU markets – particularly in the passenger cars segment. However, EU companies are expected to be challenged more and more, both in the new markets and the home market.
- In the commercial vehicles sector, and particularly heavy duty vehicles, emerging markets manufacturers represent more than 65% of total production and are achieving continuously increasing shares of the growing emerging markets¹⁸.
- On the production side, a concerted effort has been made over the last 20 years to reduce the number of parts that manufacturers conceive, design, develop and manufacture. Instead they have aimed to re-use the same parts, sub-systems and ultimately entire vehicle platforms. They use the same parts, sub-systems and entire vehicle platforms across different model ranges and a number of them have already moved further to the co-development and sharing of core production platforms¹⁹. Some manufacturers have also followed a strategy of ensuring that any given model is as close to being identical as possible in all world markets.
- The introduction of more demanding long-term greenhouse gas targets as well as air quality objectives in the EU require further improvements to the internal combustion engine and the introduction of new and cleaner vehicle technologies, such as electric and hybrid propulsion systems. The use of financial incentives in a number of countries supporting the purchase of such vehicles reinforces this trends which also depends on technological developments and the price of fuels. There is however a high level of uncertainty as to how fast the new technologies will become dominant in the market. According to a number of market reports, the combustion engine is still expected to maintain its dominant share for some time to come, particularly in the fast growing emerging markets.
- Acceleration of technical developments in a number of areas and an increasing integration of cars with ICT services via mobile systems that shift the market more towards the selling of mobility services than cars as such.
- Significant shifts in consumers' preferences and behaviour with a high focus on issues of safety but also web connectivity. There are also new mobility patterns developing – such as the use of shared cars – that can challenge the market structure.

In view of some of the challenges identified, the CARS 21 Final Report concludes that reinforcing the competitiveness of the sector constitutes the only way to preserve and develop employment in the EU in

¹⁷ CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union, Final Report 2012

¹⁸ Alix Partners, 2010, High Stakes 2010 Global Commercial Vehicle Outlook

¹⁹ Evalueserve (2012), White Paper - Platform Strategy will Shape Future of OEMs - Flexibility to Drive Growth http://sandhill.com/wp-content/files_mf/evalueservewhitepaperplatformstrategywillshapefutureofoems.pdf

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the long term. The report refers to the need for adaptation of production capacities – including possibly the closure of a number of production plants, the development of new business models and production methods and the identifications of new sources of raw materials. It also refers to the need to develop new skill profiles and tackle the resulting changes in employment. Innovation is also identified as a key factor for maintaining the competitiveness of the automotive sector based on industry investment as well as public R&D support.

At the same time, better access to markets in third countries is considered to be key in maintaining the competitiveness of EU industry. The industry makes reference to a number of tariff and non-tariff barriers for access to some emerging markets (e.g. Korea, China, India). The acceptance of international regulations under the 1958 UNECE Agreement is considered to be the best way to remove non-tariff barriers to trade and has highlighted the need for bilateral regulatory cooperation with third countries to be strengthened, with a view to eliminating non-tariff barriers.

2.2 - Motor vehicles type approval legal framework

Historical review

Regulation of the automotive industry at a national level goes back particularly to the period when the process of manufacture was becoming industrialised in the 1920s. This regulation concentrated mainly on construction standards and was concerned particularly with safety in use and signalling – audible warnings, lighting, etc. Little attempt was made to develop common standards, particularly with the protectionist attitudes that influenced much of national policy. The consequent technical barriers to cross-border trade that resulted from national developments then continued to be a major factor shaping the industry across Europe until well into the 1960's. The six founding Member States of the European Economic Community took the first steps towards developing international rules for the approval of components for motor vehicles in Geneva in 1958 (1958 UNECE Agreement). The main principles of this agreement were the mutual recognition of approval markings affixed to components, together with type-approval certificates issued by governments. This has since given rise to the development of the UNECE system for global regulations and has enabled progress to be made in harmonising safety and environmental construction standards in the motor vehicle sector around the world.

Subsequent developments by the EEC led to a process of gradually eliminating technical barriers to trade between Member States, by building on the basis established in Geneva and concentrating on motor vehicles rather than their components. The main objective was to ensure a high level of vehicle safety and this was accomplished through the use of construction standards based on sound scientific and technical knowledge, while at the same time also ensuring the protection of the environment. As a result, a legal framework was adopted in February 1970 in the form of Council Directive 70/156/EEC on 'the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers'. Over 50 directives were subsequently adopted as part of this legal framework. The implementation of Community rules was optional until 1992, when the Commission adopted a policy of replacing national regulations by binding Community rules. Subsequently Council Directive 92/53/EEC fundamentally amended Directive 70/156/EEC by introducing mandatory Community type-approval for all passenger cars from 1 January 1998. This legal framework was therefore complementary to the UNECE Regulations which only cover parts but not the whole vehicle. This essentially was the situation prior to the introduction of the type approval framework that is under consideration.

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CARS21

Demand for changes to the legal framework came about as a result of the Better Regulation initiative launched by the Commission and the support of the first CARS21²⁰ High Level Group that was launched in 2005. The CARS 21 High Level Group brought together a broad range of stakeholders. It was set up to review the regulatory environment in which the automotive industry operates and to recommend a way forward through a policy framework which seeks to achieve a high level of protection of the public interest while at the same time minimising the possible costs entailed for economic operators.

With the support of the CARS 21 High Level Group, the Commission undertook an assessment of the automotive regulatory framework and identified important opportunities for simplification. One of the key issues identified was the presence of a large number of Directives covering safety issues – some of them rather old – and the presence of many duplicate UNECE Regulations. The review concluded that while most of the directives were needed in order to guarantee a high level of safety and environmental protection, one directive could be repealed and 38 directives could be replaced by UN-ECE Regulations.

A number of additional proposals came from the CARS21 High Level Group that were also assessed by the Commission:

- The need to extend the EC Whole Vehicle Type Approval system (which has generally been regarded as successful) beyond passenger cars (category M1) to all types of vehicles in order to complete the introduction of the internal market for light commercial vehicles, buses and trucks
- Proposals for the adoption of self-testing and virtual testing for certain aspects of the type approval system in order to further reduce administrative costs
- In the field of the environment, the CARS 21 group discussed proposals to reduce pollutant emissions from light duty vehicles and heavy duty vehicles (Euro VI) and suggested a more integrated and holistic approach to reducing emissions involving a larger number of measures and the involvement of all the relevant stakeholders.
- The CARS 21 Group was a good forum in which to identify and agree on individual measures which could be considered by the Commission in the future so that industry would be provided with planning certainty and predictability vis-à-vis future vehicle technology-related road safety measures
- Actions on noise policy should be proportionate and take appropriate account of the functioning of the Internal Market. A holistic approach should be pursued to tackle noise issues
- The CARS 21 Group recommended significant new steps forward in the area of road safety and recommended the inclusion of a series of further vehicle technology improvements in new vehicles marketed in the future
- It also supported proposed amendments to the Pedestrian Protection Directive

The response to the conclusions of the review of the regulatory framework was the adoption of a number of changes, the most important of which was the introduction of a Framework Directive establishing a type approval system and supplemented by a number of additional regulatory acts (in the form of Regulations or

²⁰ DG ENTR (2011), CARS 21 Final report - Competitive Automotive Regulatory System for the 21st century, http://ec.europa.eu/enterprise/sectors/automotive/files/pagesbackground/competitiveness/cars21finalreport_en.pdf

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Directives) setting objectives and requirements to be fulfilled in order for vehicles or components to be placed in the market.

Main elements of the legal framework

An important characteristic of the current legal framework is that it is based on a ‘**split-level**’ **approach** that aims to facilitate the adoption of very complex pieces of highly technical legislation. On the first level, the European Parliament and the Council decides on the essential requirements of the Framework Directive 2007/46/EC on type approval and the associated EC Regulations and Directives (**regulatory acts**) covering specific safety, environmental and other issues that are considered appropriate to be covered under the type approval legal framework. At a second level the Commission, assisted by a regulatory committee (the Motor Vehicle Working Group), is entrusted with establishing the detailed technical provisions and the practical implementation measures.

The regulatory acts are listed in Annex IV of the Framework Directive that needs to be amended when new regulatory acts are introduced or existing ones are amended. In turn, these regulatory acts make reference to implementing measures - in the form of Regulations or Commission Decisions - providing the specific technical requirements to be met and the specific tests and other procedures to be followed. These “non-essential” aspects are defined by the Commission on the basis of the Comitology procedure (Council Decision 1999/468/EC). Some of the relevant regulatory acts – which are determined in Annex IV of the Framework Directive - were already in force at the time of the introduction of the 2007/46 and were amended accordingly to fit into the overall legal framework.

Under the Lisbon Treaty certain changes were introduced to the decision making process concerning the development of specific technical requirements and the respective decision-making process. Under the new regime, the Commission is delegated to develop technical specifications associated with the fundamental provisions. Following Regulation 182/2011²¹ in the areas related to environment and safety the adoption of the proposed implementing acts and technical specification should be based on an examination procedure from the Member State expert group (Art 290 TFEU). The Technical Committee on Motor Vehicles is expected to provide opinion on the basis of qualified majority rules regarding implementing measures (Art291 TFEU) that should be taken into account by the Commission, which can still adopt the proposed administrative provisions following amendments or an appeal procedure. The European Parliament or the Council can indicate to the Commission that an implementing act exceeds the powers provided for in the basic Directive or Regulation and ask for a redraft on the basis of the opinions provided. .

Furthermore, the UNECE Regulations that the European Union has decided to apply on a mandatory basis are indicated in the Annex IV of the Framework Directive and these replace the corresponding EC Regulations or Directives that are repealed. At this point a total of 57 UNECE Regulations are indicated in Annex IV of the Directive.

Framework Directive – Main provisions

The Framework Directive 2007/46/EC specifies the obligations of Member States and manufacturers of motor vehicles and components as part of the type approval process and the registration and placing in the market of motor vehicles or systems, component or technical units (see below for detail). Its scope is covers motor vehicles (categories M,N,O as defined in the Framework Directive) and it does not apply to agricultural or forestry tractors, two or three wheeled motor vehicles and quadri-cycles. It specifies the alternative type approval processes and the types of tests to be performed, the procedures to be followed to

²¹ REGULATION (EU) No 182/2011 laying down the rules and general principles concerning mechanisms for control by Member States of the Commission’s exercise of implementing powers

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ensure Conformity of Production (CoP) with the type approved and the requirements concerning the information to be provided in the certificate of conformity issued by the manufacturers. It also sets alternative type approval procedures – including national and EU small series type approval - and the possibility for exemptions from requirements in the case of vehicles produced in small series and individual vehicles. It also introduces procedures for possible exemptions for new technologies and defines safeguard clauses for taking corrective actions in the case of products that pose serious risks to consumers (see more detailed description in Section 2.4).

A key change brought with the Framework Directive is the extensions of the requirement for a European Community Whole Vehicle Type Approval (ECWVTA) beyond passenger cars to gradually cover on a mandatory basis all vehicles including trucks, trailers, buses and coaches. The requirement was introduced on a voluntary basis from 2009 with different timings provided for the mandatory implementation depending on the type of vehicle and the manufacturing stages involved. Longer lead times were introduced for those types of vehicles that are typically built in multiple stages (completed vehicles and special purpose vehicles) and will require a multi-stage approval, given the limited prior experience of some of the manufacturers involved (e.g. body builders or manufacturers of special purpose vehicles). By the end of 2014 it will be compulsory for all types of vehicle to be EC type approved. The table below summarises the timetable for the mandatory type approval for the different categories of motor vehicles covered by the legal framework.

Table 2.2.1 – Summary table of timetable for the introduction of optional and mandatory type approval for different categories of vehicles.

| Type of vehicle | Optional for new type | Mandatory for new type | Mandatory for existing type |
|---|-----------------------|------------------------|-----------------------------|
| Passenger cars (M1) | | | |
| M1 | Already mandatory | | |
| Special purpose ²² M1 | 29/10/2009 | 29/04/2011 | 29/04/2012 |
| Buses and coaches (M2 and M3) | | | |
| Incomplete and Complete ²³ | 29/10/2009 | 29/10/2009 | 29/10/2010 |
| Completed | 29/10/2009 | 29/4/2010 | 29/10/2011 |
| Special Purpose | 29/10/2009 | 29/10/2012 | 29/10/2014 |
| Goods vehicles (N1, N2, N3) | | | |
| Incomplete and Complete N1 | 29/10/2009 | 29/10/2010 | 29/10/2011 |
| Completed N1 | 29/10/2009 | 29/10/2011 | 29/04/2013 |
| Incomplete and Complete N2 and N3 | 29/10/2009 | 29/10/2010 | 29/10/2012 |
| Completed N2 and N3 | 29/10/2009 | 29/10/2012 | 29/10/2014 |
| Special Purpose N1, N2 and N3 | 29/10/2009 | 29/10/2012 | 29/10/2014 |
| Trailers and semi-trailers (O1, O2, O3 and O4) | | | |
| Incomplete and Complete | 29/10/2009 | 29/10/2010 | 29/10/2012 |
| Completed | 29/10/2009 | 29/10/2011 | 29/10/2013 |

²² ‘Special purpose vehicle’ is a vehicle which requires special body arrangements and/or equipment. It includes armoured vehicles, ambulances, hearses, Wheelchair accessible vehicle, trailer caravans, mobile cranes.

²³ ‘complete vehicle’ is any vehicle which need not be completed in order to meet the relevant technical requirements of this Directive;

‘incomplete vehicle’ is a vehicle which must undergo at least one further stage of completion in order to meet the relevant technical requirements;

‘completed vehicle’ is a vehicle resulting from a multi-stage type-approval process, which meets the relevant technical requirements of this Directive;

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| Type of vehicle | Optional for new type | Mandatory for new type | Mandatory for existing type |
|-----------------|-----------------------|------------------------|-----------------------------|
| Special Purpose | 29/10/2009 | 29/10/2012 | 29/10/2014 |

Source: Framework Directive 2007/46

The Directive also includes a number of provisions in relation to the implementation of the type approval process, the obligations of manufacturers and the responsibilities of Member State authorities and the European Commission. The main aspects include:

- Type approval and conformity of production process
- The role of type approval authorities
- Technical services
- The testing process
- The recall process

In comparison to the earlier type approval framework under the 70/156/EEC Directive, the main new elements introduced in the new Framework Directive include:

- Extension of the scope of the Directive related to the EC Whole Type-approval of motor vehicles to cover all categories of vehicles while providing for significant lead time for categories of motor vehicles other than M1
- Introduction of a new alternative type approval procedure, the multi-stage type approval intended to accommodate the cases where a manufacturer produces a base vehicle (normally a chassis or chassis/cab) and another manufacturer - a body builder or converter - finishes the vehicle (see more information in Section 2.3).
- The legal framework makes provisions for the EC type approval of vehicles produced in small series (EC Small Series Type Approval – ECSSTA and National Small Series Type Approval - NSSTA) and for the approval of individual vehicles (IVA). This provides alternative options for manufacturers of vehicles in small volumes on the basis of reduced technical requirements and reduced costs for type approval and Conformity of Production. The EC SSTA sets an upper limit of 1000 vehicles produced and allows for EU wide sales while the National SSTA sets even lower limits and other Member States can set additional requirements before accepting National Approvals. The IVA scheme is the least onerous of the approval routes but involves an individual inspection of each vehicle. Furthermore, it gives sales rights only within the specific Member State.
- Provision for the direct use of UN ECE Regulations rather than their use as alternatives
- Provisions for the possible use of virtual testing for certain types of tests and under certain conditions set in the Directive. Regulation 371/2010²⁴ provided a list of Regulatory Acts for which virtual testing may be used, together with the associated generic and specific conditions.
- Provisions for a simplified and faster approach for the amendment of the Annexes to the Directive and the adoption or amendment of implementing measures to Regulations related to the Directive on the basis of the Comitology procedure

²⁴ COMMISSION REGULATION (EU) No 371/2010 of 16 April 2010 replacing Annexes V, X, XV and XVI to Directive 2007/46/EC of the European Parliament and of the Council establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles.

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Regulatory acts

The Framework Directive regulates the type approval process establishing processes, procedures to be followed and structures to ensure a harmonised implementation across the EU. It does not introduce specific requirements in relation to specific policy areas. These are provided in the regulatory acts referenced in Annex IV of the Framework Directive and are further specified in the respective implementing measures in place. In brief, these include:

- **The General Safety Regulation (EC) No 661/2009** on type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units. The Regulation provides for the mandatory fitting of Electronic Stability Control Systems (ESC) on all vehicles, Advanced Emergency Braking Systems (AEBS), Lane Departure Warning Systems (LDWS) on heavy-duty vehicles and Tyre Pressure Monitoring Systems (TPMS) on passenger cars. It also introduces requirements on tyres with regard to their rolling resistance and noise emission limits values for tyres and wet grip requirements. The General Safety Regulation applies to all categories of motor vehicle (categories M,N,O) with different dates set for the entry into force of requirements – from 2012 to 2016 - depending on the type of motor vehicle or tyre.

The General Safety Regulation repealed 50 of the total of 63 regulatory acts (Directives) listed in Annex IV of the Framework Directive and the relevant requirements were carried over to the Regulation. There are also provisions for their replacement with relevant UN ECE Regulations – when applicable – but no such references are so far provided in the relevant annex of the General Safety Regulation. 11 implementing measures have been introduced so far relating to the General Safety Regulation.

- **The Pedestrian Protection Regulation (EC) No 78/2009** on the type-approval of motor vehicles with regard to the protection of pedestrians and other vulnerable road users, which introduced requirements for the use of brake assist systems and set requirements for frontal protection systems. Two implementing measures (Regulations 459/2011 and 631/2009) have been introduced so far in relation to this Regulation.
- **Regulation (EC) No 79/2009** on type-approval of hydrogen-powered motor vehicles with one implementing measure (406/2010). The objective is to ensure the proper functioning of the Internal Market for hydrogen-powered motor vehicles (cars, buses or trucks) by specifying harmonised requirements. It sets safety requirements for hydrogen components and systems that store hydrogen in a liquid or gaseous (compressed) form to ensure the safe and reliable functioning of hydrogen vehicles, which are powered either by hydrogen stored on board at cryogenic temperature or under very high pressure.
- **Regulation (EC) No 715/2007** on the type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information. This Regulation sets minimum requirements to be met by cars in relation to the emissions of pollutants, mainly nitrogen oxides and particulate matter. Compliance of manufacturers with the standards is monitored on the basis of the type-approval tests and the information provided in the certificates of conformity. There are provisions in the Regulation for the Commission to keep under review the test cycle to ensure that real world emissions are measured during type approval testing.

The Euro 5 requirements apply as of 1 September 2009 for the approval of vehicles and as of 1 January 2011 for the registration and sale of new types of cars and vans sold in the EU market. It also makes the introduction of particle filters for diesel cars obligatory. Euro 6 will set even lower emission limits that are binding for the type approval of vehicles as of 1 September 2014 and for the registration and sale of new types of cars and vans as of 1 September 2015. It also sets requirements in relation to the information that should be made available to vehicle repair and maintenance service providers. So far,

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two implementing regulations (692/2008; 459/2012) have been introduced in relation to this Regulation.

- **Regulation (EC) No 595/2009** on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information. This Regulation applies to motor vehicles of categories M1, M2, N1 and N2 with a reference mass exceeding 2,610 kg and to all motor vehicles of categories M3 and N3. It also lays down rules for the conformity of vehicles and engines, durability of pollution control devices, OBD systems, measurement of fuel consumption and CO₂ emissions. They also introduce obligations on manufacturers to provide access to vehicle repair and maintenance information to independent operators in a “readily accessible and prompt manner”, through websites using a standardised format. . There are two relevant implementing measures introduced so far (64/2012;582/2011).

Regulations 595/2009 and 715/2007 also include provisions concerning Member State financial incentives aiming to ensure a consistent approach across the EU.

- **Directive 2006/40/EC** on emissions from mobile air-conditioning systems (MACs) fitted to passenger cars and light commercial vehicles (categories M1 and N1). The main objectives of this Directive are to control of leakage of fluorinated greenhouse gases with a high global warming potential (GWP) – over 150 and to gradually prohibit the use of MACs using those gases. The Directive also prohibited the retrofitting and refilling of MACs with greenhouse gases with global warming potential over 150. The Directive sets different dates after which the Member States authorities shall not grant type approval of vehicles fitted with MACs that do not meet the requirements or – at a later stage – not allow the registration and sale of such vehicles.
- **Directive 2005/64/EC** amended by 2009/1/EC on the type-approval of motor vehicles with regard to their reusability, recyclability and recoverability. This Directive provides that vehicles belonging to category M1 and N1 may be put on the market only if they are reusable and/or recyclable to a minimum of 85 % by mass and are reusable and/or recoverable to a minimum of 95 % by mass. The manufacturer is required to collect appropriate data through the supply chain and submit to the Member State authorities information on the materials breakdown of the vehicle. Manufacturers are also expected to develop a strategy to ensure the reusability of components and for the recyclability and recoverability of materials used.

The type approval legislation also includes a number of legal commitments and empowerments (such as review clauses). Examples of those requirements include:

- a requirement for the Commission to assess the technical and economic feasibility and market maturity of other advanced safety features, including, if appropriate, proposals for amendment to the General Safety Regulation, by 1 December 2012, and every three years thereafter;
- a requirement for the Commission to consider, on the basis of experience, whether it would be appropriate to consolidate all provisions governing access to repair and maintenance information within a revised framework directive on type approval;
- a proper assessment of the retreaded tyres sector to evaluate whether there is any need to adapt the regulatory regime to include them in the legal framework;
- to introduce, at the latest upon entry into force of the Euro VI stage, a number based approach to emissions of PM in addition to the mass based approach which is currently used;

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- to introduce by entry into force of the Euro 6 a particle number standard for positive ignition engines with direct injection, in addition to the PM standard;
- to review the need to revise the New European Drive Cycle (NEDC) as the test procedure that provides the basis of EC type approval emissions regulations to ensure that real world emissions correspond to those measured at type approval.
- to study the feasibility and the development of a definition and a methodology for energy consumption and CO₂ emissions for whole vehicles and not only for engines.

Other relevant legislation

While not part of the type approval legal framework, a number of Regulations and Directives are quite closely linked to the type approval legal framework. These include:

- **Regulations 443/2009 and 510/2011** that set average CO₂ emissions standards for new passenger cars and new light-commercial vehicles. Compliance of manufacturers with the standards is monitored on the basis of the type-approval tests and the information provided in the certificates of conformity. As result, there is a clear link between the effective implementation of the type approval legal framework and meeting the objectives of the Regulations 443/2009 and 510/2011 for the overall reduction of greenhouse gas emissions from vehicles. At the same time, there are provisions in both Regulation 443/2009 and 510/2011 that call for a review of the procedures for measuring CO₂ emissions set out in Regulation (EC) No 715/2007.
- In relation to noise from vehicles, the Motor Vehicle Noise Directive (70/157/EC) with its subsequent amendments is particularly relevant for setting requirements for the permissible sound levels and exhaust systems of motor vehicles. The limits have been amended a number of times since initially coming into force, but studies have shown that the actual reduction in road traffic noise has been rather limited. A proposal for a Regulation to replace the Directive is currently in the consultation process setting new limits and introducing a new test method to measure the noise emitted from vehicles. The main areas of concern from the point of view of the Fitness Check have to do with the possible overlaps or conflicts that may arise in relation to the tyre rolling noise requirements under the General Safety Regulation 661/2009 but also any possible trade-offs in the design of vehicles or tyres between 661/2009 requirements and those of the Motor Vehicle Noise Directive.
- The End-Life of Vehicles Directive (2000/53/EC) is also related to the type approval framework and its successful implementation is in certain respects linked with the type approval. The Directive 2005/64/EC on the reusability, recyclability and recoverability of vehicles sets the administrative and the technical provisions to ensure that vehicles are type approved and placed in the market only if they are reusable and recyclable by at least 85% and/or recoverable by at least 95%. This means that the successful implementation of the Directive 2005/64/EC makes an important contribution to achieving the ELV Directive's objectives.
- The New Legislative Framework Regulation 765/2008/EC introduced general market surveillance provisions and principles which, in principle, are applicable across all sectors unless specific legislation set provisions of the same nature. In the case of the automotive sector the adoption of NLF Regulation introduces additional requirements concerning the role and responsibilities of the various economic operators involved, the Member State authorities and also requires more comprehensive and consistent market surveillance activity across the EU.

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Relationship with UN ECE Regulations

One of the important aspects of the new legal framework is the direct reference to UNECE Regulations determining the requirement for the type approval of vehicles. There have already been 106 UN ECE Regulations adopted, either as obligatory (50 so far) or as alternatives to the EC Regulation in which case vehicles are required to comply with the technical specification of these regulations in order to be type approved. Furthermore, Regulation 407/2011 that amended the General Safety Regulation 661/2009 replaced an additional set of Directives with UN ECE Regulations.

The development of new UNECE Regulations and the update of existing ones takes place in the context of the **World Forum for Harmonisation of Vehicle Regulations (WP.29)** and the Permanent Subsidiary Working Parties in which the Commission and the Member States are very actively involved. Their role is to develop, harmonise and update UN Regulations and UN Global Technical Regulations (GTRs)²⁵.

The 1958 agreement does not prejudice the right of the EU to legislate independently. The European Commission retains its ability to legislate independently of UN ECE where it is considered that there is a need for earlier or more stringent action. The European Commission can adopt more stringent EU measures in the absence of UN ECE Regulations or in the event that a UN ECE Regulation is considered inappropriate for the fulfilment of EU road safety objectives. However, the key objective of the work in the context of the WP.29 is the adaptation of the UN ECE Regulations and the respective safety requirements so that they are compatible with the objectives and the principles of the EU legislation.

In addition to the 1958 Agreement, the 1998 Global Agreement aimed to further enhance the process of international harmonisation and to bring on board a larger number of countries that were not contracting parties to the 1958 Agreement (e.g. USA, China, South Korea). Its main objective is the joint development of Global Technical Regulations (GTRs) in relation to the safety, environmental protection, energy efficiency and anti-theft performance of wheeled vehicles, equipment and parts. These global regulations are intended to serve as the basis for national regulations and to lead eventually to the convergence of technical standards. The contracting parties to the Agreement are not obliged to accede to the Agreement but if they do so then they are obliged to adopt the GTR. Unlike the 1958 Agreement, there are no provisions for the mutual recognition of approvals granted on the basis of global technical regulations. Their own national regulations can remain more or less stringent than the global ones. The Agreement provides for the creation of a Compendium of National Regulations which are candidates for harmonization or adoption as global technical regulations.

The type approval procedure

In this section we provide a description of the main processes, mechanisms and structures of the legal framework. The focus is on the requirements on manufacturers of motor vehicles, systems and components and on Member State authorities and the relevant mechanisms and structures at the national and European level that have been created to support the implementation of the legal framework.

The Framework Directive makes provisions for the type approval of whole vehicles (**EC whole vehicle type approval – ECWVTA**) and for individual systems and components. In both cases, the main stages to be followed by a manufacturer (or its representative) include:

1. Application for type approval to the **Type Approval Authority (TAA)** of a Member State by the manufacturer of the whole vehicle or individual system or component supplemented by the

²⁵ GTRs are Regulations under the 1998 Agreement

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documentation including all the tests and other documents required by the Framework Directive, the relevant regulatory acts and implementing measures, demonstrating compliance with the applicable regulation. Only one application may be submitted for a particular type of vehicle and it may be submitted in only one Member State.

The type approval authorities - one in each Member State - are responsible for all aspects of the approval process including the authorisation process, the completion of type-approval documentation (information package), issuing and withdrawing of certificates, determining and applying penalties and acting as contact points for the authorities of other Member States.

2. Testing by the Member State approval authority or the designated **technical services** of the type to ensure compliance with the requirements set out in the Framework Directive, the regulatory acts and their implementing measures or the UNECE Regulations. Technical services are designated by the approval authorities on the basis of criteria set out in the Framework Directive and there may be more than one in any Member State. There are around 250 technical services in operation, including both large organisation with multiple units or small laboratories specialised in certain types of tests. Some manufacturers have also in-house technical services. Technical services are provided by both public entities and private for-profit organisations. Technical service providers can either carry out testing themselves or can supervise (“witness”) the tests required for approval at manufacturers’ facilities.

In the case of whole vehicles, the type approval requires that the individual systems and components are type-approved according to the relevant requirement before the vehicle is considered as a whole for a type approval certificate. Reflecting the fact that vehicles may be manufactured in multiple stages by different firms and/or in different locations, the Framework Directive provides for a number of alternatives approaches. These include:

- **Step-by-step type-approval** based on the collection of the whole set of EC type-approval certificates for the components/units relating to the vehicle. At the final stage, this should lead to the approval of the whole vehicle
- **Single-step type-approval** of a vehicle as a whole or for a system, component or separate technical unit.
- **Mixed type-approval** – this approach is based on a step-by-step type-approval procedure for which one or more system approvals are achieved during the final stage of the approval of the whole vehicle, without it being necessary to issue the EC type-approval certificates of separate systems.
- **Multi-stage type-approval** – this type approval is a new alternative that was introduced with the 2007 Framework Directive and was intended to better reflect changes to supply chain structures and to help reduce administrative costs for manufacturers. Multi-stage type-approval is applicable in addition to step-by-step, single step or mixed type-approval. Each manufacturer involved in manufacturing a vehicle fills in the part of the certificate relating to the particular stage in the manufacturing process in which it is involved.

Thus, the first-stage chassis manufacturer can approve the chassis as an "incomplete vehicle" and then the body builder or converter approves the subsequent or final stage, when it becomes a "complete vehicle". Complete vehicles that do not require any other approval stage may also form the base vehicle, for example in an instance where a panel van is converted into a minibus for passengers that needs to be type approved. Each of the manufacturers is only responsible for the work carried out and for the Conformity of Production (CoP) at the particular stage in the construction of the vehicle in which they are involved. The provisions also require that the base vehicle retains its "make" and the Vehicle Identification Number (VIN) issued on the original Certificate of Conformity (CoC) in order to ensure traceability. The manufacturer of a subsequent stage has to add its own plate with its name, the stage in the approval process, the VIN and the approval number plus any revised vehicle weight information.

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3. Demonstration by the manufacturer of the **conformity of production (CoP)** with the specification and performance of the type approved. The CoP confirms that series products may be produced in conformity with the specification, performance and marking requirements in the type approval. In most cases, this is deemed to be achieved if the manufacturer demonstrates compliance with Standard EN ISO 9001 or ISO/TS 16949.

After granting an initial approval, the type approval authorities are also required to verify on a periodic basis that the production arrangements of the manufacturer continue to be adequate. This procedure may be carried out with manufacturers' technical equipment and control programmes, but may also be extended to the actual testing of selected production samples at the production site(s) of the manufacturer, even if those are located outside the EU. When the arrangements deviate significantly from the control plans agreed, the Member States have to take the necessary corrective actions to ensure that the conformity of production procedure has been followed correctly and, if necessary, they may withdraw the type-approval.

4. Once all the technical documentation and test reports are complete, and conformity of production clearance has been given, the approval authority issues an approval number, **an approval certificate**, and an index to the manufacturer's documents. However, approval authorities can refuse to grant EC type approval if they find that a vehicle or vehicle component/unit that has been type approved presents a serious risk, even if it is in conformity with the required provisions. The approval authority is also required to circulate information on a refusal and the withdrawal of a vehicle approval.

The approval authorities of each Member State are also required to send to the approval authorities of the other Member States a copy of the vehicle type-approval certificate for each vehicle type that it has approved, refused to approve or withdrawn. With respect to type-approvals of systems, components and separate technical units, only a list of approvals granted must be sent at three-monthly intervals. The type approval information is digitally distributed among the Member States with the support of **ETAES (European Type Approval Exchange System)**. ETAES is only accessible to the type approval authorities. ETAES is not a database, but a server supporting the digital exchange of documents for EU Member States that choose to use this means.

5. The issuing by the manufacturer of **a certificate of conformity (CoC)** for each vehicle produced (in the case of whole vehicles). The certificate of conformity is a statement by the manufacturer that a specific vehicle conforms to the relevant EC-type approval. Member States cannot refuse to register and place vehicles on the market if they are accompanied by a valid CoC.
6. Each vehicle is affixed with a statutory plate containing elementary information like the Vehicle Identification Number (VIN). In the case of components or separate technical units, manufacturers are required to affix the EC type-approval mark to each component or unit manufactured in conformity with the approved type...
7. If a type approval authority finds that a vehicle or components that have been placed on the market do not conform to the type approved it has to communicate this to the authority that provided the type approval in order to assess whether it is necessary to withdraw the approval or to take other corrective measures.
8. If a manufacturer decides that there is a need to **recall** vehicles that have been sold because a system or component that has been approved poses risks to safety, public health or environmental protection, they are required to inform the approval authority and to take measures to neutralise risks. The measures need to be approved by the authority or else the type approval may be withdrawn.

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Information on products presenting serious risks – including motor vehicles – and the measures taken (recalls or other voluntary actions) is included in the EU rapid alert system (RAPEX)²⁶.

Alternative type approval for motor vehicles not sold in large volumes

The type approval process described above applies primarily to large volume vehicle manufacturers that are sold across the EU. In the case of vehicle manufacturers that only sell vehicles in small volumes and/or only in one country and for those that manufacture individual vehicles, there are alternative type approval systems with less demanding requirements. These include:

- **EC Small Series Type Approval (EC SSTA)** - applies to manufacturers placing on the market no more than 1,000 passenger cars per type each year. It allows sales anywhere in the EU, but has technical and administrative requirements that are adapted for small businesses.
- **National Small Series Type Approval (NSSTA)** - a national scheme for low volume automotive manufacturers who intend to sell vehicles in only one Member State. This type approval is limited to production of between 75 and 500 vehicles per type per year and per Member State, subject to the category of vehicle. There are reduced Conformity of Production (CoP) requirements, and fewer administrative requirements. National approval schemes are not accepted automatically by other EU Member States. Producers who want to export products with national certification have to apply directly to another type approval authority in the country to which they wish to export. There are however processes in place to facilitate the mutual recognition of national type approvals.
- **Individual Vehicle Approval (IVA)** - concerns individual vehicles intended for those manufacturing or importing single vehicles or very small numbers from non-EU countries when there is no European vehicle type approval. It involves a physical inspection of each individual vehicle to be approved and results in the issue of an approval certificate that allows for registration in the specific Member State where the approval took place.

Comitology Support-coordination structures

The implementation of the legal framework is supported by a number of mechanisms and structures at EU level. These include:

- The **Technical Committee - Motor Vehicles (TC-MV)** - this comitology committee was created on the basis of the Framework Directive. It is comprised of representatives of the Member States and its purpose is to give an opinion and approve proposals from the Commission in relation to amendments to Annexes of the Framework Directive and relevant Regulations and implementing Regulations.
- A number of informal **working groups/parties** that assist in proposing EU legislation, carrying out tasks such as monitoring and coordination/cooperation in relation to EU policies and provides expert advice to the Commission. The working groups consist of national experts, industry stakeholders from business, NGOs, trade unions and academia. The working groups related to the type approval legal framework are:
 - The Working Group on Motor Vehicles
 - The Motor Vehicle Emissions Group (MVEG)
 - Working party on the General Safety Regulation

²⁶ http://ec.europa.eu/consumers/safety/rapex/index_en.htm

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- Working Group on Agricultural Tractors
- Working Group on Hydrogen
- PEMS Pilot Programme
- Light Duty OBD Experts Working Party
- The Forum on Vehicle Security
- World Forum Advisers Group
- The **Type-Approval Authorities Expert Group (TAAEG)** – established by the Commission services in October 2009 – is a consultative body composed of representatives of all national type-approval authorities. It has been created to ensure uniform application of technical requirements for the marketing of motor vehicles
- In addition, the **Type -Approval Authorities Meetings (TAAM)** have taken place since 2004 as a forum to discuss emerging questions regarding the understanding and interpretation of the European Directives and the equivalent UNECE Regulations in order to ensure common application.

2.3 - The Intervention Logic of the motor vehicle type approval legal framework

The mapping of the logic of any public intervention - funding programme or legislation - is a useful contribution to almost any evaluation. It helps to establish a clear perspective on the relationship between objectives, implementing processes and the impacts achieved.

A representation of the Intervention Logic of the type approval legal framework is presented as Chart 2.1. This representation identifies the connections between the broader strategic and operational objectives, as expressed in the policy and legal documents, and the procedures, mechanisms and structures that have been put in place. These in turn are linked to the expected outputs of these processes, the results that arise and the eventual impacts. It provides the basis for understanding the inter-linkages, complementarities – but also possible overlaps - among the different pieces of legislation that comprise the type approval legal framework.

General and specific policy objectives

The recitals of the Framework Directive and the other regulatory acts and some of the key policy and related documents provide the basis for identifying the needs, issues and the overall policy objectives that the type-approval legal framework is expected to address. The explanation of overall policy objectives set out in the recitals is generally very clear and as is usually the case shows how measures that are specific to the automotive sector are ultimately derived from the provisions of the European treaties. These then lead on to a range of more specific objectives, which include:

- The establishment and proper functioning of the Internal Market in relation to all categories of motor vehicles and the avoidance of requirements that differ from one Member State to another
- Enhancing the competitiveness of the EU automotive industry through:
 - the improvement and simplification of regulation and reduction of the administrative burden

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- the promotion and support of international harmonisation
- the promotion of the adoption of new technologies in relation to safety and the environment
- Ensuring a high level of road safety, health protection, environmental protection, energy efficiency and protection against unauthorised use. More specifically, the objectives include:
 - minimising the risk of injury to the occupants of vehicles, other road users and pedestrians
 - reducing CO₂ emissions from passenger cars and light-commercial vehicles as part of the overall EU policy for the reduction of greenhouse gas emissions and the climate change commitments
 - reducing vehicles' pollutant emissions Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Particulate Matter (PM), hydrocarbons(HC)) in order to limit air pollution to levels which minimise harmful effects on human health or on the environment (e.g. acid rain).
 - reducing noise emission from vehicles as part of the effort to reduce ambient noise levels and minimise the health impacts from noise
 - facilitating the introduction and maintaining the existence of alternative fuel vehicles as part of the broader objective of a reduction of greenhouse emissions and increasing energy efficiency
 - minimising the impact of end of life vehicles on the environment, increasing resource efficiency and supporting waste management
- Ensuring the operation of a fully competitive market for the repairing and maintenance of vehicles

In parallel, there are a series of horizontal policy objectives that need to be taken into consideration in shaping the type approval legislation. These include the EU's commitment to smart regulation (see section 3.1 below) and measures that recognise the particular circumstances of SMEs but also the general economic, social and environmental objectives that are expressed in policy documents setting out the Europe 2020 strategy and the orientation provided by the Flagship Initiatives.

Although detailed, the mapping of the objectives set out in the Framework Directive and the other related regulations allows a consistent framework to be seen. What is rather more difficult to see is the relationship between the objectives stated in more general policy statements, such as those to be found in Commission Communications, Council Conclusions and Resolutions of the Parliament and the provisions of the legislation. It is true that for a variety of reasons including different time frames, there is often not a clear alignment between even major non-legislative statements of policy and particular pieces of legislation, at least until there is an opportunity to revise the legislation. In the case of the type approval Framework, there is also a particularly wide range of highly significant policy statements in a number of different areas that have implications for the use of the type approval instrument. These include high level statements about the importance of promoting competitiveness, innovation, growth and employment and the well-being and safety of Europe's citizens and doing this in ways that are environmentally sustainable. It includes more specific policy statements such as the Commission Communication on 'Responding to the crisis in the European automotive industry'²⁷ and aspects of the 2010 Communication on Industrial Policy²⁸ and the

²⁷ Communication from the Commission 'Responding to the crisis in the European automotive industry' COM(2009) 104 final of 25.2.2009

²⁸ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'An Integrated Industrial Policy for the Globalisation Era Putting Competitiveness and Sustainability at Centre Stage' COM(2010) 614

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2011 White Paper on Transport Policy – the ‘Roadmap to a Single European Transport Area’²⁹ through to even more specific documents, such as the 2007 Commission Communication on the ‘Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light commercial vehicles’³⁰. In view of the wide range of the issues being addressed and the complexity of their interaction with each other and with other areas of policy, it is difficult to map out all the considerations to be taken into account and Chart 2.1 only provides a summary statement. For the same reasons, it has been difficult until recently to point to particular documents that bring together the main policy considerations for the motor vehicle industry. To a large extent, this has been remedied by the publication of the Commission Communication ‘CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe’³¹ in November 2012. The Communication responds to the CARS 21 Report and provides an overview of the policy issues facing the industry and actions to be taken in response to them. However, it recognises that more needs to be done, saying that ‘An integrated policy approach needs to be systematically put into practice.’

Of course, the type approval system is only one of a range of policy instruments that can be deployed in this situation. It is the main supply-side instrument directly affecting the performance of new motor vehicles when they are introduced into the market, in relation to safety requirements, pollutant emissions over a vehicle’s life and also CO₂ emissions. Other measures can work on the demand-side affecting the demand of consumers and public and corporate purchasers in a variety of ways, including providing more and clearer information, fiscal incentives and influencing procurement practices. Furthermore other instruments – including instruments not based on legislative or fiscal provisions, such as voluntary agreements are possible. The voluntary commitments of the European, Japanese and Korean motor vehicle manufacturer associations from 1998/99 to reduce the level of CO₂ emissions for new vehicles is a clear example in this area, although, of course, these have subsequently been replaced by legislation when it became clear that this voluntary commitment had failed and the targets set were not going to be met.

It has not been the intention of this Fitness Check to review all the policy instruments available, but rather to concentrate on the type approval instrument. The diagrammatic representation of the Intervention logic reflects this approach. Nonetheless, an awareness of the other instruments in the overall policy architecture does help by providing a context in which judgements are made about the effectiveness of type approval regulation and should be a background consideration for this reason.

Focussing specifically on the type approval framework, the next step is to refer to the individual pieces of legislation that constitute the legal framework. These are directly linked to specific objectives. For example, the Framework Directive is primarily related to:

- the harmonisation of the Internal Market in relation to the placing in the market of motor vehicles and systems, components and technical units on the basis of an introduction of a common approval system across the EU Member States
- the simplification of the regulatory framework and reduction of costs through the repeal of a number of Directives and the adoption of the UNECE regulations but also through elements such as the introduction of virtual testing.

²⁹ White Paper ‘Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system’ COM(2011) 144 final of 28.3.2011

³⁰ Communication from the Commission to the Council and the European Parliament - Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light commercial vehicles COM(2007)19
³¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe’ Com (2012) 636 of 3.11.2012

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- ensuring that all products placed in the market meet the required levels of safety and environmental protection on the basis of a system of approval of type, conformity of production and the obligation that no vehicle can be registered if it does not meet these requirements.

It is then through the relevant regulatory acts (GSR, Euro 5&6 etc.) that the following benefits are achieved: the reduction of emissions of greenhouse gases and air emissions which are the source of health impacts, the reduction of noise, the promotion of technologies to enhance passengers' and pedestrians' safety, the promotion of the use of alternative fuels and new technologies to increase propulsion efficiency, resource-efficiency and waste management.

By replacing some of the older Directives with Regulations (e.g. Pedestrian Regulation 78/2009 replacing 2003/12/EC) there is also a contribution to the harmonisation of the Internal Market and the avoidance of discrepancies. Similarly, the General Safety Regulation aimed to replace a number of Directives with a single Regulation and thus to contribute to the simplification of regulatory framework and, possibly, to the reduction of administrative costs.

In the case of the operation of the after-sales market – concerning the access to technical information by equipment manufacturers for the development of parts and by independent operators that provide repair and maintenance services –there are some generic provisions in the Framework Directive but the main provisions are included in Regulations 715/2007 and 595/2009. However, it is provided that there will be a review of the implementation of these two regulations in relation to the aspect of access to technical information before specific provisions with a much broader scope are introduced into the Framework Directive.

This analysis indicates linkages and expected synergies between the Framework Directive and the regulatory acts but also among some of the regulatory acts themselves, though still at the level of the design of the regulatory system. The extent to which the intended effects have been realised is considered as part of the appraisal of the effectiveness of the system.

Operational objectives, mechanisms and structures

Moving to the more specific operational objectives of the legal framework, these are reflected in requirements of various kinds, and the procedures established in the Framework Directive and the other relevant regulatory acts. These determine the operation of the overall system for type approval (procedures for type approval and exemptions, safeguard clauses, processes for revision or adoption of UNECE Regulations). They also include the specific target values for the different regulatory acts (level of emissions, noise levels, introduction of specific types of technology), the timetable for the entry into force depending on the category of vehicle and other obligations on the manufacturers and Member State authorities.

In turn, these provisions are to be implemented on the basis of actions on the ground by the manufacturers themselves and the Member State approval authorities. This includes actions at the EU level such as the adoption of implementing measures, the amendments on the basis of technological developments and the review of market operation, additional work to establish test cycles and the monitoring of the implementation of the Framework Directive and the regulatory acts. The bodies and coordination structures mentioned in section 2.3 are an important part of these processes.

As a whole, then, the Intervention Logic mapping, as summarised in the following diagram, shows how the type approval legislation delivers a response to a complex set of general and more specific policy objectives through the specification of particular procedures and the limit values of critical performance variables, when measured in specific circumstances. There are then supplementary provisions relating particularly to

Study background

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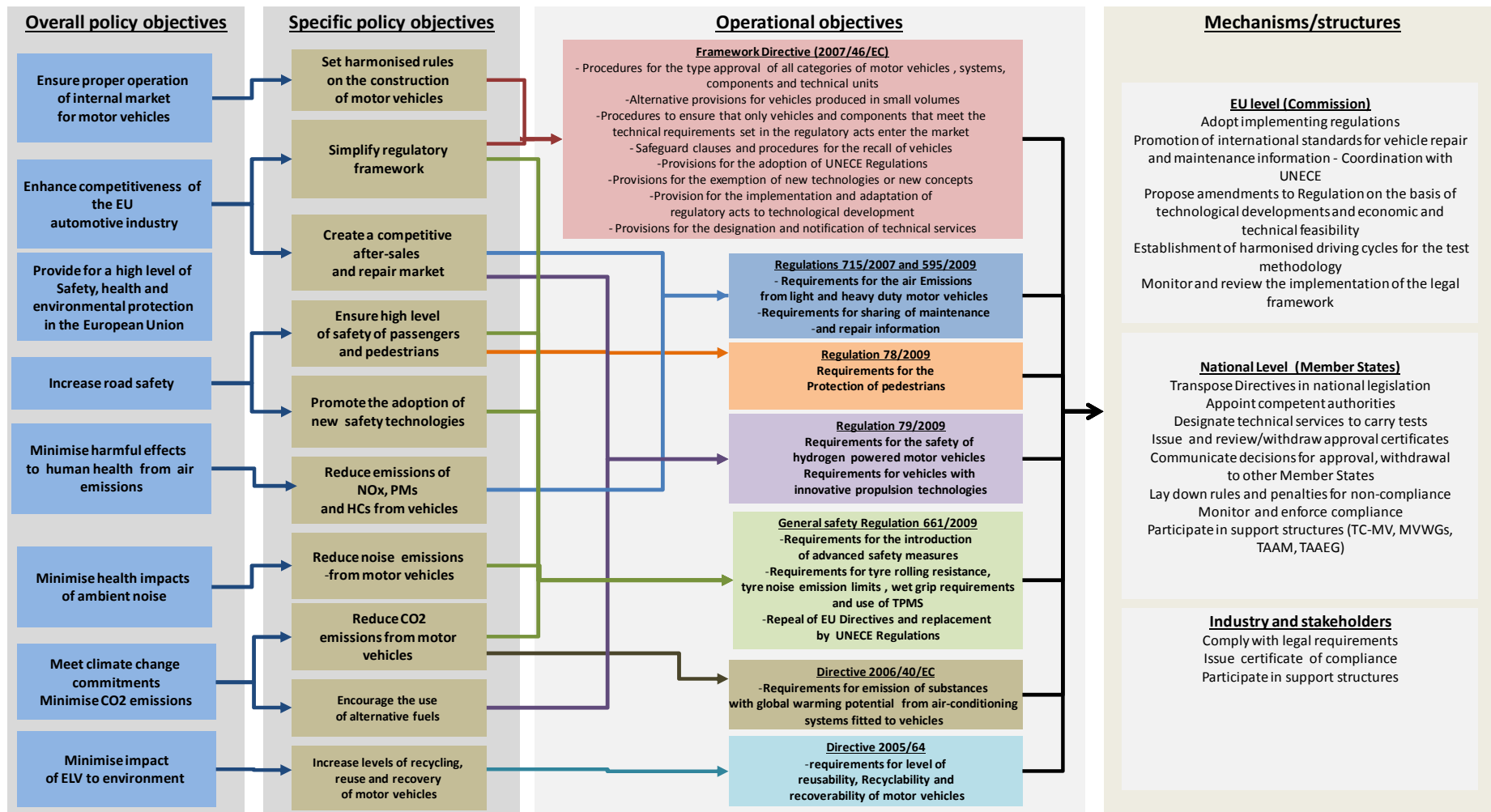
the institutional arrangements for implementing and enforcing the legislation and to related matters such as the operation of the after-market.

The diagram below provides an illustration of our understanding of the operation of the legal framework and the connection between broader policy objectives, specific objectives and actions.

Study background

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Chart 2.3.1 – Intervention logic of the type approval legal framework



Study background

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2.4 - Recent Developments – CARS21 and CARS2020

After setting out the background to the development of the type approval framework and an exposition of its principle components currently, it is also appropriate that some consideration should be given to some important elements in the current context for the development of the framework. At this stage, it will be necessary to be selective. There are a number of developments in the economic situation and in policy affecting the Internal Market, Transport, Environmental and Climate Change that could potentially be referred to, but the recent report of the reconvened CARS 21 group and the Commission's response to this in the CARS 2020 Action Plan are particularly important.

It has been seen that the first convening of the CARS21 High Level Group in 2005 had an important influence on aspects of the type approval framework. At the end of 2010, as a follow-up of the Commission Communication 'European strategy on clean and energy-efficient vehicles'³², the Commission decided to re-launch CARS 21, with the objective of making policy recommendations to support the competitiveness and sustainable growth of the European automotive industry. The Group presented its Final Report on 6 June 2012³³. The Report reviews the current situation of the automotive industry and comments that the EU has managed to safeguard its industrial base in this sector through the worst years of the economic downturn, but that with uncertain macro-economic conditions, the ability of the European automotive industry to preserve its manufacturing base and jobs in Europe will depend more and more on its capacity to increase its competitiveness through innovation and to make a quick and smooth adaptation to change. The report then goes on to consider various issues that need to be addressed and makes a series of detailed recommendations in relation to each of them. In this way, it considers enhancing business conditions and improving competitiveness on global markets, lowering CO₂ emission and reducing pollutant & noise emissions and also deploying new mobility solutions, including promoting alternative fuel and alternative fuel infrastructure, deploying electro-mobility, enhancing road safety and Intelligent Transport Systems and setting the framework for innovation in the area.

The response of the Commission to the Report is to be found in the Communication 'CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe'³⁴. This also begins by acknowledging the difficult circumstances faced by the industry in current market conditions, while at the same time recognising the strategic importance of the automotive industry to the European economy and the life of European citizens on a daily basis. It then goes on to set out responses to the challenges faced by the industry and the recommendations of the CARS 21 Group. These are considered under four headings:

- Investing in advanced technologies and financing innovation through a range of regulatory initiatives and support to research and innovation
- Improving market conditions through a stronger internal market, including the introduction of market surveillance provisions in type-approval legislation, and the consistent implementation of smart regulation

³² Commission Communication 'European strategy on clean and energy-efficient vehicles' COM(2010)186 final of 28.04.2010

³³ CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union Final Report 2012, 6 June 2012

³⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe' Com (2012) 636 of 3.11.2012

Study background

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- Enhancing competitiveness on global markets through an effective trade policy and the international harmonisation of vehicle regulations
- Anticipating adaptation by investing in human capital and skills and softening the social impacts of restructuring

In each of these areas there is a detailed account of actions that the Commission proposes or, in some cases, already has under way. However, as well as the detail that will be referred to subsequently as appropriate, there is also reference to a strengthened policy framework that is of significance for the following analysis and especially in providing a context for the recommendations to be made, Emphasis is placed on the systematic putting into practice of an integrated policy approach, with the following elements:

- private sector and public policy actions at EU, Member State and regional level that complement each other;
- measures addressing vehicles to be effectively combined where appropriate with others focusing on infrastructure and the user;
- cost-effective regulatory and alternative policy measures which are effectively implemented and enforced, in order to reach long-term societal objectives and drive innovation;
- all policy areas having an impact on the automotive sector to be closely coordinated among the relevant authorities in charge, including trade, industrial, environmental, energy, information and communication technologies, road safety and public health, transport and competition policy, innovation and internal market, so as to ensure the cost effective achievement of the policy objectives;
- timeframes established, such as the timing for the implementation of pollution abatement technologies.

The Communication comments that the Commission fully recognises the challenges and the need for an ambitious industrial policy strategy for the automotive sector, undertakes to orient its policies to this objective and calls on other Institutions, public authorities and stakeholders to follow the same approach, within their respective area of responsibility.

Evaluation framework and methodology 3

3.1 Evaluation framework

In this section we explain the methodology that has been applied for the Fitness Check.

Basic principles of a Fitness Check

In order to address the particular requirements of a Fitness Check, the standard evaluation framework for an assessment of legislation and the key evaluation questions related to relevance, effectiveness, efficiency, EU added-value, utility and sustainability have been adjusted to take into account the additional requirements, objectives and principles of a Fitness Check and the principles of Smart Regulation.

The main purpose of the Fitness Check is to assess if the overall regulatory framework for a policy area is fit for purpose, to what extent it embodies the principles of smart regulation and, if not appropriate, what should be changed. The main elements considered were:

- the different elements of the legislative package seen as a whole. This means that the methodology places an emphasis on specifying the relationships between different aspects of the package, identifying synergies, but also inconsistencies and overlaps between the different parts of the legal framework that may make the overall framework more or less effective when judged against the policy objectives
- consideration of the overall compliance and administrative costs arising from the implementation of the legal framework, and particularly the cumulative effects
- consideration of whether the legal framework has been developed on the basis of the principles of smart regulation including:
 - whether there has been effective management of the legislation linking the design, implementation, enforcement, evaluation and revision processes, and whether the design of the legislation has been considered along with the implementation and enforcement aspects
 - whether an evidence-based policy approach has been adopted
 - If there has been a sharing of responsibility for the development and implementation of the legislation among European institutions and the Member States on the basis of the subsidiarity principle and processes ensuring that action has been taken at the most appropriate level
 - whether policy making has been open to the input of key stakeholders affected by the legislation
- consideration of the coherence with other related pieces of legislation and the EU policy objectives
- consideration of the potential spillovers of the legislation to issues related to the competitiveness of the automotive industry
- consideration of whether the current legal framework could be simplified and whether certain pieces of legislation or specific provisions are excessive or obsolete
- assessing the capacity of the current structure of the overall framework to adapt to future developments in the sector and up-coming challenges

Evaluation framework and methodology 3

These principles had a major role in the development of the evaluation questions, in the analysis carried out and the nature of the findings presented in the Report.

3.2 - Evaluation questions

In order to provide focus for the investigations and the subsequent analysis a set of evaluation questions was elaborated at an early stage of the assignment. The initial set was given in the terms of reference, but they were slightly modified during the Inception period before the final set of questions was agreed with the Steering Committee.

The questions have been framed around the standard evaluation criteria against which legislation and operational programmes are usually examined.

The Relevance and Coherence of the Legislation

- What were the main objectives of the regulatory intervention? Was there an actual need to legislate to achieve these objectives?
- Do the regulations under consideration form a coherent and consistent package, given the overall objectives that the interventions are aiming to meet?
- What are the main trends in the structural characteristics of the motor vehicle industry and in its internal and external trade? What challenges do these developments pose for the current regulatory framework?

Effectiveness

- To what extent has the legal framework for the type-approval of motor vehicles contributed to achieving the overarching policy objectives of the Internal Market for goods and the competitiveness of the automotive industry?
- How effective is the legal framework for the type-approval of motor vehicles as a mechanism and means to achieve each of the stated objectives? What are the main outcomes and impacts of the regulatory framework, including the cumulative impacts of the separate pieces of legislation taken together, and to what extent have the main objectives been achieved?
- What, if anything, could be done to render the legal framework more effective as a means to achieve these objectives?
- How well are the pollutant emissions, CO₂ and road safety objectives achieved and how well has the balance between them been achieved?
- What is the added value of the legal framework for stakeholders? Do stakeholders consider that the regulatory framework for the type-approval of motor vehicles is addressing sufficiently and satisfactorily the issues that need to be addressed?
- Are there any shortcomings, overlaps, spill-over effects or unwarranted cumulative impacts that need to be addressed?

Evaluation framework and methodology 3

- What are the current and possibly future barriers or weak links to the effective application and enforcement of the legal framework, if any? How could any such barriers be overcome or avoided in the future? What role could market surveillance play in this context?
- Are there any aspects/means/actors that render certain aspects of the legal framework more or less effective than others, and – if there are – what lessons can be drawn from this?

Efficiency

- What aspects of the legal framework are the most efficient or inefficient, especially in terms of resources that are mobilised by stakeholders during the different phases of the process?
- What does this represent in terms of administrative and reporting burdens on stakeholders and/or other actors? Are there any excessive administrative burdens caused by the regulatory framework? And if so, how could these be reduced or eliminated?
- Is the administrative burden on SMEs proportionate? And if not, how could it be reduced or eliminated?
- Are there overlaps/ complementarities between the legal framework and any other European Union or Member State action in the relevant areas? Have some regulatory measures shown to be redundant, overlapping, ineffective, or inconsistent?
- How effectively has the legislation been implemented on the ground in the Member States? Is the option to include market surveillance in the regulatory framework feasible, and if so, how could this be done in an effective and efficient way?
- To what extent could measures be taken to improve the implementation of the legislation, and what measures would these be?

Utility

- Is the legal framework delivering identifiable benefits to the sector and ultimately to consumers? What are the expectations of the users?

Sustainability

- To what extent are there any positive changes brought about by the recent changes to the legal framework or are any likely to act in this way?
- Is the regulatory framework considered fit for purpose and adequately equipped for facing and tackling the needs of the changing global automotive industry environment or are there any changes needed to take account of current and future developments? And if so,
- What further changes, if any, do stakeholders consider necessary/suitable to ensure the sustainability of the legal framework in the future?

European Added Value

- Without the EU intervention, would self-regulation have been a more effective alternative to some of the regulatory measures? What has been the EU added value of the intervention?

Evaluation framework and methodology 3

These questions have been used to direct the investigations in the various areas, for instance by determining the questions asked in surveys and interviews. It will be seen the findings are presented according to the main evaluation criteria headings and that the material in each of these sections is directed towards the corresponding questions.

3.3 – Research tools

In this section, a brief overview is presented of the research tools used during this study for the collection of qualitative and quantitative data and other information and for obtaining the views of the relevant stakeholders. In summary, these included:

- Desk research in relation to the various aspects covered by the type approval framework.
- An analysis of official data sources on issues related to the operation of the internal market, trade flows, CO₂ and pollutant emissions, noise, safety etc.
- An interview programme with key stakeholders – this covered Commission officials, Member State authorities, technical service providers, European and national industry associations directly or indirectly affected by the type approval legal framework, manufacturers of motor vehicles, NGOs and consumer groups, experts.
- Three online surveys targeted at Member State authorities, manufacturers and technical service providers. These complemented the interview programme and aimed to reach a broader audience.

In the following paragraphs, we provide a more detailed presentation of the research tools used.

Desk research

Desk research involved the review and collection of relevant information from a wide range of sources. These included the actual legal documents that comprise the type approval legal framework and, where available, the relevant impact assessments. The impact assessment documents help to develop an understanding of the initial rationale for legislation and also provide the starting point against which one can assess the effectiveness of the various pieces of legislation, since they indicate the expected impacts. The review of the legal documents served – among other purposes - in developing an understanding of the Intervention Logic of the regulation and also in identifying areas where issues, gaps, conflicts or overlaps may arise. These were then further discussed during the interviews with stakeholders in order to understand the nature and importance of any potential problem.

At the same time, the desk research included a review and analysis of information from a large number of EU policy documents in the areas of transport, vehicle safety and environmental policy, other reports and studies, academic articles and web-based resources related to the various policy areas covered by the legal framework. A list of the documents reviewed is provided in Annex 3.

Data sources

A broad range of data sources was used during the course of the study. These included:

- **Sectoral statistics and studies on the automotive sector** from Eurostat, international organisations and industry associations. A number of studies provided additional information about the structure of the automotive sector and supply chains at a European and national level.

Evaluation framework and methodology 3

- Data on **ECWVTA activity** across the EU that were made available by the Dutch type approval authority (RDW).
- **Environmental data** from the European Environmental Agency database³⁵ on the level of air pollutants and CO₂ emissions, the share of vehicles in different categories complying with Euro 5 and Euro 6 and the evolution of levels of transport noise. Data available mostly cover the period up to 2011. Additional data were provided by some industry associations (e.g. ACEA) and wider organisations (e.g. International Council on Clean Transportation) which complemented official statistics.
- **Transport and vehicle safety data** from the CARE database³⁶ on the development of accidents, injuries and fatalities for the different categories of vehicles that cover the period 1999-2010. These were complemented with data related to EuroNCAP ratings provided in some reports from the ETSC^{37 38}.
- Data on the levels of **non-compliance from the RAPEX system**³⁹ concerning notifications and possible reasons for recall up to 2012. However, it is not possible to determine from RAPEX whether the defective automotive products (components) which warranted a notification were in compliance with the Directive or not.

Interview programme

A total of 77 interviews were completed as part of the fieldwork covering a wide range of stakeholders including associations representing different subsectors affected by the legal framework, environmental and consumer representatives and experts, Member State authorities and technical services and a small number of manufacturers in different sub-sectors. A number of stakeholders contacted declined to be interviewed either because of time and resource constraints or because they did not consider that they could provide answers to the questions provided in the interview checklists. Table 2.1 provides a summary of the interviews completed by type of stakeholder.

Table 3.3.1 – Summary of interview programme

| | Completed | Declined | Total |
|--|-----------|----------|-------|
| EU level | | | |
| Commission officials | 6 | | 6 |
| Consumer & environmental NGOs | 3 | 3 | 6 |
| EU industry associations | 19 | 6 | 25 |
| National | | | |
| National/approval authorities (Ministries, Agencies) | 14 | 1 | 15 |
| National Business Association | 11 | 4 | 15 |
| Technical service | 6 | 1 | 7 |

³⁵ EEA, Transport data service, <http://www.eea.europa.eu/themes/transport/dc>

³⁶ DG MOVE, Road safety: Statistics – accident data, http://ec.europa.eu/transport/road_safety/specialist/statistics/index_en.htm

³⁷ ETSC (2009), PIN Flash 13 - Boost the market for safer cars across the EU, http://www.etsc.eu/documents/Background%20tables_Flash13.pdf

³⁸ We also submitted a request to receive data of car ratings to EuroNCAP. However, so far we have not received any response.

³⁹ DG SANCO, Consumer safety – RAPEX Notifications, http://ec.europa.eu/consumers/dyna/rapex/rapex_archives_en.cfm

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| | Completed | Declined | Total |
|-------------------------------------|-----------|-----------|-----------|
| Manufacturers | 8 | | 8 |
| Non-EU industry associations | 6 | 4 | 10 |
| Experts | 4 | 3 | 7 |
| Total | 77 | 22 | 99 |

At the Member State level, the interviews covered 10 Member States⁴⁰ where the relevant authorities (ministries and/or the type approval authority – when different), industry associations and technical services were interviewed. All interviews were semi-structured on the basis of an interview checklist. A detailed list of the organisations contacted and the interviews completed is provided in Annex A.

Surveys

In parallel to the interview programme, CSES organised three online surveys that aimed to obtain inputs from a broader audience beyond those covered through the interview programme.

The survey of Member State **authorities** complemented the interview programme and targeted competent and approval authorities in all Member States. A total of 27 responses from national administrations and type approval authorities from 21 Member States were received. The survey response provided a wide coverage of both large and small EU Member States and represents an appropriate balance between countries with greater and lesser levels of type approval activity.

The survey of **technical services** providers aimed to provide the study team with information about the practical experiences of type approval on the ground. From a total of 153 technical services in the list available from the Commission website⁴¹ for which contact details were available, 18 responses were received (12%). This is clearly not a representative sample although the responses include a number of technical services with high level of type approval activity and covered 23 of the 27 EU Member States plus Norway.

The third survey targeted a broader range of **stakeholders** and aimed to obtain responses from individual manufacturers in the automotive sector. The level of participation in the survey was somewhat disappointing, with only 17 responses, almost exclusively from manufacturers of vehicles or components. Among the constraints that limited the survey response were reliance on industry associations in disseminating the survey to their members and the view of many manufacturers that their associations are best placed to speak on their behalf on matters relating to European legislation. So, while all the main industry stakeholders at European level - including but not limited to ACEA, CLEPA, ETRMA, ESCA – informed their members and sent reminder emails about the survey, the response rate remained limited. Consequently, the survey response cannot be considered as being representative of the overall experiences of the automotive industry in implementing the type approval framework. However, the responses provided by manufacturers did provide a useful additional source of information particularly to illustrate specific issues. .

Case studies

As part of the study, CSES conducted four detailed case studies which provided an opportunity for more in-depth investigation of particular issues identified as being interesting and worth exploration. These were

⁴⁰ These included the following countries: CZ, DE, ES, FR, NL, IE, IT, PL, RO, UK. They were selected taking into account the level of type approval activity but also considering the need for a balanced geographical coverage.

⁴¹ http://ec.europa.eu/enterprise/sectors/automotive/approval-authorities-technical-services/technical-services/index_en.htm

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identified by CSES in close cooperation with the Commission services. The four case study topics agreed were:

1. Assessment of the administrative burdens from the implementation of the legal framework.
2. The use of the type approval legal framework in the pursuit of environmental and climate change policy objectives.
3. The impact of the legal framework on non-EU based manufacturers.
4. Impact on the implementation of the type approval legal framework of processes followed or measures and regulations adopted at the national level concerning the process of registration and the placing in the market of motor vehicles and components.

The full versions of the case studies are presented in Annex C. However, some of the main elements from the analysis and the case study findings have been integrated into different parts of the main report.

Analysis of findings

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In this section we present the findings of the study on the basis of the analysis of the data, the input from stakeholders and other information collected. The findings are presented in relation to each of the main evaluation criteria that have determined the structure and processes of the investigations, although it will also be seen that specific evaluation questions are often addressed directly.

4.1 - Relevance and coherence of the legislation

Relevance of the legislation

The focus of questions on the relevance of the legal framework is on whether the legislative package taken as a whole responds to the needs of the automotive industry, consumers and society. Our analysis of the Intervention Logic of the legislation has identified the multi-layered objectives of the automotive regulatory framework and the specific place of type approval regulation within this. We have also discussed with stakeholders whether the introduction of regulation, and more specifically the type approval approach, has been necessary and the most appropriate way of resolving the problems that the legislation is intended to address. We have also assessed the scope of the legal framework – as well as of individual pieces of legislation – examining whether it is appropriate or whether it needs to be further extended to other categories of motor vehicle.

Stakeholders have been asked about the continuing relevance of the objectives identified in the Framework Directive and the associated regulatory acts. In brief, these are:

- Ensure harmonisation and effective operation of the internal market
- Promote fair competition in the EU market
- Increase access of the EU automotive industry to global markets
- Promote the development of innovation in the automotive industry
- Ensure high level of safety for vehicle occupants and pedestrians
- Reduce CO₂ and air pollutants emissions from motor vehicles
- Reduce noise emissions from motor vehicles
- Promote the adoption of alternative fuels
- Simplification of regulatory framework

The feedback from most stakeholders indicates that these objectives are widely accepted as both relevant and appropriate for the legislative framework. However, there are diverging views as to the level of relevance of the type approval framework with each of the objectives stated above. Thus, while the issue of harmonisation and effective operation of the Internal Market, fair competition, safety and air emissions are generally recognised as highly relevant to the type approval approach, other aspects – alternative fuels, reduction of noise emissions and promotion of innovation – are less often recognised as directly related to the type approval legal framework as such.

In general, the objectives are thought to be complementary to each other, though there are certain aspects that require careful management, such as the relationship between the costs of safety and environmental provisions and the global competitiveness of the industry and the relationship between reducing road noise and safety requirements. It is also widely agreed that legislation has been and continues to be necessary in order to provide a clear framework and planning horizon for manufacturers. The great majority of stakeholders suggest that alternative approaches – such self-regulation by industry – would not be appropriate since they would not bring similar results. The failure of the voluntary agreement on CO₂ emissions is often cited as an example. The presence of legislation is seen as supporting fair competition in the market and – if properly implemented - ensuring a certain level of consumer and environmental protection.

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Furthermore, bearing in mind the history of its development and the adjustments made, the current framework based on the type approval approach is generally recognised as being the most appropriate one when compared to the US self declaration approach.

It is widely felt, however, that in spite of its intentions and some improvements, the General Safety Regulation has not succeeded in achieving a significant simplification of the regulatory framework. This issue is also considered further below.

Finally, most stakeholders consider that the scope of the legislation is appropriate but there were suggestions that small electric vehicles may need to be included because of their possible high speed. They are not currently covered by the Framework Directive but the many new kinds of vehicles appearing on the road create confusion about which regulation is applicable. At the same time though, there was not support for a single directive bringing together all types of vehicle.

Coherence of the framework and consistency with other legislation

A central question, especially for a Fitness Check is whether the legislation forms a coherent and consistent package, given the overall objectives that the interventions are aiming to meet. More particularly, the question is whether the legal framework is robust and coherent in the sense that the stated objectives are consistent with each other and with legislation in related areas, the instruments whereby the objectives are to be realised are applied in a consistent fashion and the anticipated effects of the legislation are articulated in comparable ways and subject to parallel enforcement, monitoring and evaluation processes. The comments of stakeholders can be summarised in the following points:

- The aims and objectives of the various parts of the legislative framework are stated in a wide range of policy documents and in the recitals of the various legislative measures, often with cross reference between the two. While there are clearly legal and institutional reasons for proceeding in this way, it is often difficult for the ‘users’ of the legislation, and particularly smaller manufacturers, to get a clear view of what is involved.
- The range of policy objectives now raises issues of considerable complexity that (as will be seen in the efficiency section) put strains on the operation of the whole system. However, all of the stakeholders interviewed believed that is necessary to address all of the issues together and none of them proposed an alternative approach.
- Furthermore, given the complexity of the legislation and the need to adjust to technical and other developments, the structure of the legislative framework, with enabling legislation supported by implementing measures, is thought to be sensible. However, this approach does raise co-ordination and timetabling issues that are considered in the efficiency section.
- Streamlining of the ‘subject’ legislation is necessary to avoid differences in definitions that create confusion and problems in implementation.
- In general, the legislation appears to be flexible enough to accommodate emerging technologies that are likely to have a major effect on the market, such as natural gas, hydrogen, electric and hybrid vehicles, at least as far as the type approval instrument is concerned.
- The main reservation expressed is that, in general, the framework has been designed to meet the needs of large scale manufacturing and that the benefits of its application in the case of small series and individual vehicles are more finely balanced.

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- There is also some concern that the framework cannot easily cope with particular circumstances in some Member States (e.g. the blind spots of left-hand-drive heavy vehicles driving on UK motorways) without imposing a general ‘solution’ that brings few benefits to Member States where the problem does not arise.
- A certain amount of ‘tidying up’ of the legislative framework is considered necessary so that non type approval requirements (e.g. financial incentives) are not be included under the type approval framework and different topics are grouped within the same legislation (e.g. provisions on access to vehicle repair and maintenance information in Regulations 715/2007 and 595/2009).

The examination of the Intervention Logic also suggests that certain aspects of the legislation could be presented more consistently. Although the practicalities of the timing of legislation clearly need to be taken into account, in the sense that different issues arise at different times and the process is inherently untidy, nonetheless the structure of the legislation should be as clear as possible with core provisions consistently being contained within the Framework Directive and with related Directives, Regulations and implementing measures all addressing particular issues, with cross references minimised. Having, for instance, provisions on requirements relating to repair and maintenance information in the Euro 5&6 and Euro VI Regulations is not an obvious way of proceeding and makes the potential extension to additional types of vehicle more difficult. A separate piece of legislation focusing exclusively on RMI provisions, or provisions within the Framework Directive, would make a process of revisions and change related to RMI simpler and faster and allow, for instance, for the development of RMI requirements for trailers, which is considered a blind spot in the legislation by aftermarket representatives. Currently, irrespective of the merits of introducing such requirements, at this point there is no piece of legislation where such provisions could easily be integrated.

Furthermore, in an area where interpretations of legislative provisions is required relatively frequently, although guidance is welcome, stakeholders have commented, it does not have the same legal force as new legislative provisions. Being able to change the legislation more easily would allow greater scope for clarifications of this kind being incorporated in consolidated texts. More generally, the position of type approval legislation within the full range of policy instruments could be approached more systematically. Type approval is the main supply side instrument for policy on motor vehicles, but its function in relation to a series of demand-side issues, such as information, labelling, taxation and other financial incentives, could be presented more clearly, perhaps as part of the integrated policy approach proposed by CARS 2020. There are some difficulties in the co-ordination of a more integrated approach, notably because of the distribution of responsibilities among the different authorities, with the Member States, for instance determining fiscal measures, while other aspects are determined at an EU level. However, a clearer framework for the co-ordinated application of the different policy instruments would itself contribute to delivering the more integrated approach, not least by promoting greater transparency.

Following on from the development of clearer statements on the application of the different policy instruments, some further ‘tidying up’ of the type approval provisions will be necessary. For instance, Regulations 595/2009 and 715/2007 both include provisions concerning Member State financial incentives with the aim of ensuring a consistent approach across the EU. These demand-side provisions might well find a place alongside others to which they more closely relate.

The development of legislation relating to CO₂ emissions, after the shortcomings of the voluntary approach became apparent, now provides a complementary adjunct to the use of the type approval instrument. Whether greater integration of this objective and corresponding procedures is possible and desirable needs further consideration.

Considerations of enforcement, monitoring and evaluation provisions are made in subsequent parts of the Report.

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4.2 – Effectiveness

The assessment of the effectiveness of the type approval legal framework focuses on its contribution, to this point, to achieving a range of shorter and longer term policy objectives as identified in the relevant policy documents, the legislation itself and analysed in the consideration of the Intervention Logic. For the purposes of the analysis these have been codified in thematic areas that follow the main policy objectives:

- Ensure effective operation of the internal market and promote fair competition
- Support the competitiveness of the automotive industry by increasing access to global market and promoting the development of innovation
- Simplifying the regulatory framework
- Ensure high level of safety for vehicle occupants and pedestrians
- Reduce CO₂ and air pollutants emissions from motor vehicles
- Reduce noise emissions from motor vehicles
- Promote the adoption of alternative fuels
- Contribute to increased level of recycling and reuse of vehicles and minimise the impact of ELV on the environment

The analysis makes use of available data sources, reports and inputs from stakeholders to address a set of evaluation questions set in the terms of reference which are rather closely interlinked. These include:

- How effective is the legal framework for the type-approval of motor vehicles as a mechanism and means to achieve the stated objectives? To what extent have the main objectives been achieved?
- What are the main outcomes and impacts of the regulatory framework, including the cumulative impacts of the separate pieces of legislation taken together?
- Do stakeholders consider that the regulatory framework for the type-approval of motor vehicles is addressing sufficiently and satisfactorily the issues that need to be addressed?
- What is the added value of the legal framework for stakeholders?

However, it should be noted that there are certain limitations to the investigations. First of all, a thorough assessment of the effectiveness of the individual regulatory acts is not possible in the context of a single exercise. A detailed and thorough assessment would require separate studies to look into the specific provisions or other aspects of each regulatory act that determine their effectiveness. The objective of the Fitness Check has been to look into the overall picture and this, unavoidably, means that issues that are specific to only a part of the legal framework have been given less prominence. Secondly, in a number of areas the implementation of the type approval legal framework is still in its early stages and a number of the provisions related to specific targets are still not in force, while other parts are still in a transition phase. Thus, a direct connection between important parts of the legal framework and the expected outputs and impacts is very often difficult to make. Thirdly, from a practical side, in a number of areas secondary sources of data or relevant studies examining the development in relation to the specific expected impacts have been difficult to identify. The study has attempted to follow up qualitative assessments coming from stakeholders that participated in the interview programme and the online survey by identifying data that are

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supported these assessments or called them into question. Given the wide range of issues and the available data, it has not always been possible to make a full assessment of particular contributions. Still, input from stakeholders and experts have often been invaluable in pointing to particular advantages of the legislation or alternatively problems or weaknesses.

Contribution to the Internal Market for goods

On the key question of the operation of the Internal Market, the majority of stakeholders indicated that the legislation had made a very positive contribution. 70% of authorities indicated a significant contribution (see Table 4.2.1 below) and the input from manufacturers was also quite positive. The interviews with industry associations also confirmed this positive assessment. The main added value of the legal framework is the effective role it plays in eliminating approaches and requirements at a national level that fragment the market, at least as far as new vehicles are concerned. Evidently, the harmonised type approval system does not have any direct role or contribution to the development of an internal market for second hand vehicles which represent more than 50% of the sales in a number of countries in Eastern Europe.

There are some suggestions that vehicle registration requirements or the variation in the tax regimes of some countries sometimes present obstacles to achieving a fully harmonised market. These possible qualifications to the generally positive assessment are examined in greater detail in the fourth case study presented in Annex 4.

Table 4.2.1 - To what extent has the type approval legal framework contributed towards the objective of simplifying the regulatory framework for the automotive sector?

| | Ensures effective operation of the internal market | | | | Promotes fair competition | | | |
|-------------------------------|--|-------------|---------------|-------------|---------------------------|-------------|---------------|-------------|
| | Member States | | Manufacturers | | Member States | | Manufacturers | |
| No response | 0 | | 2 | | 0 | | 2 | |
| Do not know/No opinion | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 11% |
| Not relevant | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Expect to do so in the future | 1 | 4% | 0 | 4% | 2 | 7% | 0 | 0% |
| Little | 0 | 0% | 0 | 0% | 1 | 4% | 1 | 11% |
| Moderately | 7 | 26% | 4 | 44% | 7 | 26% | 4 | 44% |
| Significantly | 19 | 70% | 5 | 56% | 17 | 63% | 3 | 33% |
| Total | 27 | 100% | 11 | 100% | 27 | 100% | 11 | 100% |

Source: CSES survey

The survey responses also indicate a positive assessment of the role of the legislation in the promotion of fair competition within the market on the basis of the presence of a single legal framework that is applicable to all manufacturers, irrespective of whether they are based inside and outside the EU. In this area, the main issue raised concerns the operation of the aftermarket and the effectiveness of Regulations 715/2007 and 595/2009 concerning access to necessary repair and maintenance information for the manufacturers of components, independent service providers and remanufacturers. While representatives of both sectors are positive about the overall provisions of the Regulation that make the sharing of information mandatory they point to implementation aspects - such as the fees charged for access to information or the form in which the relevant data are made available - ⁴² which, in their view, mean that in effect the expected results in

⁴² The independent service providers point to the high fees charged by OEMs for accessing the repair information that reduces accessibility and gives competitive advance to authorised repair service provided. The aftermarket component manufacturers and remanufacturers suggest that the type of information and the form that the information is made

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terms of fair and open competition are not fully achieved. The increasing electronic content and computerisation of vehicles means that easy access to such information is expected to become more and more a critical aspect of competition. Limited or problematic access to such information can distort fair competition in the aftermarket. From their side, OEMs consider that the current arrangements are effective, pointing to the high share (over 50%) of independent suppliers in certain segments of the market and suggesting that fees charged are simply a reflection of the costs for the collection and provision of the necessary information. The possible loss of intellectual property was also raised as a consideration, although not a major concern.

Impact on intra-EU trade and prices

In principle, the increasing harmonisation of the automotive market as a result of the type approval framework should contribute to an increasing level of intra-EU trade, greater level of competition and ultimately a lowering of prices for motor vehicles and components. A full examination of such impacts would require a dedicated analysis of the effects of all variables that affect both supply and demand conditions in the vehicles and components market supported by a rigorous and sophisticated data analysis. Other factors like energy and raw materials costs, changes in production structures and the supply chain, brand competition⁴³ and possibly other EU regulations – such as the Block Exemption Regulation – would also have to be considered. Such an exercise was outside the scope of this study that has confined itself to a review of the indications provided by the main data on the market.

A review of the main data on the development of total intra-EU EU trade in the motor vehicles sector suggests that its evolution over the last few years has lagged behind the developments in general trade in most sub-sectors. To an important extent, this appears to be a reflection of the significant impact of the financial crisis on the demand for motor vehicles. There are some notable exceptions to this trend, relating to parts and accessories. These partly reflect the changes in the structure of the supply chain and the increasing share of Central and Eastern Europe in the manufacture of components and systems. Extra-EU imports have also increased, particularly in the components and light commercial vehicles segments of the market.

Table 4.2.2 – Evolution of volume of intra-EU and extra-EU imports in the motor vehicles and components sectors over the period 2000-2011 (2000=100)

| | | 2000 | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 |
|--|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total trade | Intra-EU | 100.0 | 103.1 | 114.7 | 113.1 | 116.6 | 104.6 | 121.3 | 126.7 |
| | Extra-EU | 100.0 | 103.4 | 115.0 | 120.4 | 122.0 | 104.2 | 110.2 | 111.7 |
| Vehicles | Intra-EU | 100.0 | 106.9 | 119.0 | 95.6 | 108.9 | 80.0 | 109.3 | 127.9 |
| | Extra-EU | 100.0 | 100.2 | 127.1 | 152.7 | 168.7 | 118.6 | 137.0 | 150.9 |
| Motor vehicles for the transport of 10 or more persons | Intra-EU | 100.0 | 105.6 | 134.3 | 83.9 | 97.4 | 91.8 | 113.8 | 131.9 |
| | Extra-EU | 100.0 | 118.1 | 165.1 | 252.6 | 332.1 | 240.3 | 216.8 | 251.2 |
| Motor cars and other motor vehicles | Intra-EU | 100.0 | 111.8 | 119.7 | 65.8 | 73.6 | 66.5 | 100.7 | 102.9 |
| | Extra-EU | 100.0 | 92.9 | 124.9 | 144.9 | 140.7 | 107.3 | 105.8 | 111.4 |
| Motor vehicles for the transport of goods | Intra-EU | 100.0 | 98.5 | 100.7 | 63.5 | 83.1 | 46.0 | 81.3 | 91.7 |
| | Extra-EU | 100.0 | 106.0 | 134.2 | 162.6 | 193.2 | 104.5 | 133.0 | 144.3 |
| Chassis fitted with engines, for tractors, motor vehicles. | Intra-EU | 100.0 | 134.9 | 143.7 | 95.8 | 109.9 | 57.0 | 93.9 | 99.1 |
| | Extra-EU | 100.0 | 36.0 | 42.7 | 116.6 | 86.0 | 83.0 | 117.3 | 154.2 |

available does not allow them to develop the products and the relevant technical information as a level of similar quality to original equipment.

⁴³ DG COMP (n.a.), Commission evaluation report on the operation of Regulation (EC) N° 1400/2002 concerning motor vehicle distribution and servicing

http://ec.europa.eu/competition/sectors/motor_vehicles/documents/evaluation_report_en.pdf

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| | | 2000 | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 |
|--|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Bodies, incl. Cabs, for tractors, motor vehicles | Intra-EU | 100.0 | 109.7 | 156.3 | 42.0 | 61.4 | 44.3 | 70.5 | 91.4 |
| | Extra-EU | 100.0 | 45.2 | 29.5 | 52.6 | 70.7 | 27.6 | 34.0 | 48.2 |
| Parts and accessories for tractors, motor vehicles | Intra-EU | 100.0 | 104.9 | 118.5 | 138.9 | 144.1 | 102.4 | 125.0 | 140.8 |
| | Extra-EU | 100.0 | 118.5 | 129.8 | 166.1 | 201.8 | 136.4 | 191.9 | 225.4 |

Source: Eurostat and own elaboration

The data from Eurostat and DG Competition suggest a steady decline of passenger car prices over the last few years. As can be seen in Table 4.2.3 the harmonised price index for cars (reflecting nominal prices paid by consumers, including rebates, VAT and registration taxes) increased by around 2% in the period 2005-2011, in comparison to the 15% rise in the overall price index, thus indicating a fall in real prices. However, scrap car incentives adopted in a number of Member States can distort the picture. In contrast, prices in the spare parts and accessories markets have increased significantly. The DG Competition report⁴⁴ on pre-tax prices suggests a fall in prices for cars that is linked primarily to increased competition among manufacturers. The 2011 TERM report also indicated a reduction in the cost of car purchase by around 10%⁴⁵ and a recent report from AEA on behalf of DG CLIMA based on an extensive database concluded that, overall, cars have become 12% to 22% cheaper – after inflation – in the eight years from 2002 to 2010⁴⁶.

Table 4.2.3 – Evolution of car and spare parts prices (2005=100)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|
| All-items HICP | 100.00 | 102.31 | 104.73 | 108.56 | 109.63 | 111.91 | 115.38 |
| Motor cars | 100.00 | 100.72 | 101.73 | 101.32 | 100.94 | 101.43 | 101.96 |
| Spares parts and accessories | 100.00 | 102.50 | 105.77 | 109.62 | 112.84 | 115.47 | 118.58 |

Source: Eurostat Harmonised Price Index

On the other hand, while there is evidence of passenger car price convergence across the EU during the period 1995-2005 (e.g. Gil-Pareja and Sosvilla-Rivero, 2005)⁴⁷, price dispersion among Member States remains significant - more than 30% for some models - but this seems to be primarily a result of price discrimination, possibly linked to the use of the exclusive dealership system⁴⁸.

Put together, there are some positive indications in terms of the role of the type approval legal framework in the operation of the market and a broadly recognised contribution to harmonisation in the market. However, it is not possible to establish direct causal links between the introduction of the ECWVTA and developments in the level of trade or prices, given the role of other important parameters. This is particularly the case for passenger cars since the type approval system was applicable even before 2007.

Role in promoting the competitiveness of the automotive industry

The survey responses and the interview programme provided a generally positive assessment of industry competitiveness in relation to two important drivers; facilitating the access to global markets and the promotion of innovation. The responses (see Table 4.2.4) of Member State authorities and manufacturers

⁴⁴ http://ec.europa.eu/competition/sectors/motor_vehicles/prices/report.html

⁴⁵ EEA (2011), Laying the foundations for greener transport TERM 2011: transport indicators tracking progress towards environmental targets in Europe, Report No 7/2011

⁴⁶ AEA (2011), Effect of regulations and standards on vehicle prices - Final Report to the European Commission – DG Climate Action

⁴⁷ Gil-Pareja, S., Sosvilla-Rivero, S., (2008), Price convergence in the European car market, Applied Economics, 40 (2), http://peer.ccsd.cnrs.fr/docs/00/58/20/37/PDF/PEER_stage2_10.1080%252F00036840600749847.pdf

⁴⁸ Radoias, V (2012), Persistent Price Dispersion due to International Price Discrimination in the European Auto Manufacturing Industry - New Evidence of Income Effects and Collusive Behavior, http://www-scf.usc.edu/~radoias/Research_files/Radoias-PDAuto2012.pdf

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indicate a positive view in this respect. In relation to the **access to global markets**, most industry representatives focused on the positive aspects, at least in principle, of the replacement of EC Directives by UN Regulations and the direct reference to them in the Framework Directive and the General Safety Regulation. This is seen to be in line with a process that has been going on for a long period with the driving force being the UN process, and less so the EU type approval framework. The direct reference to the UN Regulations in the context of the type approval legal framework is a positive element even though, as described later on in the report, the mechanism adopted under the GSR is considered problematic.

In addition, the input from non-EU manufacturers indicates that in a few countries authorities accept EU type approved vehicles and components without additional testing or that certain elements of the type approval system have been adopted – albeit with a certain lag – in other regions (case study 3). This can be an important consideration for EU firms although a few EU manufacturers (vehicle and component manufacturers), suggested that access to many non-EU market remains more difficult and more complicated than the access of their non-EU competitors to the EU market.

Table 4.2.4 - Contribution of the type approval legal framework to increased access to global market and development of innovation.

| | Increase access of the EU automotive industry to global markets | | | | Promote the development of innovation from the automotive industry | | | |
|-------------------------------|---|-------------|---------------|-------------|--|-------------|---------------|-------------|
| | Member States | | Manufacturers | | Member States | | Manufacturers | |
| No response | 0 | | 0 | | 0 | | 2 | |
| Do not know/No opinion | 5 | 19% | 0 | 0% | 1 | 4% | 0 | 0% |
| Not relevant | 0 | 0% | 1 | 11% | 0 | 0% | 1 | 11% |
| Expect to do so in the future | 1 | 4% | 1 | 11% | 1 | 4% | 0 | 0% |
| Little | 3 | 11% | 1 | 11% | 5 | 19% | 2 | 22% |
| Moderately | 7 | 26% | 6 | 67% | 10 | 37% | 5 | 56% |
| Significantly | 11 | 41% | 0 | 0% | 10 | 37% | 1 | 11% |
| Total | 27 | 100% | 11 | 100% | 27 | 100% | 11 | 100% |

Source: CSES survey

Beyond the UN process, some stakeholders suggested that the demanding safety requirements of the EU legal framework help to reinforce the reputation of motor vehicles produced in Europe as vehicles that are safe and of a high quality, thus providing an advantage in the competition for markets around the world. From their side most industry representative suggested that the high quality profile of the industry is primarily a reflection of its technological sophistication and the long history of investment in innovative technologies. Meeting the type approval safety requirements is not seen as a selling point, in contrast to the more demanding and more visible NCAP ratings.

In relation to the role of the legal framework in the **promotion of innovation**, the response from most sides is that the requirements do not have a critical role in the development of new technologies. The type approval framework is not considered to be particularly relevant for the development of innovation but it does have a role in promoting the adoption and more widespread use of technologies developed for the high end segments of the market. The contribution made by introducing mandatory requirements for the use of technologies such as Electronic Stability Control systems arises more from creating economies of scale and reducing unit costs through their widespread adoption than through promotion of technological innovation as such.

However, a distinction should be made between vehicle safety and environmental technologies. In the area of safety, most representatives consider that market demand and tools like the EuroNCAP rating are the drivers of innovation and investment in new technologies. In contrast, in the case of environmental aspects –

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such as fuel efficiency and air pollutant emissions – the feedback from a number of manufacturers, industry representatives and other stakeholders is that the provisions of Euro 6 do have a role in pushing the development of new technologies. Industry representatives and environmental NGOs expressed diverging views as to how demanding the requirements are, but the overall message is that the Euro 6 requirements represent a challenge to manufacturers and do require a certain level of technological innovation.

Another relevant point considering the promotion of innovation is the extent to which the requirements set are technology neutral and performance oriented or prescriptive, design oriented and potentially limiting the development of innovation. A few examples have been provided by industry representatives. The geometrical limitations on the different vehicles in combination with the size and weights regulation 96/53/EC can limit the freedom for manufacturers to design safe and environmentally friendly vehicles. In the area of automotive lighting requirements on lamps and driving beams are generally considered to be rather detailed and potentially restrictive, but the lighting industry representatives suggested that the standard development process followed at the UN level has not led to any obstacles to innovation. In the case of a company developing safety systems design to reduce the speed of a vehicle when an impact is impeding, the use of the terminal impact speed as a metric of the system safety performance, was considered as rather restrictive. Overall, while there may be some occasions that the requirements or the measurement methods used may be problematic, there is no evidence to suggest that the legal framework stifles or limits innovation.

Concerns were also raised by a few stakeholders in relation to the provisions on e-Call systems and other wireless communications systems that are currently under consideration, suggesting that it is important that the requirements ensure access to all stakeholders interested in providing services, on the basis of interoperable and open-access platforms and that adoption of standards that may be restrictive should be avoided. We need to note that while there are standards developed for proprietary eCall, there is no indication that this is going to be the approach followed in the legislation which has yet to be adopted.

Finally, the provisions in Chapter VIII of the Framework Directive on the exemptions for new technologies provide the context for the necessary flexibility to support the development of innovation. We have not been able to find specific references concerning the actual use and effectiveness of these provisions but, a few stakeholders did make reference to them as another positive aspect of the legal framework.

The third driver in relation to competitiveness of the automotive sector arises from the **impact of the legislation on the operating costs** of the automotive sector and the various subsectors. Some manufacturers indicated that compliance with the demanding Euro 6 requirement, but also the combination of stringent requirements in relation to both emissions and safety, can have a detrimental impact on production costs. The study by AEA already mentioned also concluded that the additional requirements have had an impact on production costs. But it also found that these costs are often partly offset by cost reductions resulting from economies of scale and improved productivity and that, on a number of occasions, these increased costs can effectively be passed on to consumers through increased prices without loss of market share.

In relation to the administrative costs from the type approval legal framework, greater detail is provided in section 4.4, but the dominant view of stakeholders is that, particularly in the case of large volume manufacturers, the legal framework has made a positive contribution to the costs of doing business by eliminating the costs of addressing multiple national barriers. The type approval administrative costs represent only a small share of the total product development costs. The costs of the wider compliance with the various provisions of the legislation are more substantial and are often portrayed as damaging for industry. The information made available from one manufacturer, for instance, indicated substantial compliance costs of €200 million or higher for the development of a new vehicle type. Potentially more problematic are the requirements that affect sectors dominated by SMEs – such as the trailers, bodybuilders or special purpose vehicles. In this case the type approval process has introduced new administrative

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burdens and required extra human resources, creating new additional costs. In the period of financial crisis with a decrease in the level of sales this is often seen as unfortunate or unhelpful.

On balance, however, the CSES team concluded that there is no clear indication of a negative impact from the type approval legal framework on the competitiveness of the industry. On the contrary, it contributes directly or indirectly to the harmonisation of the market, to access to global markets and, if not contributing greatly to innovation, it does not appear to create obstacles. While there may be a few particular weak points relating to specific provisions, requirements or implementation there is no evidence of negative impacts overall.

Simplification of the regulatory framework

The stated policy objective of simplification of the regulatory framework is in many respects linked to the competitiveness of the industry. It is expected to have a direct contribution to reducing the administrative burden for industry and improve the business environment. The introduction of the General Safety Regulation and the replacement of EC Directives by UN ECE Regulation were considered to be a key contribution in this direction.

The impact assessment of the General Safety Regulation did not provide specific figures for the expected savings from the proposed changes in the legal framework. This hinders a direct assessment of the actual effectiveness of the legislation, but the expectations were clear:

“the current duplication of regulation also increases the complexity of the regulatory framework, and involves much administrative effort from all stakeholders in keeping the regulations up to date, and keeping up to date with the regulations.... By eliminating around 50 base Directives and over 100 amending Directives, the clarity of the vehicle regulatory system is improved, with definite (but not easily quantifiable) benefits for all stakeholders. ... In addition, by using a direct-acting Regulation instead of a Directive, much of the administrative effort required by Member States to transpose Directives into national legislation will be avoided”.

Indeed there has been a reduction in the number of applicable pieces of legislation by the repeal of the EC Directives even though this will only fully take effect in 2014. There have been a number of amendments to the GSR (4) and to implementing measures (10)⁴⁹ since 2009, but the need for large numbers of amendments has been removed and, following the changes, has been made easier to a certain extent.

However, the feedback from stakeholders has not been as positive on this point as might have been expected, at least as far as the experience up until now is concerned. In fact, the survey responses indicate a negative, or at least sceptical, view. When asked to indicate the extent that the type approval legal framework has contributed to the objective of having a simplified regulatory framework, the majority of Member State authorities indicated ‘little’ or ‘moderately’ while the manufacturers responding were even more sceptical (6 out of 10 said little).

⁴⁹ Based on information in : http://ec.europa.eu/enterprise/sectors/automotive/documents/directives/motor-vehicles/index_en.htm

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Table 4.2.5 - To what extent has the type approval legal framework contributed towards the objective of simplifying the regulatory framework for the automotive sector?

| | Member State authorities | | Manufacturers | |
|-------------------------------|--------------------------|-------------|---------------|-------------|
| | Count | Percentage | Count | Percentage |
| No response | 0 | | 1 | |
| Do not know/No opinion | 0 | 0% | 0 | 0% |
| Not relevant | 0 | 0% | 0 | 0% |
| Expect to do so in the future | 3 | 11% | 0 | 0% |
| Little | 10 | 37% | 6 | 60% |
| Moderately | 11 | 41% | 1 | 10% |
| Significantly | 3 | 11% | 2 | 20% |
| Total | 27 | 100% | 11 | 100% |

Source: CSES survey

Comments from the survey and the interviews with stakeholders almost unanimously pointed to the General Safety Regulation as the most problematic aspect of the legal framework. The GSR is considered to be particularly complicated, bringing together in one piece of legislation different thematic areas and introducing a large number of deadlines that are difficult to follow. It is regarded as having created an additional framework structure within the broader Framework Directive with its own implementing measures⁵⁰.

The interviews with industry representatives, type approval authorities and technical services seem to suggest that the architecture of the earlier framework that included a large number of topic-specific EC Directives was, from a practical level, simpler, easier to follow and more straightforward. For the majority of the stakeholders, the introduction of the GSR is seen as complicating rather than simplifying things. This is even more of a problem for small firms, arguably the main expected beneficiaries of a possible simplification. They have limited resources and often no prior experience in dealing with type approval. From their side, Member State authorities are positive about the move to UNECE regulation but pointed to problems in terms of understanding these regulations and following the frequent changes. The following comments are representative of a longer list of comments that have been made by stakeholders.

Text box 4.2.1 – Comments of stakeholders in relation to the General Safety Regulation

| | |
|----------------------|--|
| <i>Manufacturers</i> | <ul style="list-style-type: none"> - <i>On simplification of regulatory framework, the whole vehicle requirements are now harmonized, but GSR is an example of simplification objectives which is not yet proven. We have not a good picture of introduction dates and their impact on the second stage approval</i> - <i>The General Safety Regulation is a very confusing piece of legislation (being one regulation containing many separate regulatory requirements). The implementation dates for each set of requirements (particularly for multi-stage vehicles) are almost impossible to decipher.</i> - <i>GSR is an additional administrative burden and does not reflect the idea of simplification of type approval process.</i> - <i>There are more requirements, and the General Safety Regulation is especially complex in this respect. It was far preferable to have one subject per regulation.</i> - <i>GSR is not welcomed by industry. [It is] no simplification actually</i> - <i>The purpose of this regulation was initially to simplify the TA framework, but the text finally lead to a huge amount of tricky questions on the conditions of implementation.</i> |
| <i>Technical</i> | - <i>General safety is problematic to understand how far the requirements reach and when specific</i> |

⁵⁰ Under the initial interpretation firms were also required to ensure compliance with individual UN-ECE requirements and the GSR created additional mean that every time there is a change in one UN-ECE there was also requirement for additional paperwork for renewing compliance with GSR. The requirement was subsequently removed.

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| | |
|------------------------------|---|
| <i>services</i> | <i>requirements are mandatory or not at all.</i> |
| <i>MS and TA authorities</i> | <ul style="list-style-type: none"> - <i>The GSR has been a nightmare to introduce. The approach adopted to deliver the GSR simplification outcomes is largely flawed and has created a higher level of bureaucracy and opaqueness.</i> - <i>[There is the] problem of GSR. There are unclear stages for the second stage vehicle builders [and] a lot of transition provisions. [The] procedure is not clear</i> - <i>GSR created a stronger role for UNECE - But the approach followed does not deliver but only adds a level of bureaucracy</i> - <i>The GSR has complicated rather than simplified things. [There is a] need to identify requirements inside a long document. More paperwork [is] created. The earlier system was simpler.</i> |

Source: CSES survey and interview programme

It should be noted that the implementation of the GSR is still in a transition period. The building of practical experience among manufacturers should over time improve the situation for all actors involved and particularly among the smaller firms. Thus, the initial period could be expected to be particularly demanding given the number of implementing measures that had to be introduced and the need to include a number of stakeholders with limited prior experience and capacity. Still, on the basis of the feedback from most stakeholders and the review of legislation, the CSES team consider that the architecture of the GSR which covers a range of issues that apply to different groups and is complicated by the different days of entry into force of its different provisions, does not seem to have succeeded in creating a simpler and more workable structure.

Contribution to safety and environmental policy objectives

Turning to the environmental and safety policy objectives, the majority of stakeholders provide a positive or very positive overall assessment of the legal framework. More than 65% of the responding Member State authorities consider that the legal framework has made a positive and significant contribution to safety and the reductions in CO₂ and air pollutant emissions. This view is also shared by a large proportion of manufacturers (over 50% of respondents). The responses also indicate a positive contribution to the control of noise emissions but suggest no role or even no relevance, in the case of promoting the adoption of alternative fuels.

Table 4.2.6 - To what extent has the type approval legal framework contributed to policy objectives? (Member States authorities and manufacturers responding)

| | No response | Do not know | Not relevant | Expect to do so in the future | Little | Mode- rately | Signifi- cantly | Total |
|--|-------------|-------------|--------------|-------------------------------|--------|-----------------|--------------------|-------|
| Member States authorities | | | | | | | | |
| Ensure high level of safety for vehicle occupants & pedestrians | | 2 | | 2 | 1 | 4 | 18 | 27 |
| Reduced CO ₂ and air pollutants emissions from motor vehicles | | 1 | | 2 | 3 | 4 | 17 | 27 |
| Reduced noise emissions from motor vehicles | | 2 | 0 | 1 | 5 | 9 | 10 | 27 |
| Promoted adoption of alternative fuels | | 3 | 2 | 2 | 8 | 8 | 4 | 27 |
| Manufacturers | | | | | | | | |
| Ensure high level of safety for vehicle occupants & pedestrians | 2 | 1 | | | | 3 | 5 | 11 |

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| | No response | Do not know | Not relevant | Expect to do so in the future | Little | Mode- rately | Signifi- cantly | Total |
|--|-------------|-------------|--------------|-------------------------------|--------|-----------------|--------------------|-------|
| Reduced CO ₂ and air pollutants emissions from motor vehicles | 2 | 1 | 1 | | | 0 | 7 | 11 |
| Reduced noise emissions from motor vehicles | 2 | 2 | | | | | 7 | 11 |
| Promoted adoption of alternative fuels | 2 | 3 | 2 | 0 | 3 | 1 | | 11 |

Source: CSES survey

Of course, we should note that for most of the specified policy objectives, it is still too early to make a proper assessment of the contribution of the legal framework. In certain areas we are still largely in a transition period and not all requirements have been implemented. Thus, the positive assessment made by stakeholders could be read as a statement about the relevance and appropriateness of the proposed tools and rather than as an actual assessment of impact.

Additional and more specific feedback, along with data and studies allow for a more direct assessment of the contribution of the legal framework to some of the particular areas of policy under consideration.

Vehicle and road safety

In the case of vehicle safety, the dominant view among stakeholders, which seems to be supported by the relevant data, is that there has been an improvement in the overall level of road accidents and fatalities in the EU and vehicle safety improvements have played a role in bringing this about. The mandatory introduction of various types of advanced safety systems across the whole vehicle fleet as a result of the GSR are generally considered as having had a positive role in the reduction of fatalities recorded in recent years. Some consumer representatives suggested that additional systems identified in the initial cost-benefit analysis - such as reminders for rear seats belts, speed limiting devices or alcohol interlocks – should also be made mandatory. Environmental NGOs also pointed to the fact that some crash tests used have not been updated for more than 20 years and are currently rather relaxed.

Having said that, it has not been possible to assess the extent to which the expected contribution (identified in the impact assessment study) from the various systems made mandatory under the General Safety Regulation has materialised. The available data on the number of fatalities and accidents linked to passenger cars across Europe (the CARE database) indicate a significant overall reduction in comparison to the baseline (more than 35%) even though the objective of halving the number of fatalities by 2010 was not met (30,900 fatalities against a target of 27,000). There is no scientific or other analysis available that provides a direct connection between road accidents and the requirements for the use of advanced safety systems in the Regulation. It is not possible to reach such conclusions given that vehicle safety systems represent only one element affecting road safety. Others include road user population characteristics, the level of compliance with relevant regulations and driving attitudes, traffic volume, and road quality.⁵¹ It is also important to note that the expected reductions in fatalities and injuries presented in the impact assessment of the GSR and the supporting cost-benefit study assumed a single stage of introduction of the different measures and did not take into account the gradual entry into force of the different measures, some of which have yet to be fully implemented.

⁵¹ DACOTA project, Forecasting Road Traffic Fatalities in European Countries: Model Definition and First Results http://www.dacota-project.eu/Deliverables/DaCoTA_WP4_D4_2_Final%20after%20Revision.pdf

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Table 4.2.7 – Expected contribution of the adoption of advanced safety technologies to road safety

| | | Fatalities | Severe injuries | Slight injuries |
|---|------|------------|-----------------|-----------------|
| Baseline (do-nothing scenario) | 2010 | 42,382 | 448,550 | 4,429,204 |
| | 2020 | 34,797 | 412,525 | 4,083,271 |
| Electronic stability control SC (assumption of 100% of fleet in 2020) | 2010 | -2,138 | -19,396 | -191,530 |
| | 2020 | -2,250 | -22,866 | -226,337 |
| Advanced Braking Assistance Systems (assumption 100% in 2025) | 2010 | -1,223 | -12,431 | -122,383 |
| | 2020 | -1,675 | -19,164 | -188,332 |
| Tyre Pressure Monitoring Systems (assumption of 100% in 2020) | 2010 | -18 | -196 | -1,932 |
| | 2020 | -29 | -340 | -3,369 |
| Lane Departure Warning Systems (assumption 100% in 2025) | 2010 | -3,941 | -19,494 | -127,665 |
| | 2020 | -5,491 | -30,791 | -208,554 |
| Expected results from implementation of measures | 2010 | 35,062 | 397,033 | 3,985,694 |
| | 2020 | 25,352 | 339,364 | 3,456,679 |
| Actual figure | 2010 | 30,900 | 341,013 (2009) | n.d. |
| 2010 target | | 27,000 | | |
| 2020 target | | 15,500 | | |

Source: Impact assessment of the General Safety Regulation and COWI study⁵²

From a different angle, the level of adoption of the technologies made mandatory in the vehicle fleet is also a relevant indicator. A recent report from an ESC manufacturer offers supportive evidence by indicating that “... driven by the legislation that all new vehicle models by November 2011 have to be equipped with ESC the installation rate [in new cars] in the EU climbed up to 63 percent in 2010”^{53 54}. However, the adoption rates remain still lower than those in the USA where a similar mandatory requirement applies and where the uptake of ESC was much faster (from 21% in 2003 to 90% in 2010).

It is also not possible to clearly distinguish between the contribution of GSR requirements and the role of market forces and consumer demand supported by the information provided by EuroNCAP ratings. Since 2009 electronic stability control is mandatory for a car in order to receive the top level five star rating. On the other hand, EuroNCAP ratings cannot ensure the adoption of vehicle safety systems across the whole fleet while the legal requirements can and do.

Turning to the issue of **pedestrian protection**, discussions with safety experts suggest that since the introduction of the relevant provisions there have been significant improvements in the design of vehicles that have increased pedestrian safety and reduced the impact from collision. While EuroNCAP ratings also play a role in driving developments, during our interview programme, two manufacturers indicated that the legislation has clearly been the driver for facelifts designed to improve the performance of vehicles in relation to pedestrian safety.

⁵² Cost-benefit assessment and prioritisation of vehicle safety technologies

⁵³ BOSCH(2011), Electronic Stability Control ESC on the rise in Japan - Over one quarter of new cars in 2010 equipped with live-saving technology, <http://www.bosch.co.jp/en/press/pdf/rbjp-111201-22-release.pdf>

⁵⁴ Data from the same provider for 2012 indicate an installation rate in 2012 of around 78%.

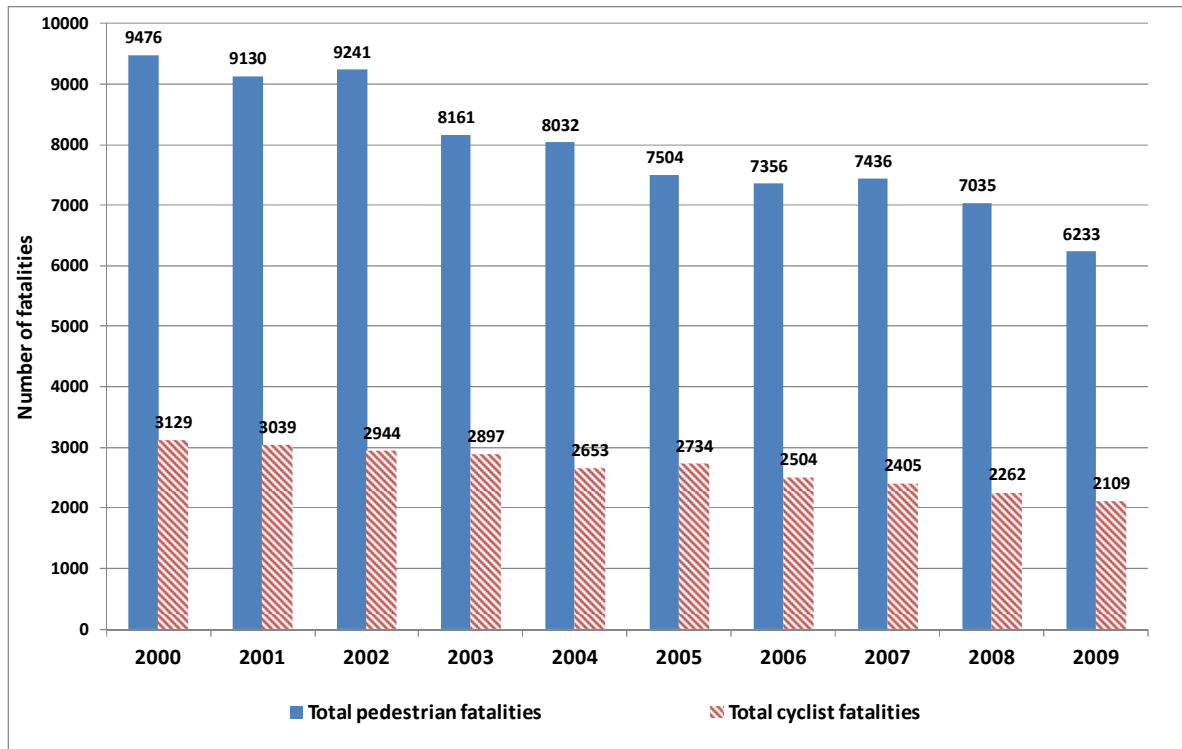
<http://www.carpages.co.uk/motoring-news/esp-22-11-11.asp>

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Data extracted from the CARE database also indicate a continuous and significant reduction in the absolute number of pedestrian⁵⁵ and cyclist fatalities⁵⁶ although the data are only available up until 2009 and it is probably too early to associate any changes with the specific provisions of the Regulation, given that new vehicles represent only a small part of the vehicle fleet.

Chart 4.2.1 – Evolution of Number of pedestrian and cyclist fatalities - Total number and share in total road fatalities



Source: CARE database

Concluding, we consider that the available evidence, including the views of various stakeholders supports a conclusion that the legal framework has a positive role and is effective in improving vehicle and road safety. The purpose of the legislation is mainly to ensure that minimum levels of safety – that are still higher than in most other regions outside the EU – apply in all new vehicles entering the market. It works in parallel to market based mechanisms such as the EuroNCAP ratings.

Air pollutant emissions

On the question of **air pollutants**, the introduction of Euro 5 but, even more so, the Euro 6 requirements are generally expected to bring significant improvements – particularly in the category of passenger cars. Some manufacturers do consider that Euro 6 imposes requirements that are too demanding but this view is not generally shared. Examples of vehicles already in the market meeting the Euro 6 requirements – at least two years prior to the entry of the requirements into force - can be cited as an indication of the feasibility of meeting the targets without denying that there is significant investment required. However, as explained later in greater detail, the contribution of the legal requirements to the reduction of air emissions is also

⁵⁵ DaCoTA (2011), Traffic safety basic facts 2011 – Pedestrians, http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2011_dacota-intras-pedestrians.pdf

⁵⁶ DaCoTA (2011), Traffic safety basic facts 2011 – Cyclists, http://ec.europa.eu/transport/road_safety/pdf/statistics/dacota/bfs2011_dacota-swov-cyclists.pdf

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dependent on addressing the problematic aspects of emission measurement and the development of a more representative driving cycle.

According to the Impact Assessment of the Euro 5/6 Regulation 717/2007 a core indicator to monitor progress towards achieving the objectives should be the number of vehicles that are successfully type-approved according to the Euro 5 standard. Air pollution levels and health impacts were also expected to point to the wider success of the policy. In relation to the expected reductions of pollutant emissions the impact assessment only provided values of expected reduction for the year 2020 (summarised in the table 4.2.8 below)

Table 4.2.8 – Expected contribution of Euro 5 for different types of pollutants – Difference from baseline scenario in 2020

| | NOx | | PM | | HC | |
|---------------------------------|-----------------|--------------|----------------|--------------|----------------|---------------|
| | tonnes | % | tonnes | % | tonne | % |
| Diesel car | -62,000 | -16% | -20,000 | -70% | -520 | -1.00% |
| Light duty commercial vehicle | -42,000 | -16% | -5,900 | -52% | -210 | -1.50% |
| Total diesel | -104,000 | -16% | -26,000 | -65% | -730 | -1.10% |
| Petrol car | -28,000 | -16% | 60 | 0.30% | -30,000 | -13% |
| Light commercial vehicle petrol | -2,400 | -16% | 110 | 5.00% | -1,300 | -11% |
| Total petrol | -31,000 | -16% | 170 | 0.80% | -31,000 | -13% |
| LPG car | 30 | 0.50% | 3 | 0.60% | 140 | 0.80% |
| TOTAL | -135,000 | -16% | -26,000 | -43% | -32,000 | -9.70% |

Source: Impact assessment to the regulation 715/2007

The available data from the recent EEA TERM report⁵⁷ indicate a reduction in the total level of NOx and PM emissions in all three categories of vehicle – passenger cars, light duty and heavy duty commercial vehicles. The following chart (chart 4.2.2) illustrates the development of NOx and PM_{2.5} emissions during the period 2000-2010. The reductions have been achieved despite an increase in the overall level of traffic and have primarily been a result of fitting three-way catalysts to petrol fuelled vehicles. The downward trend for most pollutants has followed the progressive introduction of tighter Euro emission standards on new road vehicles supplemented by improvements in fuel quality driven by EU Fuel Quality Directives.

However, it should also be noted that the introduction of the Euro 5 limits came only towards the end of the period covered by the data (2000-2010) while Euro VI requirements have not yet formally entered into force. Penetration levels of Euro 5 vehicles were below 5% in 2008 according to a recent ICCT report⁵⁸, but rose to 40% in 2010 and close to 80% for new vehicles sold in 2011. Euro 6 cars are below 1%. In the case of light commercial vehicles, the market penetration of Euro 5 in 2010 was much lower still, around 5%. In relation to heavy trucks, the 2011 TERM report concludes that technological improvements have penetrated the truck fleet at a lower rate than they have for passenger cars, due to trade-offs between pollutant emissions and fuel efficiency. It appears that Euro standards tend to be adopted much closer to the deadline for the majority of vehicles in this category.

The trends in emissions of key pollutants NO_x and PM_{2.5} have been tempered by the increased market penetration of diesel vehicles since 1990.

⁵⁷ EEA (2011), Laying the foundations for greener transport TERM 2011: transport indicators tracking progress towards environmental targets in Europe, Report No 7/2011

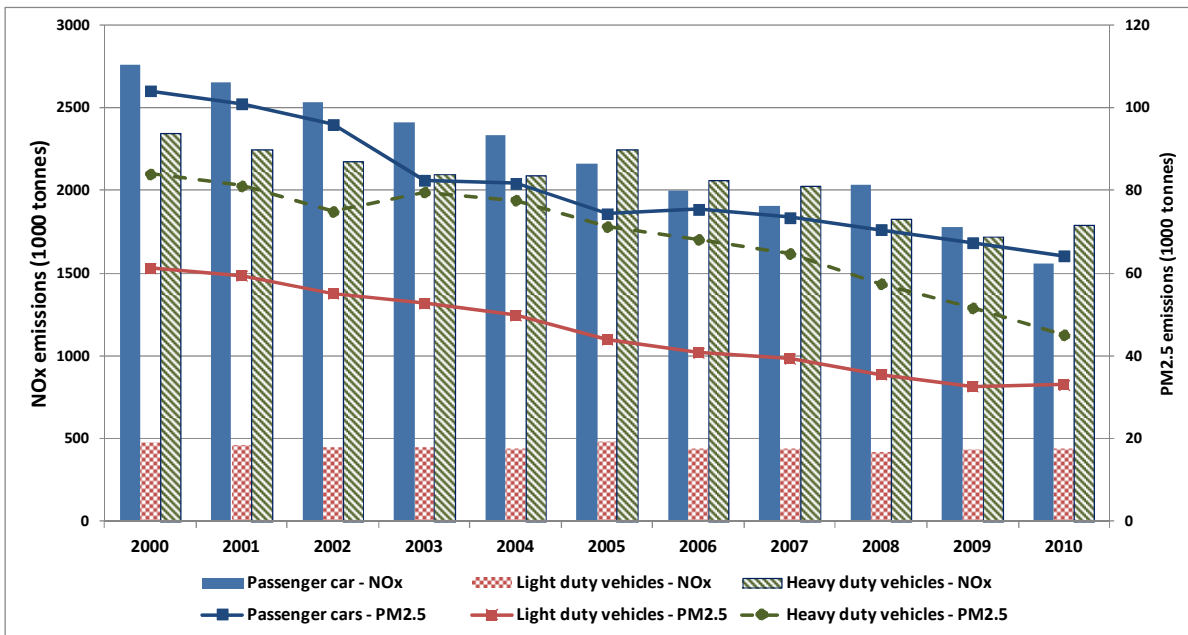
⁵⁸ ICCT, European Vehicle Market statistics (2012),

http://www.theicct.org/sites/default/files/publications/Pocketbook_LowRes_withNotes-1.pdf

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Chart 4.2.2 – Evolution of level of NO_x and PM_{2.5} emissions from passenger cars, light duty and heavy duty vehicles – Total emissions for EU27 in 1000 tonnes



Source: EEA – Air pollutant emissions data viewer (LRTAP Convention)⁵⁹

According to the EEA 2011 TERM⁶⁰ report, these reductions are still below the initial targets while ambient urban concentrations of NO₂ in EU-27 countries in recent years have not fallen by as much as reported emissions. The main problem appears to concern diesel cars for which, according to the ICCT report, real-world emissions values have remained nearly constant during the last few years.

Furthermore the EEA report suggests that requirements related to aromatic compounds should be introduced, a point also raised by a few stakeholders. In relation to Heavy Duty Vehicles, recent tests conducted by the TNO in the Netherlands with a small number of vehicles suggested that the Euro VI requirements have the potential to bring significant reductions to emissions in comparison to the Euro V standards. The improvements are both a reflection of the stricter limits but also, the report suggests, due to changes in the test procedure with the expected adoption of a more representative laboratory test cycle and the introduction in the regulation of the use of portable measurement devices for the in-service conformity.

More generally, the test cycle appears to be a limiting factor in achieving a greater level of effectiveness from the Euro 5 requirements. It is generally acknowledged that under real-world or 'normal' driving conditions, emissions from vehicles exceed the test cycle limits specified in the Euro emission standards (EEA, 2011). Especially in relation to diesel vehicles, several studies (Pelkmans and Debal, 2006; Vojtisek-Lom et al., 2009; Rubino et al., 2007)⁶¹ concluded that real world NO_x emissions of light-duty diesel vehicles substantially exceeded the earlier Euro 2–5 emission limits. Tests performed by the Joint Research Centre on passenger cars and light commercial vehicles showed that Euro 3–5 diesel vehicles exceeded the emission

⁵⁹ EEA (2012), Air pollutant emissions data viewer <http://www.eea.europa.eu/data-and-maps/data/data-viewers/air-emissions-viewer-lrtap>

⁶⁰ EEA (2011), Laying the foundations for greener transport TERM 2011: transport indicators tracking progress towards environmental targets in Europe, Report No 7/2011

⁶¹ Cited in Weiss et al (2011), Analyzing on-road emissions of light-duty vehicles with Portable Emission Measurement Systems (PEMS), Joint Research Centre Scientific and Technical reports, http://ec.europa.eu/clima/policies/transport/vehicles/docs/2011_pems_jrc_62639_en.pdf

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limits by a factor of 2–4 in real world driving conditions. Exceeding the limits also occurred with heavy duty vehicles (HDV), albeit to a lesser extent⁶².

More generally, the in-service conformity provisions are recognised as a positive contribution from the Euro 5/6 and Euro VI Regulations towards ensuring the durability of emissions controls and providing lasting improvement in performance, as part of the more coherent approach that is necessary to achieve emissions reductions. However, there has been limited experience of in-service conformity up to this point and with one exception - suggesting that it is only properly implemented in a few countries - no particular positive or negative comments were provided on this issue.

Impact on CO₂ emissions

Based on the data provided in type approval Certificates of Conformity, reports from ACEA, ICCT and EEA, suggest that the average CO₂ emissions from new cars bought in the European Union have dropped over the last few years. In 2010, around 50% of cars were lower than the 139 g/km level, in comparison to 2001 when the respective level was 160 g/km. The ICCT report also indicates a significant improvement in CO₂ emissions for all car segments despite increases in engine power and vehicle weight. The most recent data (2011) suggest that the 12.8 million new cars registered in the EU had average emissions of 135.7gr/km in 2011 in comparison to 140.3gr/km in 2010. Still, the initial strategy presented in 2007⁶³ aimed at reaching the Community objective of 120 gCO₂/km by 2012, a target that was not met.

According to the EEA report there is a combination of reasons for the reductions that have been observed, including improvements in technology and more efficient engine designs but also increasing demand for more fuel-efficient cars due to high oil prices and the impact of the economic crisis.

The direct impact of the type approval legal framework – including the measures under the GSR like tyre pressure monitoring or tyre rolling resistance – has been analysed⁶⁴ but is small in comparison to other areas of improvement. However, the type approval framework has an indirect impact on the reduction of CO₂ emissions through the use of the data from emissions measured as part of the type approval process in order to estimate the average emissions according to Regulation 443/2009. Problems with the measurement methods and the extent that they reflect real life conditions are generally reported as having an important impact. This aspect is analysed in greater detail in Case study 2 in Annex B but is also discussed further in the following sections.

Noise emissions⁶⁵

The scope of our assessment in relation to noise has been limited to the requirements covering the noise from the rolling of tyres since the vehicle noise emission provisions that are currently under revision have been explicitly excluded from the study. It should be noted though that the contributions of tyre and powertrain to overall vehicle noise levels are interlinked, with different shares depending on the vehicle

⁶² Weiss et al (2011), Analyzing on-road emissions of light-duty vehicles with Portable Emission Measurement Systems (PEMS), Joint Research Centre Scientific and Technical reports,

http://ec.europa.eu/clima/policies/transport/vehicles/docs/2011_pems_jrc_62639_en.pdf

⁶³ Communication from the Commission to the Council and the European Parliament - Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light-commercial vehicles <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007DC0019:EN:NOT>

⁶⁴ Report from the Commission to the European Parliament, the Council, and the European Economic and Social Committee 'Progress report on implementation of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles' COM(2010) 656 final of 10.11.2010

⁶⁵ The analysis is based on input from the two independent noise experts, interview with the Commission and input from a small number of industry stakeholders, including the Tyre manufacturers.

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speed. Thus, according to most experts, a clear separation of these two considerations is not possible and this is reflected in the current proposal for the Vehicle Noise Emissions Directive⁶⁶ where tyre noise is taken into consideration. The proposed approach provides for a balance of noise emission reductions between powertrain and tyres that can be expected to lead vehicle manufacturers to demand quieter tyres, creating an important market push.

Turning to the tyre noise requirements themselves, tyre noise has been a target for noise emissions from vehicles since 1996⁶⁷. The relevant impact assessment studies established that the introduction of the GSR requirements – the first stage of which was introduced in November 2012 – were expected to lead to a reduction of around 3,3 to 3,8 dB in average noise emissions from tyres, when the third stage of requirements enter into force in 2017. Thus, at this point it is not possible to make any assessment of the GSR's actual effectiveness in achieving these targets. Currently, the available data do not indicate that there has been a reduction in the overall noise levels, which are increasingly linked, among other considerations, to higher levels of road traffic – particularly heavy duty vehicles, but also, in the case of tyres, to the trend for the use of tyres with wider profiles.

Unfortunately, we have also not been able to identify data on the extent of market uptake of tyres with different levels of noise emissions. However, the feedback received from the tyre industry and some of the experts provides some indications of the expected effectiveness and points to certain issues that raise concern:

- Member State authorities and manufacturers generally expect that the legal framework will have a positive contribution to noise emission reductions. The discussion with industry and some of the experts suggest that the limit values set in the GSR concerning tyre noise are appropriate and more demanding than earlier limits (EC/2001/43), which were met by almost all tyres in the market. In the case of heavy duty vehicles, they are probably still not particularly demanding. More recent data are not available, but the limits under GSR were met by 40% of passenger tyres and 60% truck tyres at the time of their proposal and this was closer to 75% for standard truck tyres⁶⁸. The entry into force of the Tyre Labelling Regulation (EC 1222/2009) is expected by the tyre industry to have an important role in promoting the adoption of tyres that go beyond the minimum requirements.
- Another important issue is the extent that retreaded tyres are not currently under the scope of the Regulation while, according to the estimate of an expert, they represent around 50% of the bus and truck tyres (C3) in Europe⁶⁹. According to a FEEHL report, retreaded tyres in these categories tend to be 2-4db noisier than new tyres and in that respect their exclusion can have a negative impact on the effectiveness of this aspect of the legislation. On the other hand, they reduce the amount of recycling necessary. According to GSR provisions, the possibility of including retreaded tyres in the legislation is expected to be considered in 2016 on the basis of a feasibility study to be conducted that will also consider possible safety concerns. The representatives of the retreaded tyres industry appear to be positive about such a development.
- On the implementation side there are concerns expressed about the current proposals for the reduction of vehicle noise, because of a possible inconsistency and potential duplicate burden in the measurement of noise resulting from tyres and from vehicles. Tyre manufacturers suggest that this can lead to a

⁶⁶ European Commission (2011), Proposal for a Regulation of the European Parliament and of the Council on the sound level of motor vehicles, http://ec.europa.eu/enterprise/sectors/automotive/documents/proposals/index_en.htm

⁶⁷ Green Paper on the Future Noise Policy

⁶⁸ IPG (2008): Tyre testing data and factsheet.

⁶⁹ FEHRL Report, Study SI2.408210, Tyre/Road noise – Volume 2 – Appendices, http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report_tyre_road_noise2_en.pdf

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transfer of the burden concerning the meeting of noise emissions from vehicles to tyres but consider that the Commission proposals that tyres used for the testing of vehicles should be at legal tread depth should effectively address the problem. Suggestions made for the possible use of alternative methods for the measurement of vehicle noise (such as standard tyres) are not considered technically feasible by the manufacturers.

Manufacturers of tyres consider that a particularly troubling aspect is the significant level of non-compliance with the type approval requirements in the case of imported tyres – found to be in the range of 10-20% in a survey in Italy. Imported tyres accounted for over 120 million units in 2010. Non-compliance more generally is analysed in section 4.3 in greater detail, but from the vehicle noise perspective, to the extent that non-compliant vehicles do not meet the GSR requirements this can also have a negative effect on achieving the expected noise reductions. Overall, we consider that the analysis indicates a rather developed framework that brings together vehicle and noise emissions as part of the type approval system with more market based mechanisms such as the tyre noise labelling scheme. There are some indications of overlap in relation to measurement methods for noise – although the feedback suggests that acceptable solutions have been found. Greater concern is expressed about the omission of the retreaded tyres segment - which covers a significant part of the market – and the weaknesses in enforcement that allow a sizeable number of non-compliant tyres to enter the market.

Alternative fuels promotion

In relation to the overall objective of the promotion of alternative fuels the expected contribution comes both from the introduction of the Euro 5 and Euro 6 Regulations and the requirements set for pollutant emissions but also Regulation 79/2009 concerning the type-approval of hydrogen-powered motor vehicles that entered into force in February 2011. This Regulation harmonises requirements concerning hydrogen propulsion systems and aims to increase confidence in the use hydrogen powered vehicles, components and systems.

The Impact assessment study expected that hydrogen vehicles would not be more than 0.2% of the vehicle stock in 2017 and not exceed the 1% level before 2020. Currently available data indicate that the share of electric/fuel cell cars in total new registrations in EU27 was 0.01% in 2010⁷⁰ and data on electric vehicles for 2011 indicate that their market share was 0.07%⁷¹. Data on the total stocks were not available to assess developments against the targets but on the basis of earlier penetration rates it should still be very close to zero.

More generally, the penetration levels of alternative power-trains and relevant fuels – including hybrids – remain rather low - only 1% of all new car sales in the EU. In comparison, in Japan hybrid penetration is close to 16%⁷². Natural gas and ethanol vehicles achieved significant penetration rates in previous years only in a couple of countries (natural gas in Italy and ethanol in Sweden) and this appears to be connected with the introduction of a model by respective national brands⁷³.

⁷⁰ ICCT(2011), European vehicle market statistics,

http://www.theicct.org/sites/default/files/publications/Pocketbook_LowRes_withNotes-1.pdf

⁷¹JATO (2011), September 2011 press release - Incentives fail to stimulate European electric vehicles sales, ,

<http://www.jato.com/PressReleases/Incentives%20Fail%20to%20Stimulate%20European%20Electric%20Vehicle%20Sales.pdf>

⁷² ICCT (2012), European vehicle market statistics,

http://theicct.org/sites/default/files/publications/Pocketbook_2012_opt.pdf

⁷³ Fiat in Italy and Volvo in Sweden.

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Overall the available data do not allow for meaningful assessment of the effectiveness of the legal framework in this area. The low level of penetration of alternative fuels suggests that the overall policy on their promotion – of which type approval of new vehicles is only a part – has not been particularly successful. On the positive side, industry representatives indicated harmonisation had a positive role in the promotion of alternative fuels infrastructure and also suggested that the requirements introduced do effectively ensure that explosions due to the use of wrong fuels cannot take place. These contributions are seen as making a positive contribution to boosting consumer confidence in alternative fuels and a necessary precondition for their adoption on a larger scale.

On the other hand, from a practical side the necessary infrastructure to support the wider adoption of most types of alternative fuels is not in place and there is also a need to develop common standards for most refuelling stations. OEMs have not shown significant interest in those markets while, as indicated in the recent Commission Communication - Clean Power for Transport: A European alternative fuels strategy⁷⁴ - previous European initiatives supporting alternative fuels (including the introduction of market quota and favourable taxation schemes), were followed up in uneven and disjointed ways. It could also be argued that the existing requirements for air pollutant and GHG emissions are not demanding enough to promote a greater adoption of alternative fuels.

What can be concluded is that the type approval framework can play a facilitating role in the adoption of alternative fuels but should not be considered as a key driver in increasing their penetration of alternative fuels. Increased investment in alternative fuels infrastructure and demand based measures such as tax incentives are much more important in this direction.

Reduction of waste from ELV

In relation to the objective of reducing the waste stream from end-of-life vehicles (ELV), the role of the type approval legal framework is to support the implementation of the ELV Directive (2002/53/EC) – through the requirement that vehicles meet minimum levels of recyclability, reusability and recoverability under Directive 2005/64/EC (3R Directive). At the same time, the 3R Directive sets requirements for the collection and management of the necessary information from suppliers.

There was only limited feedback from stakeholders in relation to the specific Directive and most of them indicated little experience on the area. Consequently, a proper assessment has not been possible of the extent that it meets its objectives. From the point of view of the Commission Services, the 3R Directive is considered to be working effectively towards supporting the practical implementation of the broader policy goal of increasing the level of reuse, recycling and recovery of ELV and prevention of waste from these sources. The existing data on the level of recovery and reuse from ELV for the period 2006-2010 indicate a gradual improvement. At the national level a few countries have reached or exceeded the 2015 targets of 85% recycling/reuse and 95% recovery/reuse while some other have yet to meet the 2006 targets⁷⁵.

⁷⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Clean Power for Transport: A European alternative fuels strategy <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0017:FIN:EN:PDF>

⁷⁵ IEEP et al (2010), FINAL REPORT – Supporting the thematic strategy on waste prevention and recycling, <http://ec.europa.eu/environment/waste/pdf/final%20report%20final%2025%20oct.pdf>

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Table 4.2.9 – Evolution of the rate of recycling/reuse and recovery/reuse in total ELV waste – EU27 average

| | 2006 | 2007 | 2008 | 2009 | 2010 |
|---------------------------|-------|-------|-------|-------|-------|
| Total recycling and reuse | 80.3% | 82.4% | 82.3% | 81.9% | 82.0% |
| Total recovery and reuse | 82.7% | 84.7% | 85.2% | 85.3% | 85.5% |

Source: Elaboration from Eurostat waste stream data⁷⁶

However, it is not possible to read too much into those figures which are also influenced by Member States' policies in relation to the treatment of ELV. Focusing more on the mechanism a few Member State authorities commented that the specific legislation is appropriate and is expected to be effective. From their side, manufacturers did not question the basic principles of the legislation even though a few of them claimed that it has rather demanding information collection requirements. Second stage producers questioned the added value of such requirements being applicable to their case since their contribution to the total material content is rather small. Still, this was not a generally raised concern.

Strong claims on the effectiveness of the legal framework in relation to reduction of waste from ELV cannot be made on the basis of such evidence. We could say that the comments made by a few stakeholders do suggest a positive, or possibly not negative, picture but there are no data or other studies available to substantiate this picture.

Balance and trade-offs between objectives

Given the multiplicity of policy objectives under the legal framework, there are important questions about the extent to which a correct balance is struck and whether the trade-offs pose problems.

The survey responses from Member State authorities and manufacturers suggest diverging views about the presence of trade-offs between pollutant emissions, CO₂ and safety objectives. The majority of the Member State authorities do not consider that there are significant trade-offs created between environmental and safety objectives as a result of the legal framework even though many of them recognise that a balancing point will always exist. The dominant view is that the legal framework does achieve an appropriate balance, but it is suggested that this is an area that needs to be monitored on a continuous basis. From their side, most manufacturers appear less positive, claiming that there are already clear trade-offs between the emissions reduction requirements and requirements for additional safety systems that increase vehicle weight or between fuel consumption and increased lighting requirements. Achieving a reduction of air pollutants beyond a certain level is also expected to lead to increased fuel consumption and the Euro 6 requirements are seen as rather demanding in that respect.

⁷⁶ Eurostat, Environment- waste statistics,

<http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/data/database>

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Table 4.2.10 - Are there any trade-offs between safety and environmental aspects (pollutant and CO₂ emissions) in the implementation of the legal framework?

| | Member State authorities | | Manufacturers | |
|--------------|--------------------------|------------|---------------|------------|
| | Number | Percentage | Number | Percentage |
| No response | 1 | | 3 | |
| Do not know | 9 | 35 | 2 | 25 |
| NO | 12 | 46 | 1 | 13 |
| YES | 5 | 19 | 5 | 62 |
| Total | 27 | 100 | 10 | |

Source: CSES survey

However, to the extent that past experience is a relevant indicator, a recent AEA study⁷⁷ suggests that manufacturers have generally been able to meet environmental legislation requirements with the introduction of new technologies while also providing improvements in comfort, power and safety features. For example, the data analysis shows that during the period 1995-2010 the average vehicle power for lower medium and super-mini vehicles increased by around 40% while the average fuel consumption fell by around 20%.

From a different angle, there are concerns raised by some industry representatives that the current CO₂ emission requirements on the basis of vehicle weight creates incentives for the use of heavier materials and, indirectly, penalises the use of light weight materials. But at the same time, light weight materials may also pose challenges in meeting some of the safety requirements.

Concluding, there are concerns about possible trade-offs, though their extent and severity should not be exaggerated. In our view, it seems unavoidable that certain trade-offs will always emerge within a legal framework that addresses a broad range of issues in relation to a very complex product, especially whenever the requirements become more demanding. In that respect, introducing a significant transition period – a principle generally followed – is important to allow industry to develop the appropriate technologies in order to accommodate such trade-offs.

Considerations that render aspects of the legal framework more or less effective - lessons learned

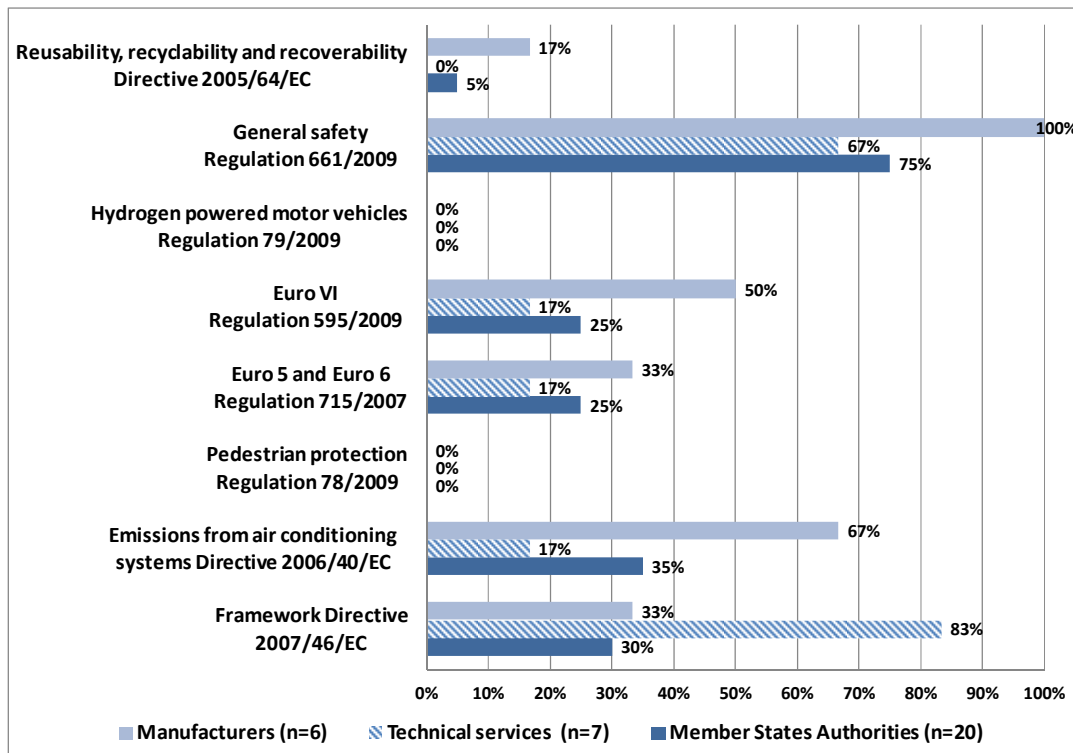
In this section we bring together the input from various sources that points to specific aspects of the legal framework that appear to have an impact on its effectiveness. The responses of stakeholders point to certain elements that are considered to be either ineffective or problematic. The majority of stakeholders pointed to the General Safety Regulation (see Chart 4.2.3) as the prime example. Other aspects identified include the Framework Directive, the Directive on emissions from air-conditioning systems and the Euro 5&6 and the Euro VI Regulations.

⁷⁷ AEA (2011), Effect of regulations and standards on vehicle prices - Final Report to the European Commission – DG Climate Action

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Chart 4.2.3 - Directives or Regulations for the type approval legal framework considered problematic (percentage of respondents indicating)



Source: CSES survey

Concerning the **General Safety Regulation (GSR)**, as already indicated, the main cause of concern is that its introduction has led to a more complicated structure in the overall legal framework. It has added another layer which, at least from the practical side, is unnecessary. References to the applicable EU Directive and UNECE Regulation and to the annexes of the Framework Directive are now also included in the GSR, along with any additional implementing regulation. A “framework within a framework” structure has been created which according to most stakeholders – industry and Member State authorities - leads to problems of interpretation and can be detrimental to the necessary clarity and predictability of the legal framework.

For a large number of stakeholders the attempt to bring together different thematic areas under a single piece of legislation has been counterproductive. The long transition period with a large number of milestones and dates for the entry into force of requirements for the different categories of vehicles, while welcomed as a general principle, is seen by some manufacturers as making it even more difficult to interpret and navigate. Some have proposed that new technical requirements should be brought into force together on the same date in order to simplify type approval procedures and create a simpler and less costly application for industry. However, others disagree, preferring a step-wise approach to avoid a sudden need for resources and to allow for a learning effect to take place.

In the case of the **Framework Directive**, a commonly stated problem concerns the provisions for the multi-stage type approach process that is primarily used by manufacturers of special purpose vehicles and bodybuilders in the commercial vehicles and trucks and trailers sectors. The multi-stage process provisions appear to be based on the assumption that multi-stage vehicles are developed from incomplete vehicles. In practice it is common for the existing types of complete vehicles to be used. In such cases, the second stage producers often face requirements that the first stage vehicle does not fulfil – since they were not applicable at the time it was type approved- and on which second stage manufacturers can have very limited impact, if any at all.

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Another problem area potentially has an impact on the effectiveness of the legal framework in terms of fair competition and the operation of the Internal Market as well as in terms of achieving safety and environmental objectives. It concerns the **presence of non-compliant products in the market**. The CARS21 Final Report recognised that there is an important issue of non-compliant products in the market and the ex-post evaluation of the Framework Directive⁷⁸ also concluded that there is indeed an issue with unsafe and non-compliant new vehicles or components placed on the market. The assessment made at that time was that these represent less than 10% of the products in the market. The analysis of RAPEX notifications for 2010 indicated that non-compliance of products represented only 4% of the causes for notification.

Our own survey of Member State authorities, technical services and stakeholders did not produce ample evidence (most stakeholders indicate no knowledge on the issue) but seems to corroborate the picture that there are indeed non-compliant products but they tend to be less than 10% of the total (see Table 4.2.11). The high level of “Do not know” responses from Member States is also a reflection of the fact that a large number of Member States do not put much effort and resources into market surveillance activity.

Table 4.2.11 - Assessment of the level of non-compliant products in the vehicles and components market

| | MS authorities | | Technical Services | | Manufacturers | |
|--------------|----------------|------------|--------------------|------------|---------------|------------|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| Do not know | 12 | 48 | 6 | 40 | 5 | 83 |
| Less than 1% | 4 | 16 | 2 | 13 | 1 | 17 |
| 1-5% | 7 | 28 | 5 | 33 | 0 | 0 |
| 5-10% | 1 | 4 | 2 | 13 | 0 | 0 |
| 10-25% | 1 | 4 | 0 | 0 | 0 | 0 |
| >25% | 0 | 0 | 0 | 0 | 0 | 0 |
| No response | 2 | | 3 | | 4 | |
| Total | 27 | 100 | 18 | 100 | 10 | 100 |

Source: CSES survey

More detailed data were provided by the European Tyre Association (ETRMA). Surveys carried out in Italy showed that 5.8% of tyres tested were not homologated. ETRMA suggested than existing surveys in Italy suggest that more than 10% of tyre products are non-compliant. In the case of vehicle components, feedback from a number of interviews of technical services and Member State authorities suggests that non-compliance is primarily an issue in the aftermarket segment with references to known cases related to lighting equipment and brake pads. It has not been possible to verify or refute this claim but it seems plausible given that original equipment used for the production of vehicles undergo the quality and compliance control systems that all OEMs have in place. This is not necessarily the case with all aftermarket products sold through various distribution channels.

The analysis of the survey responses also suggests scepticism about the effectiveness of some of the type approval processes, including those relating to conformity of production (CoP), but also the subsequent monitoring and enforcement activities (see chart 4.2.4). Some manufacturers and technical services appeared less supportive of the monitoring and enforcement activities – although a large number did not have a specific view. Many referred to problems in relation to conformity of production. Among the Member State authorities there is a higher level of confidence in the type approval processes but, still, around half regard current procedures and activities as not being effective.

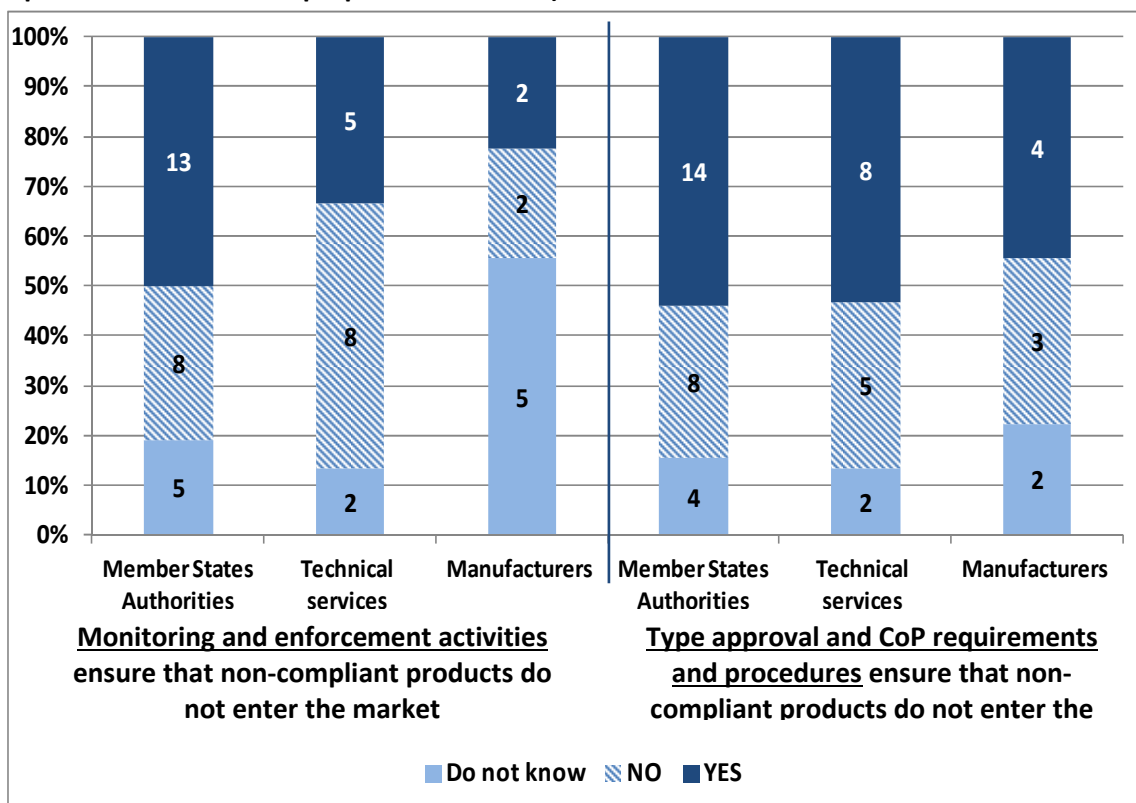
⁷⁸ RPA (2011), Ex-Post Evaluation and Impact Assessment Study on Enhancing the Implementation of the Internal Market Legislation Relating to Motor Vehicles, Study prepared for prepared for DG Enterprise and Industry

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More specific feedback from interviews concerning the CoP problems suggests that there is a significant variation in the strictness with which the rules are applied among different Member States. Some EU manufacturers but also Member State authorities consider that CoP is not conducted with the same level of strictness outside the EU, particularly in the case of production facilities. Tyre manufacturers indicate that there have been cases identified where CoP did not take place on a continuous basis. However, there is more focus on the monitoring and enforcement arrangements, where limited resources dedicated by the Member States are cited as the main reason for what is seen as a limited control on whether products entering the market are indeed compliant. A few Member State authorities also suggest that current CoP, and the in-service conformity procedures under Euro 5&6 Regulation, even more so, do not include sufficient requirements nor the necessary legislative power and do not allow the authorities to act appropriately.

Chart 4.2.4 – Effectiveness of type approval mechanisms and monitoring and enforcement activities in ensuring that non-compliant products do not enter the market (percentage of respondents that provided a positive answer to the proposed statement)



Source: CSES survey

In the case of **Euro 5&6 and Euro VI** regulations for light and heavy duty motor vehicles the main concern raised relates to the measurement tests and the driving cycle definition. These have a significant impact on its effectiveness of the legislation in terms of air pollutant emissions but also spillover effects to the policy measures for reducing CO₂ emissions. It is already widely acknowledged that there is a significant divergence between test conditions and those that apply in the real world (see also Case study 2 in Annex 2). The proposals for a new test cycle – which according to the recent CARS 2020 should be finalised before 2014 – are generally expected to make an important contribution towards bridging this gap even though there are questions as to the actual level of improvement. What remains more contentious is the appropriateness of the measurement test procedures. NGOs and Member State authorities suggest that the flexibility provided in the provisions of the legislation in relation to parameters like temperature or the classification of vehicles

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in inertia classes allows for a significant deviation between the results of types tested and the actual performance of cars placed on the market. A recent study by ICCT⁷⁹ provides some evidence on this. The 4% tolerance margins allowed are considered by some Member States to be too large, given current technologies, and allow manufacturers to aim at the upper limit of the tolerance allowed rather than the limit specified. We should note that the majority of manufacturers deny that there are any problems with the test procedures – even though there is acceptance of the need for an improved cycle - and suggest that a certain level of flexibility is necessary.

Finally, the **Directive on emissions from air-conditioning** systems has also been identified as a problematic aspect of the legal framework especially because of an inability to comply with the requirements due to the short supply of the refrigerant gas needed to achieve compliance with the requirements. While the Commission has decided not to launch infringement procedures in cases of non-compliance until this issue is addressed, it was reported that national type approval authorities have adopted different approaches, some refusing type approval of non-compliant vehicles and others accepting. The lack of legal certainty on this issue and the possibilities for legal challenges is considered by some stakeholders to be a significant problem. Generalising from this problem, it has been suggested, that there is a need to include provisions in the legal framework that allow for extreme cases. At another level, there is criticism that the introduction of the specific requirements came without having ensured the general availability of essential components.

4.3 – Efficiency

In this section we consider the efficiency of the implementation of the legal framework, looking into the operation of the various processes and mechanisms in the framework, the barriers and weak links and also examining the resources allocated by the different actors involved. Of particular significance in this section is the evidence from stakeholders, provided in the surveys and interviews. We then consider areas where the legal framework appears to complement or overlap other EU or national measures and regulations.

Overall experience of the implementation of the legal framework

Before looking in more detail into certain mechanisms of the legal framework, stakeholders were asked to comment on their overall experience of the type approval implementation procedures. The responses reveal a clearly positive view on the part of Member State authorities (80% of respondents stating positive or very positive), in contrast to a more non-committal view from technical services and manufacturers (53% and 56% indicating a neutral experience).

Table 4.3.1 - What is your overall experience so far of the implementation procedures of the motor vehicles type approval legal framework?

| | MS authorities | | Technical Services | | Manufacturers | |
|---------------|----------------|------------|--------------------|------------|---------------|------------|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| Do not know | 0 | 0 | 0 | 0 | 0 | 0 |
| Very negative | 0 | 0 | 0 | 0 | 0 | 0 |
| Negative | 0 | 0 | 0 | 0 | 1 | 11 |
| Neutral | 5 | 19 | 8 | 53 | 5 | 56 |
| Positive | 17 | 65 | 7 | 47 | 3 | 33 |
| Very positive | 4 | 15 | 0 | 0 | 0 | 0 |

⁷⁹ ICCT (2012), Discrepancies between type approval and “real-world” fuel consumption and CO₂ values - Assessment for 2001-2011 European passenger cars

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| | MS authorities | | Technical Services | | Manufacturers | |
|--------------|----------------|------------|--------------------|------------|---------------|------------|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| No response | 1 | | 3 | | 2 | |
| Total | 27 | 100 | 18 | 100 | 11 | 100 |

Source: CSES survey

At the same time, to the extent that the development in the level of type approval activity could be seen as a vote of confidence in the system, the data provided by the Dutch authorities suggest an increase in activity for almost all categories of vehicle, particularly among light commercial vehicles (N1) that are usually produced by large OEMs, large buses and coaches and some categories of trailers even before the formal entry of the requirements into force.

Table 4.3.2 – Evolution in the number of ECWVTA approvals for the different categories. What is your overall experience so far of the implementation procedures of the motor vehicles type approval legal framework?

| Vehicle Category | 2007 | 2008 | 2009 | 2010 | 2011 |
|--|-------------|-------------|-------------|-------------|-------------|
| M1 – Passenger cars with less than 8 seats | 1244 | 1364 | 1411 | 1589 | 1229 |
| M2 – Buses and coaches of less than 5 tonnes | | | 5 | 14 | 39 |
| M3 - Buses and coaches of more than 5 tonnes | 33 | 34 | 87 | 269 | 428 |
| N1 – Commercial vehicles (<3.5 tonnes) | 6 | 7 | 165 | 451 | 651 |
| N2 - Commercial vehicles (3.5-12 tonnes) | 26 | 7 | 57 | 65 | 150 |
| N3 - Commercial vehicles (>12 tonnes) | 107 | 37 | 123 | 166 | 255 |
| O1 – Trailers (<0.75 tonnes) | | | 43 | 76 | 150 |
| O2 – Trailers (0.75-3.5 tonnes) | 39 | 26 | 169 | 200 | 335 |
| O3 – Trailers (3.5-10 tonnes) | | | 1 | 6 | 6 |
| O4 – Trailers (>10 tonnes) | 15 | 23 | 48 | 93 | 188 |
| Total | 1470 | 1498 | 2109 | 2929 | 3431 |

Source: RDW

The additional comments provided suggest a balance between a positive view overall of the objectives that the legal framework is seen as serving – particularly from the side of Member State authorities – and a more sceptical view on the part of technical services and manufacturers in relation to the practical aspects of the implementation. These are examined in greater detail in the following section.

Barriers and weak links to the effective application and enforcement of the legal framework.

The analysis of the information and data collected in the course of the study pointed to a number of weak links in the implementation of the TA legal framework which, if left unaddressed, could have a detrimental effect on its effective application. In brief, these include:

- Differences in the interpretation of the various requirements among Member States and type approval authorities. This is particularly the case in relation to the monitoring of the Conformity of Production (CoP) arrangements.
- Problems stemming from the replacement of EU Directives with UNECE Regulations and the UNECE process.
- Difficulties identified relating to the recall process by automotive manufacturers.
- Variations in the competence levels of Technical Services.

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Differences in interpretation and role of EU structures

Approximately half of Member State authorities and respondents from the technical services and around three-quarters of manufacturers identified problems relating to the interpretation of various parts of the legislation. In a number of areas, there seems to be significant degree of flexibility in the interpretation of legal provisions with a clear risk that this may allow a substantial variation in the implementation of the legislative provisions by type approval authorities across Member States. This in turn leads to uncertainty for manufacturers operating on a cross-border basis as they try to respond to the different interpretations emerging across the EU. The text box 4.3.1 below provides examples of comments made by different types of stakeholder on the issue of the varying interpretations among Member States and the problems arising particularly in relation to Conformity of Production. Other issues identified concern multi stage vehicles, small series and special purpose vehicles. The current procedures are seen as not being appropriate for these categories of vehicle and this in itself leads to different interpretations between Member States.

Text box 4.3.1 – Comments of stakeholders on the issues of interpretation with the legal framework

| | |
|--|--|
| Manufacturers | <ul style="list-style-type: none"> - <i>Interpretations of the text are not always consistent among different national authorities : we have had long debates on the interpretation especially on GSR application</i> - <i>The wording of the regulation leads to interpretation which can be widely different from one TAA to another</i> - <i>Interpretation problems have a huge negative influence (cost & time) but are not solved in a short time by the EU Institutions. The legislative texts are often written in a very complex language and user-unfriendly way</i> - <i>Interpretation of the UN requirements is a key issue – one country may give a generous interpretation, but another Member State may provide a different interpretation</i> - <i>Some countries favour innovation and therefore encourage competition with liberal interpretation of the provisions of the regulations. Other countries do not share these interpretations and as a result a barrier to competition is created</i> - <i>We have experience of approvals for Special Purpose Vehicles (wheelchair accessible) granted by the UK, Holland and the Czech Republic. In each case there has been, at best, different emphasis on the same subject requirements. At worst, there have been complete tests that have been required by [the type approval authority] in one country but not in another.</i> |
| Technical services | <ul style="list-style-type: none"> - <i>[Interpretation] can be problematic. There is no stringent and clear approach. Type approval authorities do not know how to deal with it. Some TAAs take CoP very seriously [and] some others not. [The] legal provisions are not clear.</i> - <i>Sometimes legislation is not completely clear and may not be easily applied. This is the case of Regulation 661/2209 and its implementing measures which would need guidelines to be adopted by the Commission in order to ensure homogeneous application in the EU.</i> - <i>Different countries have different interpretations. The reason for this can be that the regulations are not clear enough</i> |
| Member State/Type Approval authorities | <ul style="list-style-type: none"> - <i>[There is] different approach from TAAs on the same requirements; approvals refused in one MS are granted by another MS</i> - <i>CoP measures differ drastically from authority to authority, and this leads to "fishing" for easiest route.</i> - <i>There are real issues about the way in which the various TAAs deliver their CoP responsibilities. Each appears to have a different approach and there is no transparency about how and what is done and the frequency.</i> |

Source: CSES survey and interview programme

Some respondents also suggested that the differences in legal interpretation were linked to more fundamental issues regarding how competition operates within the Internal Market. There is in particular concern that too much flexibility in interpretation can lead to unfair competition and this is supported by some evidence of type approval hopping (see more below). On the other hand, it is also recognised that

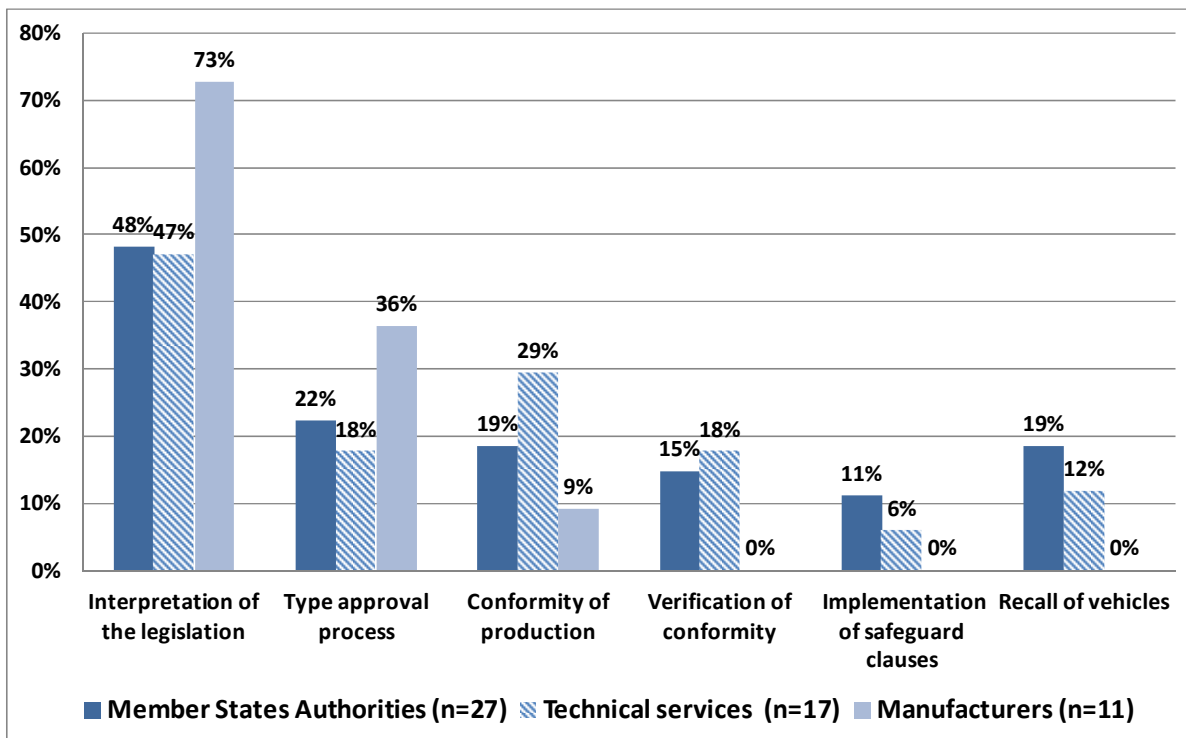
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flexibility has some advantages. One example is the introduction of the adaptive driving beam, where relative flexibility in the interpretation of the requirements allowed the introduction of a new technology that had not been envisaged at the time of the legislation.

In relation to specific areas of the implementation of the legal framework the type approval tests, the conformity of production (CoP) and, to a lesser extent, the vehicle recall process were most frequently identified as causing problems. Concerning Conformity of Production, the comments presented in the text box above point to important variations in the approach adopted by Member States and type approval authorities. There is consequently a risk that automotive manufacturers may engage in a race to the regulatory bottom and identify EU countries in which requirements are interpreted in a more lenient way. In certain cases, this may lead to products entering the European market that would be considered non-compliant in other Member States that apply a more stringent interpretation of the rules.

Chart 4.3.1 – Problems with implementation of the legal framework (Percentage of respondents indicating)



Source: CSES survey

Differences in the interpretation and implementation of certain parts of the legislation do not seem to be directly linked to a failure of structures to promote co-ordination and information exchange. Most Member State authorities provided a rather positive assessment of the overall level of information exchange and co-operation. Some individual comments referred to the need to improve data exchange – including a more effective database for allowing access to Certificates of Conformity, but also the need for increased co-operation on the part of some Member State authorities.

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Table 4.3.3 - How helpful is information exchange and co-operation with other Member States in the implementation of the type approval legal framework?

| | Number | Share of respondents |
|--------------|-----------|----------------------|
| No response | 1 | - |
| Do not know | 2 | 8% |
| Very little | 0 | 0% |
| Little | 4 | 15% |
| Moderately | 3 | 12% |
| Considerably | 9 | 35% |
| Very much | 8 | 31% |
| Total | 27 | 100% |

Source: CSES survey

The coordination structures and mechanisms that have been put in place (TAAM and TAAEG) are also generally considered to have played a positive role in promoting the exchange of information and enabling practical problems to be solved through co-operation. This is reflected in the responses provided concerning these two structures (see chart 4.3.2 below) where more than 65% considered them as either helpful or very helpful and only 8% made a negative assessment.

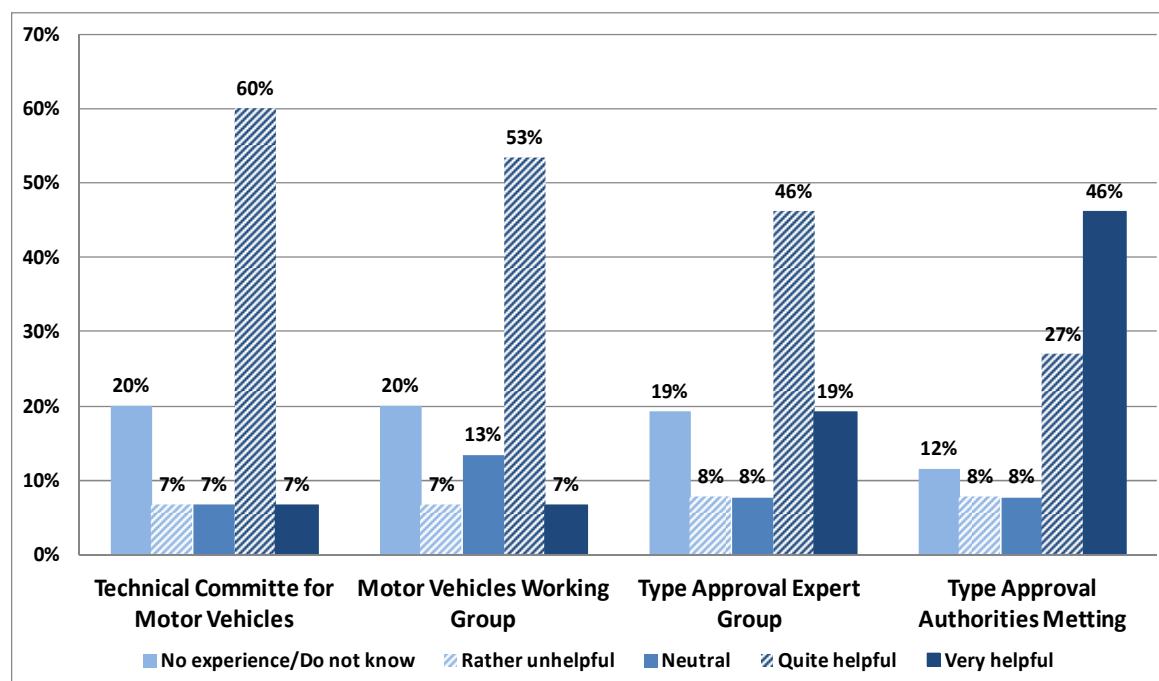
Less positively, concerns were raised about the appropriateness of having two structures which, for a few authorities, appear to be very similar in nature and without distinguishable results. Others recognised the added value of these separate structures and pointed to the need to separate the technical discussion (in the TAAM) from the legal discussion (in the TAAEG). This view is also that of the Commission services. Some Technical Services suggested that the coordination of the two groups needs to be improved and the issues considered more carefully defined. The fact that TAAM meetings can only discuss issues without being able to provide concrete decisions is regarded as not being helpful by some Technical Services that would prefer to be able to provide clear answers to their clients. From the resources points of view, a number of Member States suggested that there is a significant strain on their limited resources from the need to participate to these two structures, along with the Motor Vehicles Working Group (MVWG) and the respective expert groups, the Technical Committee on Motor Vehicles (TCMV) and the respective UN Working Groups. While in principle these should be attended by different experts, in practice this is not the case for a number of smaller countries.

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Chart 4.3.2 - Contribution of the EU support structures to addressing problems related to the implementation of the legal framework (percentage of Member State authorities indicating n=27⁸⁰)

Source: CSES survey



The majority provided a positive assessment of both the TCMV and the MVWG and their role in the development of the legal framework. The views of stakeholders on their participation in the MVWG ranged broadly from those that emphasised the importance of transparency and representation of all interests to others that considered that the presence of too many representatives makes the whole process slow and ineffective.

UNECE process

Another issue considered was the development of UNECE Regulations and its relationship to the EU processes. While the great majority of stakeholders are in principle supportive of the replacement of EU Directives with UN Regulations, a significant proportion of respondents— mainly manufacturers - indicated that there are issues and problems arising from the UNECE process.

Table 4.3.4 - Are there issues arising from the replacement of EC Directives by UNECE Regulations? (number/share of respondents indicating)

| | Member State authorities | | Technical services | | Manufacturers | |
|-------------------------|--------------------------|------|--------------------|------|---------------|------|
| No response | 2 | | 4 | | 2 | |
| Do not know/ no opinion | 3 | 12% | 1 | 7% | 0 | 0% |
| NO | 12 | 48% | 8 | 57% | 3 | 33% |
| YES | 10 | 40% | 5 | 36% | 6 | 67% |
| Total | 27 | 100% | 18 | 100% | 11 | 100% |

Source: CSES survey

⁸⁰ As a result of a mistake in the electronic version of the questionnaire sent to some authorities there were only 15 responses concerning technical committee for motor vehicles and the motor vehicles working group.

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The issues of concern to different groups of stakeholders, in decreasing order of stakeholders' acceptance, were:

- The slow speed of the process for the adoption and approval of UNECE Regulations. A number of industry associations believe that the process of considering and approving proposals, together with the subsequent six month period for the adoption of the legislation, is too long. According to one industry association, the whole UN procedure leading to a change coming into force can take up to 20 months. One association indicated that the delays in the process can have a negative knock-on effect on the timing of introducing products to the market, a key consideration for the industry.
- The need to monitor a process that includes a wide range of working groups and committees and frequent changes – up to three times a year - to the appropriate reference documents. There are also instances reported of inconsistencies with earlier EC Directives (e.g. bus regulation Number 107), problematic cross references and an absence of a transitional period for the entry of regulations into force. Representatives of sectors dominated by small firms indicate that following UNECE developments is a particularly challenging task.
- While this is not a viewpoint that is generally shared, there are concerns among some NGOs and certain industry representatives about the weight of the dominant automotive industry actors in UN regulatory formulation processes. NGOs and consumer groups do not have the resources necessary to follow all the processes and participate in a large number of committees and working groups. Even Member State authorities are often absent from the meetings in certain working groups of the UNECE and do not have the opportunity to review proposals made by industry.
- The danger of adopting the lowest common denominator approach was highlighted by some NGOs, particularly on environmental aspects of legislation and issues relating to testing and the type approval process. The low testing capacity in certain third countries was seen as a barrier to the adoption of more demanding environmental standards. However, the UNECE representative suggested that there is no evidence of such tendencies and that countries opt-in to different parts of the regulatory system only when they believe they can meet the requirements adopted. EU Member States are still a significant force in pushing for demanding environmental standards in the UNECE.

Recall process

The recall process represents the main tool currently available to ensure that non-compliant or unsafe products are removed from the market. Data from the RAPEX system on the number of notifications in the motor vehicles sector indicates that on average there have been approximately 150 notifications per year. Nearly all notifications involving motor vehicles on RAPEX are associated with a vehicle recall.

Table 4.3.5 – No. of notifications of 'Motor Vehicle' products presenting a serious risk

| 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|
| 197 | 160 | 146 | 175 | 169 | 137 |

Source: RAPEX

While not considered by stakeholders to be as much of a problem as other aspects, a number of Member State authorities and consumer organisations indicated that the recall process remains a weak element in the overall legal framework. The issue most commonly raised in this regard was that there is still no standard procedure at EU level for recall actions and there are different procedures and criteria being adopted by different Member States with the result that only some countries are seen as having properly functioning recall systems. At this point, the Framework Directive does not have clear and firm provisions on the recall process. It was reported that vehicles may be recalled in one country but not recalled in all others and that

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the process can be rather slow and complicated in situations where a type approval has been initially granted in another Member State. Thus, while there is no evidence that there have been significant problems, this situation could lead to problems in ensuring common minimum levels of consumer protection and health and safety standards across the EU.

Some industry representatives did recognise the variations in the recall process across the EU, but they expressed the view that, overall, the recall process as currently applied is appropriate. They pointed to the number of recalls every year and recent increases in comparison to earlier periods as an indication that the process is operating effectively.

Variation among Technical services

As with type approval authorities, the feedback from a number of other sources suggests that there is a significant variation in the way Technical Services carry out their tasks and different levels of stringency applied by them. For example, there were suggestions by one industry association that firms from outside Germany tend to avoid German technical services since these are perceived as adopting a stricter interpretation of the rules than those of other EU Member States. This could also be a reflection of the variations in the approach said to be followed by the respective type approval authorities in the different EU Member States.

In parallel, there is clearly a variation in the availability of Technical Services among Member States with possible negative impacts on some manufacturers. In some smaller EU Member States, it has not been possible to establish commercially viable Technical Services, because of the low number of producers. However, as type approval legislation extends to more categories of vehicle, an increased number of smaller manufacturers need to comply with the requirements of the legislation and rely on the use of Technical services not only for conducting tests but also for understanding the applicable requirements and organising their information collection. Relying on the technical services in other EU countries can introduce considerable additional costs, particularly for small firms that do not have the means to invest in their own testing facilities.

On the other hand, technical services are generally seen to have a positive role in supporting firms in the implementation of the legal framework. Among the manufacturers that participated in the survey, 85% indicated that they were satisfied or very satisfied with the support provided by technical services.

Administrative and reporting burdens on stakeholders and other actors

The assessment of the efficiency of the legal framework included an analysis of the resources dedicated by stakeholders at different parts of the process. It was based on the information made available in the analysis that examined the costs for Member States authorities and, firms in the automotive sector.

Costs for authorities

The resources dedicated by Member State authorities to support the implementation of the type approval legislation vary significantly but appear to be driven by the level of type approval activity in each Member State and, to some extent, the division of responsibilities among different entities. The responsibilities typically include the overall supervision of the system and the development of policy in the motor vehicles sector, the responsibility for issuing type approvals, market surveillance activities and, although not directly related, vehicle registration. In some EU countries, these functions are performed by a single entity – quite often the Ministry responsible for transport – while in others the type approval process and the responsibility for market surveillance are delegated to agencies operating under the supervision of the Ministries. In the area of policy design, responsibility is often shared among multiple Ministries. In addition,

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in a few countries (e.g. Germany) the implementation framework includes regional and local authorities that have responsibility for individual type approvals.

At the policy level, in most EU countries there are around 2-5 officials (Full Time Equivalents -FTE) with responsibilities in transposing the legal framework into national legislation and when necessary, monitoring and supervising the implementation of the system, participating in the various working groups and supervising the technical services. In a few EU Member States (e.g. UK, NL, BE) the estimated number of people (FTEs) working on automotive legislation and related regulatory matters is closer to 10.

A few authorities provided more detailed data on the costs of implementation. For instance, the Swedish authorities made reference to annual costs of around €500,000 for implementing the legislative procedures and making improvements to the registration system. The development and maintenance of the relevant computer systems was indicated as the most costly and important aspect – a view shared by other national authorities. A broader range of between 2 and 10 FTEs are dedicated to the operation of the type approval databases - followed by the activities for information provision and support for manufacturers and test facilities. The Swedish authorities also estimated that translation costs were incurred in the order of €900,000/year in implementing the legislation. The UK Ministry of Transport spent over €5 million to set up the system (one-off costs) and has 20 people (10-12 FTE) working on different aspects related to the implementation. Other national authorities made reference to costs incurred in awareness-raising activities for industry (e.g. an annual budget of €20,000 has been allocated for this purpose in Ireland). A number of interviewees suggested that there is a substantial need for guidance to enterprises (mainly SMEs) that are unused to the type approval processes. Familiarising smaller manufacturers in those sectors that have only recently been brought under the type approval legal framework has posed a significant challenge for a number of national authorities.

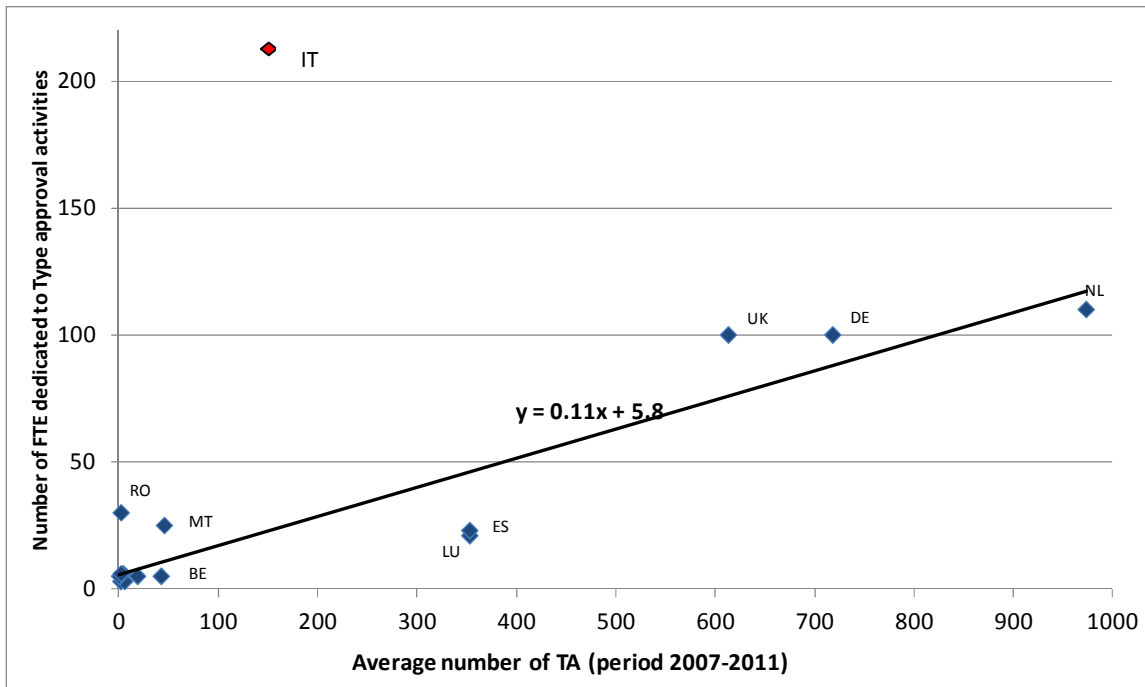
Turning to the type approval activity itself, the analysis of the data made available during the fieldwork suggests that a large number of Member States dedicate no more than a few FTEs to type approval while in a few EU Member States with significant numbers of type approvals, the number of FTEs allocated is up to 100. The following scatter diagram (chart 4.3.3) presents the relationship between FTE dedicated to type approval activities (testing and certification) and the average level of the type approval activity in each country during the period 2007-2011 (as indicated in the ECWVTA database of the Dutch authorities).

If the outlier of Italy is excluded from the analysis, the linear regression fit is high and significant and suggests that an average of 1 FTE is allocated to type approval activities for every 9 type approvals.

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Chart 4.3.3 – Relationship between human resources dedicated to type approval and number of type approvals



Source: Own elaboration based on CSES survey and RDW data; Note: the trendline calculated is based on data from 15 EU Member States and does not include Italy, which was an outlier

Another important cost element concerns market surveillance. This is an area where, according to the discussions, only a small number of Member States are currently actively engaged. The data provided by three Member States indicate a range between 2-10 FTEs dedicated to market surveillance activities. The feedback obtained through the interviews suggests that this level of resourcing on market surveillance is probably insufficient given the current level of type approval activity.

Overall, it is difficult to provide a robust estimate of the total resources allocated across the EU to the implementation of the type approval legal framework. On the basis of the information provided, the total number allocated appears to be close to 1000 FTE across the EU27 (and Norway) with the type approval activity (testing and certification) representing more than 70% of the total. Furthermore, 7 EU countries account for close to 95% of type approval activity and account for close to 85% of the total resources allocated.

It is not possible to assess whether the total amount of resources dedicated represents an efficient ratio as there is no evident benchmark against which to compare. The responses of Member States authorities to the online survey indicate that in most countries the resources are not considered sufficient with half of the respondents indicating that more are necessary. The additional comments made during the interviews concentrate on the resources needed mainly for following the developments in legislation and participation in the various working group meetings rather than for the type approval activity itself. Among the most active type approval authorities, the resources for approval activity were generally considered to be appropriate and in some cases, such as in the UK or the Netherlands, they reflect the high level of demand for type approval testing from inside and outside the EU. Both of these Member States have type approval authorities that are also very active in providing services– mainly in the form of witness testing – to non-EU manufacturers.

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Table 4.3.6 - Are the resources available at the national level sufficient for the effective implementation of the legal framework? (Number of Member State authorities responding)

| Response | Number (percentage) |
|--------------|---------------------|
| No response | 3 |
| Do not know | 4 (17%) |
| NO | 12 (50%) |
| YES | 8 (33%) |
| Total | 27 |

Source: CSES survey

Our overall impression on the basis of the data available and the discussions with authorities is that additional resources in some Member States would probably be justified, but this does not appear to be a major bottleneck in the process of implementing the type approval legal framework.

The same conclusion applies in relation to the resources allocated by the European Commission services. There are currently 6 officers working full time in various parts of the type approval framework in DG ENTR, 3 FTE in DG CLIMA and, as far as we understand, 2-3 FTE in the other DGs responsible for specific parts of the legal framework (DG MOVE, DG ENV). Additional resources would be helpful but, again, there do not appear to be major bottlenecks in the process.

Costs for the automotive industry

Turning to the administrative burdens for industry, the overall picture appears to be rather mixed and varies between different sub-sectors and even among firms within the same sub-sector (see also the detailed analysis in Case Study 1). For large OEMs producing passenger cars or commercial vehicles, the administrative costs – including familiarisation with legislation, resources allocated for the collection of data and reporting and fees to technical services and type approval authorities - are generally considered to be a minor consideration when compared to the other compliance costs resulting from the necessary changes to product design and technologies to meet the environmental or safety requirements. Large OEMs and, similarly, Tier 1 component manufacturers tend to have organised legal units that help to deal with the administrative processes resulting from the applicable legal framework inside and outside the European Union.

When the associated costs for industry are divided by the hundreds of thousands of vehicles sold per annum, the costs per vehicle for the industry are no more than a few Euros per unit. The case study analysis of the administrative burdens for two OEMs producing M1 and N1 cars suggests a cost relating to a single vehicle model in the range of €700,000-1,000,000⁸¹. According to both manufacturers, this represents a small fraction of the product development costs invested to ensure compliance with the various legal provisions. It was reported that these can often exceed a billion Euros in total. The total administrative costs for the type approval process on an annual basis for an OEM with 5-6 models in parallel were estimated to be in the range of €5-10 million, representing no more than 0.1% of annual operating expenses^{82 83} and 0.05% of their annual turnover.

In comparison, data from a single luxury/sports car producer suggest initial administrative costs in the range of €250,000-350,000 per model - and around €900,000 for all models produced in parallel on an annual basis – representing no more than 0.2% of the annual turnover. Over the whole period of the life of model – which

⁸¹ On the basis of an average cost for a FTE of €100,000.

⁸² Based on total cost of sales, distribution and administrative expenses

⁸³ Data for operating expenses are based on the 2011 annual report.

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is usually 10-15 years – the type approval costs for the main model and 1-2 variants are estimated to be up to €2.5 million. Thus, the main difference from the large OEMs is that in the case of luxury cars a single product platform has extended life –2-3 times longer – and this means that some of the administrative costs are reduced. At the same time, for those manufacturers that sell only a few thousand vehicles – in comparison to more than a million vehicles sold by large OEMs –vehicles, the cost per unit is around €300, up to 50 times more than the costs for the OEMs. Still, in comparison to the total of €200 million dedicated to product development directly linked to the legal requirements, the type approval administrative costs are a rather small part- 2-3% - of the full year budget.

The picture is rather different for firms in other subsectors – including producers of trailers and tankers (O4 category). The estimated costs for a type approval in this sector appear to be in the range of €25,000-€100,000 for the type approval of a model and around half of this in subsequent years. At this early stage of the implementation of the legislation, an important part of the total costs comes from the need to hire a new employee to be responsible for managing the process and collecting information. Support from consultants is also commonly required at these early stages. Further type approval costs – once experience has been developed and the number of tests for individual components is reduced – are expected to be lower. The data made available indicate that type approval costs represent around 0.5-1% of annual turnover. Estimated costs per unit varied in the range of €50-250/vehicle produced. Critically, in the case of trailer or tanker manufacturers administrative costs relating to type approval appear to be more important than compliance costs arising from product development necessary to ensure compliance with legal requirements. This is to be expected since emission requirements related to power-train design are most often not applicable to trailers.

In the case of bodybuilders and other sectors using the multi-stage approach, overall type approval costs may increase significantly when they work on multiple types of a base car. Even if they perform the same type of operation – such as the fitting of a box body onto a chassis-cab, second stage producers are required to have separate type approvals for each different base cab acquired from different manufacturers. In this case, bodybuilders may either be forced to reduce the range of base vehicles they use or have to pay costs that, at least at first sight, appear disproportionate to the range of operations they perform.

It has not been possible to collect detailed data from firms making use of the permissible alternative type approval approaches. However, the survey responses suggest that there has been some increase in the costs associated with these processes. The data from the UK study indicate that costs per type approval were expected to be around 30%-80% of the ECWVTA costs while individual vehicle approvals were expected to be between £650-1540 (€850-1900) depending on the type of vehicle. Data provided by a few manufacturers in the UK suggest that costs for an IVA were closer to the €300-500 range but this figure does not include costs for any testing required. Still, with the exception of vehicles in the M1 category, for all other categories the EC and National Small Series costs or even the IVA costs represent a significant new expenditure. While the case of firms in the UK is rather particular due to the absence of any prior type approval process for certain categories of vehicles, the feedback from a number of sources and the responses to the survey indicates that the costs for type approval have increased in almost all categories.

Considering the extended market access provided on the basis of single EC WVTA, some stakeholders, including existing or prospective non-EU based manufacturers, suggest that the relative costs are probably relatively low. However, in the case of smaller vehicle producers concentrating on national markets, the relative costs of the type approval process appear to have increased further while the benefits have been rather limited, at least in the initial stages when there is no increase in cross-border activity by those firms,.

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Table 4.3.7 – Summary of type approval (TA) costs estimates for selected categories of vehicles

| Type of vehicle | Costs(€s)/TA of a single model | Main cost drivers | TA costs (€s)/ Annual turnover | TA costs (€s)/ vehicles sold |
|------------------------------------|--------------------------------|---|--------------------------------|------------------------------|
| Large volume passenger cars | 700,000-1,000,000 | Human resources for preparation, information collection and monitoring (30-50%) Testing costs (15-20%) | <0.05% | 5-15 |
| Sport/luxury cars | 250,000-350,000 | Human resources for preparation, information collection and monitoring (30-50%) Testing costs (15-20%) | 0.1-0.2% | 250-300 |
| Trailers/Tankers | 50,000-100,000 | Human resources (50-80%) Testing fees (15-20%) | 0.3-0.5% | 50-250 |

Source: CSES survey

It has not been possible to obtain data that would allow a comparison of the administrative costs of the type approval process with those of the processes applicable in other global regions with a similar system, such as Japan. In the United States, manufacturers are expected to have information on the tests conducted providing proof of compliance with the legal requirements but there is no type approval process or comparable type approval fees. Thus, the up-front administrative costs are generally lower and, according to one vehicle manufacturer, it can be the case that the information dossiers developed may never be examined by the authorities. However, the self-declaration system followed in the United States means that manufacturers carry all the legal responsibility and, as a result, almost all purchase insurance against the risks of liability. The view of some manufacturers – including non-EU producers selling in both regions - is that the European type approval process represents a less expensive system once these insurance costs are taken into account.

Finally, for the firms in the components and systems sub-sectors, the single example available indicated a type approval cost of around €5,000 per product, with total administrative costs from type approval estimated again to be a small fraction of the annual turnover but with no specific figures provided. Individual firms and the industry representatives also confirmed that, at least in the case of Tier-1 suppliers, the administrative costs and testing fees represent only a small percentage of the total costs while costs for development of the products and quality control represent a much greater challenge.

Compliance costs

Manufacturers of vehicles have been reluctant to share data on the level of compliance costs but at the same time most of them indicate that, these tend to be significant. Some manufacturers referred to the design challenges resulting from the Euro 6 requirements or the pedestrian protection regulation. One manufacturer made reference to product development costs directly relating to compliance with the legal requirements as being over €100 million and another to a total of €200million. It has not been possible to verify the validity of these numbers. In contrast, as already indicated, , according to both manufacturers and some type approval authorities, trailer or bodybuilder manufacturers or manufacturers of special purpose vehicles tend to have compliance costs that are a relatively limited in relation to total costs.

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The administrative burden on SMEs

The online survey and interview programmes indicated that the general view of industry representatives and technical services is that SMEs face particular problems in implementing the Framework Directive and associated regulations. Most of the comments made point to these problems arising because of the limited resources and capacity of SMEs.

Text box 4.3.2 – Comments provided to the questions: Do small size firms face particular problems or challenges in compliance with or implementation of the legal framework?

| | |
|---|--|
| Manufacturers and industry associations | <ul style="list-style-type: none"> - Our members (bodybuilders) are overextended by the legal affairs [=requirements]. - According to the experience of some bodybuilders it seems significant workload addition especially when it comes to having to have a different approval for each base chassis model. - SMEs have more difficulties than large firms. In fact, only large firms can implement the Framework Directive given that they have enough in-house experts to deal with all the issues and their global production units can share information. - For firms that use the IVA (typically SMEs) the costs per approval/homologation are higher |
| Technical services | <ul style="list-style-type: none"> - Economical difficulties related to the complexity of technical tests - Homologation [for bodybuilders in Spain] is difficult and costly - Small firms often face problems. [They is] no experience of how to deal with it (do not know the process) TS tend to provide support to firms – some need to hire personnel |
| Member State authorities | <ul style="list-style-type: none"> - Firms in the trailers/body builders sectors are in a rather different world that volume manufacturers. The EC WVTA is ok for large volumes but not sure this is the case for small volume productions with no exports. |

Source: Interviews and online surveys

The analysis of the administrative burden figures provided earlier suggests that, in comparison to large OEMs, the administrative burden is a considerably higher proportion of costs in the case of SMEs. The data available indicate that while smaller in absolute terms, administrative costs of type approval per vehicle produced by a small volume producer can often be up to 50 times higher than those of an OEM. Type approval costs appeared to be in the range of 0.1-1% of annual turnover for SMEs, in comparison to less than 0.05% for large manufacturers. Given that the firms that provided data were still relatively large (over 100 employees) the share of administrative costs is most probably even higher for the smaller size firms that dominate certain sub-segments of the automotive industry including body builders and manufacturers of trailers or special purpose vehicles.

Human resources are an important cost driver for SMEs, since most of the firms that aim to receive an ECWVTA have to hire a type approval expert on a full time basis or allocate an important part of their existing technical capacity to the type approval activity. They assume responsibility for the various parts of the process – identification of relevant requirements, development of the information dossier, type approval testing and conformity of production procedures and any other relevant requirements. Furthermore, in most firms, a type approval expert is retained because of the prospect of future type approval work, even though over time a certain level of learning and capacity building can reduce some of the costs of the process.

Overall, there are clear indications that, in relative terms, the costs of an ECWVTA for small size firms are greater than for larger producers. It remains however rather difficult to assess whether or not they are “proportionate”.

The introduction of the small series type approval schemes (national and EC) and individual vehicle approval were expected to accommodate the needs and characteristics of SMEs that produce in small volumes and help to reduce their relative costs. However, the information available does not allow a proper assessment to be made either of the extent of use or the cost saving from these alternative schemes. A few manufacturers recognised their potential value, but the most common feedback is that in practice the

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National Small Series Scheme (NSSTA) does not differ significantly in terms of administrative costs from the ECWVTA. Manufacturers of special purpose vehicles commented that despite the reduced costs in comparison to ECWVTA, the restrictive upper limits set for the NSSTA make the whole process uneconomical and the use of IVA a much more preferable option for a producer of up to a few hundred vehicles per annum.

Data on the level of use of these schemes in different Member States have only been obtained for the Netherlands (RDW). They show a clear decline in the use of national type approvals (the earlier national scheme and the current NSSTA) during the period 2007-2011 in parallel to an increase in the number of ECWVTA used. It should be kept in mind that the RDW is one of the few preferred type approval authorities for non-EU manufacturers and these are expected to have a preference for ECWVTA when this is available. As a result this trend may not be representative of the picture in other countries. Still, the discussions with the German type approval authorities also suggest that the use of the national small series scheme has been rather limited so far and that in practice the costs are not that different from the ECWVTA.

Table 4.3.8 – Evolution in the number of number of national type approvals and ECWVTA in the Netherlands (period 2007-2011)

| Vehicle Category | Type | 2007 | 2008 | 2009 | 2010 | 2011 |
|------------------|------------------------|------|------|------|------|------|
| M1 | National type approval | | | | | |
| | ECWVTA | 129 | 148 | 126 | 128 | 94 |
| M2 | National type approval | | | 4 | 4 | |
| | ECWVTA | | | | | |
| M3 | National type approval | 33 | 34 | 22 | 3 | |
| | ECWVTA | | | 7 | 85 | 120 |
| N1 | National type approval | 6 | 7 | 16 | 15 | 1 |
| | ECWVTA | | | 5 | 30 | 89 |
| N2 | National type approval | 26 | 7 | 18 | 16 | 3 |
| | ECWVTA | | | | 2 | 9 |
| N3 | National type approval | 107 | 37 | 73 | 44 | 16 |
| | ECWVTA | | | 25 | 80 | 62 |
| O1 | National type approval | | | | | |
| | ECWVTA | | | 8 | 9 | 30 |
| O2 | National type approval | 39 | 26 | 4 | | |
| | ECWVTA | | | 23 | 53 | 88 |
| O3 | National type approval | | | | | |
| | ECWVTA | | | 1 | 2 | 3 |
| O4 | National type approval | 15 | 23 | 6 | 11 | 9 |
| | ECWVTA | | | 16 | 20 | 46 |

Source: RDW

Stakeholders made a number of suggestions concerning possible ways of reducing the costs for SMEs. These included:

- **Considering simplification of the legal framework** - the current legal framework is complicated and difficult to understand, particularly for SMEs that are brought within a formal regulatory system for the first time and have consequently to allocate significant resources to learning how the regulatory system operates and what their obligations are and to taking the necessary steps to obtain type approval.
- **Increasing the predictability of the legal framework** - changes could be introduced specifying the procedures and information obligations required from SMEs, as opposed to larger automotive industry participants.

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- **Strengthening the information provision and support to SMEs** – the research found clear evidence that SMEs have limited capacity to follow regulatory developments on a continuous basis and find clear explanations providing an orientation particularly useful. Provision of relevant support mechanisms, or strengthening of those already in place, could prove particularly helpful.
- **Introducing changes so as to simplify the multi-stage approval process** – this tends to affect bodybuilders and/or special purpose vehicle manufacturers, which tend to be SMEs. The current structure imposes significant costs in terms of ensuring effective communication and information flows with vehicle manufacturers. It also puts sole responsibility on SMEs for those parts of the vehicle that they manufacture during the production process, but that are not controlled by final stage manufacturers.

Overlaps between the legal framework and other European Union or Member State action

At the EU level the type approval legislation is directly or indirectly linked to a number of pieces of environmental legislation including, primarily, the Regulation on average CO₂ emissions (Regulation 443/2009) but also legislation on noise emissions (Environmental Noise Directive 2002/49/EC), Air Quality (Directive 2008/50/EC) and the End of Life Vehicles Directive (2000/53/EEC). There have already been comments on the need for greater clarity in the architecture of the legislation in the section on the relevance and coherence of the type approval framework. However, there are also ‘efficiency’ aspects to the overlaps in the sense that there may be inconsistencies or duplicated requirements that may add complications and costs. In fact, in spite of the considerable complexity of the legislation, only a few areas of inconsistency or duplication have been identified by stakeholders, in terms of the objectives set and procedures used in the main related pieces of legislation currently adopted. These are explained below.

In relation to the emissions Regulations 715/2007 and 595/2009 (Euro 5+6/Euro VI) and also Regulations 443/2009 and 510/2011, there are concerns raised by some authorities and NGOs in relation to the accuracy of the measurement of air pollutant and CO₂ emissions as part of the type approval process. This is considered to have possibly detrimental effects on achieving broader EU environmental and climate change policy objectives. The annexed second case study gives consideration to the divergence of real-world emissions from those measured in type approval tests and indeed the legal obligation stemming from Regulations 715/2007 and 443/2009 to propose a new, more representative test cycle and procedure by 2013 at the latest. It also refers to the development through the UNECE of the Worldwide harmonized Light vehicles Test Procedures (WLTP) and the expectation that this will provide a potential solution to at least part of the problem. However, the case study also points to the need for further progress in areas, such as CO₂ emissions resulting from the use of air conditioning systems that will not be covered in the WLTP.

In relation to the more specific alignment of legislative provisions, it is also suggested that there is no alignment between pollutants under the Air Quality Directive (Directive 2008/50/EC) which only deals with NO₂ emissions and the Euro 5/6 Regulation that covers all NO_x. A number of Member State authorities raised concerns that the Euro 5&6/VI Regulations constraint Member States that may need to adopt additional measures in order to meet the objectives of the Air Quality Directive.

At a more practical level, a few areas of overlap with other EU provisions were indicated by specific manufacturers. An issue raised by a few manufactures is the possible overlap with the EMC (2004/108/EC) and the Machinery (2006/42/EC) Directives, in relation to those categories of vehicles - such as wheelchair accessible vehicles or trailers - that require the fitting of powered winches or lifting equipment. Such products need to be EC marked and are not covered by type approval. In certain cases it is the manufacturer of the motor vehicle that is required to go through the EC certification process when additional equipment need to be fitted in the specific vehicle.

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From a different aspect, certain categories of heavy duty vehicle with containers - including ADR (refrigeration containers) or ATP (dangerous goods containers) – are not covered by the type approval framework and require separate approval processes. Industry representatives suggest that, given that the requirements are also developed under by UN ECE WP 29, bringing them under the type approval framework would bring certain administrative cost reductions.

At the national level, the feedback from various stakeholders and desk research also identified a number of overlaps and conflict areas. Reference has already been made to some of them in section 4.2 and more detailed information is provided in Case Study 4 in Annex II. The key problematic areas identified include the conflicts with the registration process when national requirements – such as for example additional information that goes beyond the information provided in the certificate of conformity - or practices appear to pose an obstacle to placing products on the market or create additional burdens for firms. Tax regimes and incentives at the national level are often based on different criteria or use different limit values. While there is no evidence to suggest that they create serious obstacles affecting the harmonisation of the market, it appears evident that they do sometimes operate against the objective of harmonisation under a single type approval.

Reference was also by a number of stakeholders to varying requirements among Member States concerning the inclusion of certain items of equipment in vehicles (carriage requirements) – such as high-visibility vests, different numbers of warning triangles, anti-theft devices or breathalysers. These represent additional requirements which are said to mean that entry to the EU market on the basis of the certificate of conformity is not sufficient. However, discussions have indicated that in fact these are generally driving requirements and not conditions for putting the vehicle on the market.

The efficiency of type approval procedures

As well as considering if the provisions of the type approval framework are setting the right objectives in terms of their consistency with other aspects of policy and in terms of the costs that the provisions impose, it has also been important to ask if the legislation is efficient in the sense that its processes and procedures ensure that the results of the legislation are being delivered in conformity with the legislation's aims.

It has already been seen that some stakeholders have questioned whether the same interpretations are being placed on the framework's requirements by the type approval authorities and the technical services in the different countries. However, in addition, a number of stakeholders pointed to the provisions of the testing procedures used and suggested that they too needed examination.

It is clear that the testing procedures are central to the whole type approval system. It is essential that the driving cycle and the tests carried out have the confidence of all stakeholders and are accurately measuring the performance of vehicle types against the limit values established in the legislation. Without the assurance that this is indeed the case, the standing of the whole system may be brought into doubt. It is an increasing concern that the resulting emissions data may not be adequate as a tool for verifying that the environmental and climate objectives defined by EU legislation are achieved. Because of the prominence of information on fuel efficiency and CO₂ emissions in motor vehicle advertising, promotional material and manuals, a widespread perception that the 'official figures' do not mean what they say, can quickly translate into disaffection with the whole system and may undermine the credibility of other policy instruments aiming to influence consumer behaviour.

And yet, as already indicated, it is generally acknowledged that there is a discrepancy between test results and real-world conditions, especially in relation to fuel efficiency, CO₂ and NO_x emissions. This is even a reference in the legislation to the need to adapt the test procedure. In the CARS 2020 Communication the Commission announced that it 'will actively support the development and implementation of a new driving

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test- cycle and test procedure to measure fuel consumption and emissions from cars and vans that is more representative of real-world driving, taking account of the characteristics of the EU market’.

In summary, it can be seen that the test procedures are a key element of the type approval framework that have increasingly become problematic, in particular as regards CO₂ emissions and pollutant emissions. The plans to address the deficiencies are of major significance.

Measures to improve the implementation of the Directive

As part of the survey, Member State authorities and other stakeholders were asked to indicate whether additional measures are necessary to improve the implementation of the legal framework. Concerning possible measures to be taken at the EU level, 42% of the respondents among Member State authorities indicated that additional measures are not necessary while a smaller but still significant share (27%) considered that additional action would be appropriate.

Table 4.3.9 – Share of Member State authorities considering that additional measures or mechanisms introduced at a European level to support the implementation of the legal framework are necessary

| | Number | Percentage |
|--------------|-----------|-------------|
| Do not know | 8 | 31% |
| NO | 11 | 42% |
| YES | 7 | 27% |
| No response | 1 | |
| Total | 27 | 100% |

Source: CSES survey

The main theme of those asking for additional measures was the need to ensure a common interpretation of requirements among type approval authorities and enhance coordination, communication and exchange of information in order to ensure a more harmonised approach and a faster reaction in the case of non-compliance. Reference was also made to the need to coordinate with the authorities responsible for aspects outside the type approval framework, namely the registration and the periodic technical inspection authorities.

Thus, even though the existing co-ordination structures do get a positive endorsement from the majority of stakeholders, there seems to be scope for strengthening their role and improving their effectiveness. Even among those that do not consider that additional measures are necessary and focus more on the need to maintain the balance between EU and national responsibility, improvements to the existing structures are still considered important.

Market surveillance

One of the areas of debate in relation to possible changes to type approval legal framework concerns the introduction of **market surveillance** and provisions aiming to ensure that non-compliant products do not enter the market. As already described in Section 4.4, the discussions with most of the stakeholder groups indicate that that non-compliance remains an important issue even though it appears to concern primarily specific segments of the market including certain categories of components (lights and brakes above all) and tyres.

In view of the recognised weaknesses of the current system in controlling certain segments of the market, a large number of stakeholders (including Member State authorities, a number of industry associations and environmental and consumer groups) considered that market surveillance is an important missing element

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in the current type approval legal framework. It is identified as an important tool to address the presence of non-compliant products and complement the ex-ante type approval system.

But there is also an important number of industry representatives and Member State authorities that question both the relevance and the possible added-value of market surveillance measures. In their view, appropriate implementation of the current type approval procedure – with particular focus on the conformity of production and more systematic inspections – would bring the desired results. Furthermore, a key concern is that the introduction of market surveillance requirements may undermine the whole type approval process, particularly if different authorities within Member States assume the responsibility for Market Surveillance. This may lead to the introduction of additional requirements and undermine the levels of trust needed for the type approval system to work effectively. A few Member States are also against the possible integration of market surveillance into the type approval legal framework – considering it to be a separate consideration not directly related to the type approval process. Having said that, this is not the dominant view and such an approach would depart from the usual legislative practice of including market surveillance measures in the same legislation as the core Internal Market provisions.

Irrespective of the support in principle for the introduction of market surveillance, it is generally recognised, that its implementation will pose challenges for the authorities (see table 4.3.8). Almost two out of three Member State representatives suggested that this will be the case, the main concern being the additional human and financial resources required. Currently, only a few Member States allocate resources to some form of market surveillance activity. Others referred to the possible coordination problems that may arise when market surveillance is the responsibility of different authorities.

Table 4.3.10 - Do you expect market surveillance requirement to pose any challenges (Member State authorities indicating)

| | Number | Percentage |
|--------------|-----------|-------------|
| No response | 3 | - |
| Do not know | 3 | 12% |
| NO | 5 | 21% |
| YES | 16 | 67% |
| Total | 27 | 100% |

Source: CSES survey

In view of the expected challenges, a significant proportion of Member State authorities suggested that important aspects of the surveillance should be organised at the European level – in the form of targeted projects with co-ordination by the European Commission - in order to ensure a high level of co-operation and a greater sharing and more effective use of resources. In addition, it was suggested that the market surveillance activity should focus on the areas where the main problems are reported. In that respect, the general view is that the components market should be given priority. However, a few Member State authorities were opposed to anything that involved the setting of targets at an EU level and suggested that Member States should be given the flexibility to decide on the level and target of market surveillance activity depending on their specific own circumstances.

We should note that the recently adopted CARS2020 report already commits the Commission to the adoption by 2013 of a proposal to enhance the type-approval framework including provisions for market surveillance in areas where a need has been identified.

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4.4 – Sustainability

One of the intended contributions from the changes to the type approval legal framework in 2007 was to bring greater clarity and predictability to the framework and lead to simplifications and reduced costs. As has already been seen the overall developments with the move towards the reference to UNECE Regulations and the extension to other categories of vehicles has generally been welcomed and is supported by most stakeholders. However, there are also a number of references to issues suggesting that the changes have not delivered all that was expected of them.

Asked specifically about this issue, the survey respondents – primarily the Member State authorities and the technical services – adopt a moderately positive view of the legal framework's contribution to clarity, but most indicate that there has either been no change or only a limited contribution to predictability or simplification. For an important proportion of the authorities (35%) and around 20% of the technical services the changes have actually led to greater complexity – rather than a simplification of the process. As already indicated, the majority pointed to problems relating to the General Safety Regulation, which is seen as having increased the complexity of the overall framework and led to less simple architecture that appears to be more difficult to follow, especially for firms with limited prior experience and limited resources.

On the question of the costs of compliance, the majority of stakeholders tend to see either no change or an increase in costs as a result of the changes. Specific comments made in relation to this aspect focus on the costs created for smaller firms for those categories of vehicle that were not previously within the scope of the Directive.

Table 4.4.1 – Impacts of the changes to the type approval legal framework in 2007 with the introduction of the Framework Directive 2007/46/EC and the subsequent regulatory acts (% of respondents indicating)

| | No response | Do not know | Reduced significantly | Reduced slightly | No change | Increased slightly | Increased significantly |
|---|-------------|-------------|-----------------------|------------------|------------|--------------------|-------------------------|
| Clarity of the type approval legal framework | | | | | | | |
| MS authorities (n=27) | 0 | 4% | 4% | 7% | 19% | 52% | 15% |
| Technical services (n=18) | 3 | 14% | 0% | 13% | 13% | 53% | 7% |
| Manufacturers (n=10) | 3 | 25% | 13% | 0% | 0% | 50% | 13% |
| Predictability of the legal framework | | | | | | | |
| MS authorities (n=27) | 1 | 8% | 4% | 20% | 40% | 24% | 4% |
| Technical services (n=18) | 3 | 20% | 0% | 13% | 20% | 33% | 13% |
| Manufacturers (n=10) | 3 | 38% | 0% | 13% | 13% | 38% | 0% |
| Simplification of the type approval process | | | | | | | |
| MS authorities (n=27) | 1 | 12% | 8% | 23% | 35% | 15% | 8% |
| Technical services (n=18) | 3 | 13% | 7% | 21% | 27% | 27% | 7% |
| Manufacturers (n=10) | 2 | 11% | 22% | 0% | 11% | 44% | 11% |
| Costs of compliance with the type approval | | | | | | | |
| MS authorities (n=27) | 2 | 28% | 0% | 12% | 16% | 36% | 8% |
| Technical services (n=18) | 3 | 20% | 7% | 0% | 20% | 33% | 20% |
| Manufacturers (n=11) | 3 | 50% | 13% | 0% | 13% | 0% | 25% |

Source: CSES survey

Facing future needs

There has been only limited feedback provided from stakeholders in relation to the capacity of the legal framework to cope with possible challenges arising from the changing global automotive industry. This was

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because the remit of the Fitness Check led to a concentration on the legislation currently in force and its current objectives rather than on developments that are still subject to debate.

A number of stakeholders did however, extrapolate from current circumstances. Importantly, most consider that with the current structure and with the increasing role of UN Regulations the type approval system appears capable of adapting to new technological developments and to facilitating the achievement of a growing share of non-EU markets. The legal framework is considered to be flexible enough to accommodate emerging technologies that are likely to have a major effect on the market, such as natural gas, hydrogen, electric and hybrid vehicles, at least as far as the type approval instrument is concerned. There was no specific feedback in relation to the level of use and effectiveness of the provisions for the exemptions in relation to new technologies within the framework but, at least in principle, it is recognised as being an appropriate tool. A common point made is the need to avoid prescriptive provisions and requirements and to ensure that solutions adopted are technologically neutral. As indicated earlier, a few stakeholders raised concerns about legislative requirements being discussed relating to eCall systems that could end up requiring proprietary software solutions that would limit market access. In general, however, with the possible exception of the perceived prescriptive nature of the UNECE Regulation is the area of lighting, it is considered that technological neutrality has largely been achieved and the overall assessment of stakeholders in this area is clearly positive..

A more general concern arose from the possibility of a gradual information overload for the driver. A number of recent developments require a response by the driver. With the growth of multiple screens and other sources of information presented to a driver, there is an increasing prospect of drivers not being able to cope at key moments – thus raising safety concerns. There may be a limit to the extent that future developments will be able to deliver information effectively.

From a rather different point of view, one Member State authority expressed the opinion that over time there should be greater emphasis on the useful life of vehicles and, thus, on ensuring that requirements concerning new vehicles are complemented by provisions to ensure that the performance of vehicles is stable over their lifetime. Others pointed out that this could pose considerable problems for certain emerging technologies, notably electric vehicles, using batteries.

4.5 - European Added Value

Considering the question of the necessity and role of EU intervention it is almost universally agreed that action in the form of legislation at a European level was necessary. An alternative approach based on self-regulation would not have been appropriate.

From the point of view of industry, EU legislation is necessary for ensuring harmonisation in the EU market, removing national barriers and ensuring a level playing field. A number of industry associations referred to earlier problems resulting from different national requirements. In fact, large manufacturers consider that the structure and global scope of the industry justifies eventually moving to an international legal framework. Thus, the move towards establishing regulation at a global level under the aegis of the UN is generally thought to be necessary and positive. The leading and co-ordinated role that EU Member States play in the current UN arrangements is thought to work positively for the EU, though it is appreciated that as the number of countries acceding to the UN Agreement increases, this position will be increasingly challenged. From their side, environmental and consumer groups and most Member State authorities also consider it necessary to ensure that certain levels of safety and environmental protection are guaranteed at the EU level.

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At the same time through, it is recognised that there is still scope for maintaining national regimes to accommodate national conditions and provide the necessary flexibility – particularly in relation to small manufacturers - as long as these do not create loopholes and are not detrimental to the overall policy objectives. The provisions on national small series or individual vehicles are, at least in principle, accepted as rather appropriate.

Self-regulation

Despite the various shortcomings pointed out by some stakeholders there is almost no support for the use self-regulation as an alternative system to the type approval. It is not seen as a realistic alternative by almost all stakeholders. Among industry stakeholders there has been only one suggestion made of the possible use of self-regulation in relation to emissions from air-conditioning systems.

The example of the failure of the earlier voluntary agreements to deliver the necessary improvements in CO₂ emissions is seen as a clear indication of the problems with such an approach. The costs associated with approaches based on self-regulation can easily exceed those arising from a regulatory approach, especially if the latter is governed by the principles of smart regulation. In addition, a key question, raised by a number of industry representatives, is the capacity of the public authorities to carry out monitoring and enforcement, and thus ensure fair competition.

4.6 – Utility

From the point of view of environmental, safety and consumer representatives, it is generally accepted that the legal framework makes an important contribution to ensuring that high standards of vehicle safety apply to all vehicles in the market, thus contributing to the overall level of safety for consumers and citizens. While market forces have an important role and consumer purchase decisions are including more safety considerations^{84 85} they are not considered sufficient to bring the desired results across the whole vehicle fleet and therefore a regulatory approach is seen to be needed. Although not considered as particularly relevant from the industry side, some stakeholders suggest that the high vehicle safety standards also represent a selling point for the automotive industry, contributing to its reputation for technological sophistication and supporting sales in global markets.

In relation to the improvement of environmental performance and the respective impact on pollution and climate change, the recent data (e.g. TERM 2011 report) do indicate a gradual move towards cars with lower levels of CO₂ emissions and a reduction of NO_x and PM from road transport, even though these are not as much as initially expected⁸⁶.

In terms of meeting the needs and expectations of citizens, therefore, and even after taking into account the various qualifications that have been set out in preceding sections, the type approval framework is generally delivering what is required. However, to properly assess this fundamental aspect of the utility of the legislation, in the spirit intended in a Fitness Check, it is not only a matter of asking whether the legislation has managed to achieve its objectives, but also of considering how dynamic is the relationship between those responsible for the legislation and the community that it serves. In other words it is not just a matter

⁸⁴ CEA (2011), Quality criteria for the safety assessment of cars based on real-world crashes – How important is vehicle safety in the new vehicle purchase process,

http://ec.europa.eu/transport/roadsafety_library/publications/sarac2_4.1.pdf

⁸⁵ KPMG (2012), KPMG's Global Automotive Executive Survey 2012,

<http://www.kpmg.com/GE/en/IssuesAndInsights/ArticlesPublications/Documents/Global-automotive-executive-survey-2012.pdf>

⁸⁶ EEA (2011), 2011 TERM report

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of considering if the legislation has managed to do the right thing, but also of asking how the management of the legislation reacts dynamically with the evolving needs of citizens, consumers and manufacturers and other stakeholders in the industry.

This more dynamic interaction is partially a matter of having the appropriate institutional framework, but also of being able to have access to and make use of a sound evidence base. As far as the latter is concerned, the evaluation framework, in a broad sense, has developed considerably in recent years. As well as the current Fitness Check, there have been a series of impact assessments accompanying legislative proposals and broader studies aiming to assess the likely impacts of legislation within the type approval framework. These include:

- Proposal for a Regulation on the sound level of motor vehicles: SEC(2011)1505
- Proposal for a Regulation concerning type-approval requirements for the general safety of motor vehicles: SEC(2008)1908
- Regulation on motor vehicles emissions: SEC(2005)1745
- Analysis for the development of legislation on child occupant protection (July 2010)
- Accident analysis for the development of legislation on frontal impact protection (July 2010).

In terms of ex-post evaluation, there has been the 'Ex-post evaluation report on enhancing the implementation of the Internal Market Legislation relating to motor vehicles' completed in June 2011.

There has also been the gathering of information through legislative provisions, such as the monitoring and reporting of average emissions required in Regulations 443/2009 and 510/2011.

In terms of engagement with stakeholders, the convening of the High Level Group CARS 21 has created a major forum for discussing critical elements for the future of the industry on two occasions now – in 2005 and in 2011-12. This has been supplemented by a series of public consultations:

- 2011 - Consultation on Complementary provisions to Euro 5/6 and Euro VI.
- 2010 - Consultation on enhancing the implementation of the internal market for motor vehicles.
- 2008 - Consultation of interested stakeholders on the CARS 21 mid-term review.
- Public Consultation on Future Regulation addressing:
 - Reduction of CO2 Emissions of Light-Duty Vehicles by More Efficient Mobile Air Conditioning Equipment and Gear Shift Indicators
 - Safety Regulation of Mobile Air Conditioning Equipment.
- 2007 - Public Consultation on outline proposals for a new Regulation of the European Parliament and of the Council on Advanced Safety Features and Tyres.
- Public consultation on the future Euro VI emission limits for heavy duty vehicles.
- 2006 - Stakeholder consultation on a preliminary draft proposal regulation on hydrogen powered motor vehicles.
- Consultation of interested stakeholders on the CARS 21 final report.
- 2005 - Stakeholder consultation: Euro 5 emission limits for light duty vehicles.
- Public Consultation: The Automotive Regulatory Framework of the Next 10 Years.

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- Stakeholder Consultation on a preliminary draft proposal for a regulation on the protection of pedestrians.

Furthermore it has been proposed in the recent CARS 2020 Communication from the Commission, to extend this open engagement with stakeholders. The constructive discussions in the CARS 21 High Level Group have highlighted the usefulness and the need to continue the dialogue among major stakeholders. It therefore proposes to launch a CARS 2020 process to monitor and take stock on a regular basis of the implementation of the earlier CARS 21 recommendations and the Action Plan. In addition, dedicated expert meetings are proposed that could be set up on an ad-hoc basis with a view to enhancing the knowledge base of the Commission and broaden stakeholder consultation.

The state of the dynamic interaction with stakeholders appears to be good and improving and, although there can always be improvements in the knowledge base, this interaction and the subsequent development of policy appears to be founded on a sound knowledge base.

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In this section we present the conclusions of the study together with a set of relevant recommendations. We also include recommendation for a set of indicators to monitor the fitness of the legal framework.

5.1 - Conclusions

The overall picture that has emerged from the investigations is that **the EU type approval legal framework is appropriate for achieving the main goals of harmonisation, effective operation of the single market and fair competition**. Most stakeholders, both inside and outside the EU, agree that the legislation has eliminated national differences with positive results, particularly in the segments beyond passenger cars (M1 category) that were not covered previously. For these categories of vehicle the feedback suggests that – despite problems in the implementation – the extension of the scope has been beneficial. Furthermore, the provisions of the Euro 5/6 and Euro VI Regulation on repair and maintenance information are seen to be an important step in the creation of a more level playing field in the aftermarket, even if there are concerns by some of those involved that the requirements are not properly enforced.

There is **no support for adopting a radically different approach, such as self-regulation**. The earlier negative experience is seen as evidence that this type of approach is limited in its capacity to attain agreed objectives, particularly in relation to environmental impacts. There is also **no support for adopting a self-certification system** similar to that of the United States which is seen to create much greater uncertainty, require many more ex-post market controls and involve a higher level of litigation risk. It is also difficult to envisage such an approach fitting in with European practice and the structures of the legal system. From a cost side, there are strong indications that despite higher up-front costs, overall the EU system is a cheaper system than that of the US, once insurance costs have been taken into account.

In relation to the broader range of objectives covered under the type approval legal framework beyond the harmonisation of the internal market, there is generally **agreement on their relevance and appropriateness and they are mostly seen as complementary**. Currently concerns about trade-offs between environmental and safety aspects or the competitiveness of the industry do not appear to be prominent and, although the industry does point to certain technical and business limitations in addressing such a wide range of objectives, no particularly problematic areas have been identified with the current legislation.

However, from the practical side, with respect to any future extensions of the legal framework, there are concerns about the growing complexity of a system that is already difficult for some stakeholders to follow. In that respect, the **changes in recent years to the legal framework – and particularly the introduction of the General Safety Regulation in 2009 – have so far complicated rather than simplified the overall structure**. While we are still in a transition period and there is a certain learning process necessary on all sides, stakeholder comments point to a fundamental feature of the structure created (the ‘framework within a framework’) that appears to cause confusion and increase complexity for a broad range of stakeholders including Member State authorities. This is particularly a problem for small firms with limited resources but more generally for firms in almost all sectors.

It is evident from the experience of the General Safety Regulation that **the simplification process cannot be judged on the basis of the number of Directives repealed**. It requires a much more detailed process in examining the provisions of any replacement legislation and, especially when the provisions are inherently complex, a major emphasis on communication to assist those affected to understand the nature of the requirements.

In communicating the central objectives and requirements more clearly, attention could usefully be paid to the architecture of the type approval and related legislation affecting motor vehicle manufacture. There is a certain amount of ‘tidying up’ of the provisions within the type approval framework that is necessary, so that all core provisions of the legislation are found within the Framework Directive and subsidiary legislation

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clearly addresses applications in particular areas, but there could also be a clearer statements of the respective roles of the range of policy instruments used, so that the requirements of the major supply-side instrument – the type approval legislation can be seen alongside the demand-side measures within the integrated policy framework called for by CARS 2020.

More detailed points on the effectiveness and efficiency of the measures in meeting policy objectives can be summarised as follows:

- The legal framework makes a positive contribution to the development of innovation either by pushing industry to meet more demanding standards (mainly in the environmental area) or by extending the market base for existing technologies and generating economies of scale (e.g. in relation to advanced technology systems). There are differences of opinion about how demanding the current requirements are and the significance of trade-offs between environmental, safety and other performance requirements. The evidence does not suggest major problems for manufacturers of passenger cars in meeting the different requirements but this is also a reflection of the significant level of investment in R&D by the industry.
- Generally speaking, the requirements introduced can be characterised as technologically neutral in that they do not favour specific technologies or create technical barriers to market access.
- The main and key contribution of the legal framework in terms of promoting access to the global markets comes from the direct adoption of the UNECE Regulations. This supports a process that has been under way for quite some time now and is being extended to broader categories of vehicles.
- In relation to vehicle safety, the requirements are generally considered to have had a clear and positive effect by making the use of certain safety technologies mandatory and applying them more extensively across the vehicle fleet. There have definitely been a decreasing number of road accidents and fatalities across Europe, though it is not possible to determine the precise contribution of the legislation to this development, given the large number of other considerations in play.
- The introduction of Euro 5 requirements, and even more so the Euro 6 requirements, are generally considered to have had a positive impact on reducing air pollutant emissions and the same is expected of the Euro VI requirements for heavy duty vehicles. Existing data on air pollutant emissions indicate positive developments in terms of emissions from some categories of vehicle. However, it is also generally acknowledged, and this is supported by the available evidence, that there are weaknesses in the test cycle that leads to real life NO_x emissions being higher than the regulatory limits and having a knock-on effect on air quality targets.
- The contribution to the reduction of CO₂ from the type approval legislation is largely indirect through its contribution to the implementation of the Regulations 443/2009 and 510/2011 on average CO₂ emissions. Again, problems with the test cycle and test procedures have an impact on the effectiveness of these Regulations.
- The divergence between test and real world conditions is of central importance for the type approval framework, threatening to undermine its credibility. A timetable for addressing the issue has been set by the recent CARS2020 Communication.
- The current requirements for tyre noise are generally considered to be appropriate and to have the potential to bring measurable improvements in combination with the Tyre Labelling Regulation. Specific weaknesses are still identified – including the exclusion of retreaded tyres and concerns about a potential transfer of the burden of future vehicle noise requirements from vehicle to tyre manufacturers.
- It is not possible to assess the contribution of the legal framework to the promotion of alternative fuels. Existing penetration of alternative fuels is very low but the framework has only a small role to play along with a range of other considerations. For industry its potential role in facilitating the harmonisation of the market and increasing confidence appears to be well-recognised.

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- There has been limited comment on the role of the legal framework in reducing waste from ELV. Data from Member States indicate an increase in the level of recycling and reuse and recovery and reuse of motor vehicles but with many still missing the targets set by the ELV Directive. The limited information received indicated that the Recyclability, Reusability and Recoverability Directive for motor vehicles is a key mechanism in the achievement of these objectives, but little was said, for instance, on the costs involved.

Apart from the problems with the test cycle, the **main weakness of the legal framework from the practical side is the perception of a significant variation in the interpretation of requirements among Member States**. There have been examples provided in relation to various parts of the legislation, but the most commonly cited area is the Conformity of Production. The feedback suggests that the degree of strictness with which periodic tests of the CoP are carried out varies greatly and in certain cases it has been reported that there is essentially no CoP testing. This could have a direct and negative impact on the level of non-compliant products in the market, although with the exception of tyres, there has been little reference to any evidence of this effect, – but clearly there is a danger that it could lead to unfair competition. The practice of “type approval hopping” is encouraged by such differences but there is no indication that this is a widespread phenomenon.

More generally, the reported levels of non-compliance relate to around 10% of products and seem to concern only specific segments including the tyre and the components aftermarket.

The existing coordination structures – including the TAAM and TAAEG – do have a positive role in promoting a certain level of common understanding among Member State authorities and in the resolution of issues. Their position is generally supported, but they are not regarded as being a decisive instrument in delivering a uniform approach to the implementation of the framework.

Despite the general support for the adoption of the UNECE Regulations and the development of global solutions, the UNECE process, also has certain implementation problems. These primarily concern the slow speed of the adoption process for Regulations which along with a brief transition period, can have a real impact on time to market. Inconsistencies with earlier Directives and cross references are also reported but do not appear to be a key concern. What is more important is that the development of UNECE Regulations is resource intensive and very difficult for both SMEs and representatives of consumer groups and NGOs to follow. Member State authorities and Commission officials also report problems in following the multiple working groups.

Another area of concern is **the recall process**. While manufacturers consider the process to be generally effective and appropriate, the recall processes applied are not standardised, different criteria are used and vehicles recalled in one country are not recalled in others, leading to different levels of consumer protection. The process can also be slow when the type approval has taken place in another country.

The implementation and effectiveness of the legal framework appears to be constrained, in certain instances, **by national requirements and practices** mainly relating to the registration process. Additional data requests that go beyond the information provided in the Certificates of Conformity appear to be the most important, causing an additional administrative burden in some countries and for certain categories of vehicle. However, while troubling for the firms affected, the research does not suggest that these are widespread problems and there is no evidence that they lead to serious distortions in the operation of the market. Differences in the tax regimes with different criteria and limit values based on engine size/horsepower or the level of CO₂ emissions appear, may be more serious, according to some manufacturers, and can operate against the harmonisation of the market.

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The administrative costs to industry, an estimated €0.7-1 million per type approval of a single model - including human resources, testing and type approval fees - are a rather small fraction of the broader compliance costs. They also represent a very small share of the total annual turnover of large OEMs and, given the number of vehicles registered, only a small fraction of the cost per vehicle. In contrast, the costs for small size producers of trailers or trucks, special purpose vehicles or bodybuilders appear to be in the range of €50,000-100,000. This represents a higher share of their annual turnover and, given their limited prior experience, often requires a much greater effort and resources input in relative terms. For these firms, administrative costs are most often more important than the costs incurred in ensuring compliance.

In terms of the broader costs, the analysis indicates a significant **variation in the resources allocated by Member States** to support type approval, with a small number of countries – those that also have the greatest share of type approval activity - allocating more than 150 full time equivalents (FTE) for policy supervision and coordination, type approval and conformity of production activity. The available data indicate an average allocation of 1 FTE to type approval tasks for every 9 ECVVTA type approvals but with countries with limited type approval activity having only a few resources allocated. Member States suggest that additional resources are necessary to support type approval activity, including appreciable resources for explaining the system to smaller manufacturers, but overall resource constraints do not appear to be a major bottleneck or weakness in the system. However, when formal market surveillance requirements are introduced, currently available resources will not be sufficient to respond.

The flexibility provided by the introduction of alternative EC and national small series and individual vehicle approval systems is, in principle, appropriate to reduce the costs for small firms, many of which often produce only a small number of vehicles and only sell their products in national markets. However, firms in a number of countries appear not to perceive the national small series as particularly cost-effective and the data available suggest a rather limited use of this option. The analysis of cost data indicates that that the upper limits set for the use of NSSTA in certain categories (primarily the 75 units for M1 vehicles) makes it preferable to the use multiple individual vehicle approvals.

The introduction of **market surveillance** is generally accepted by stakeholders as a necessary mechanism in addressing the presence of non-compliant products in certain market segments. However, concerns about the availability of resources to implement market surveillance properly and the recognition that the problem with non-compliant products tends to be specific to certain product categories, leads a number of Member State authorities to suggest that targeted campaigns co-ordinated by the European Commission represent the most appropriate market surveillance solution. At the same time though, there are concerns about the possible undermining of the type approval system, co-ordination issues and the possibility of additional requirements. The main point is that market surveillance should operate in a complementary way to the type approval system, which should remain the sole mechanism for accessing the market.

Looking into the longer term viability of the system, there is confidence that through adaptations and changes to legislation the type approval system will be able to address technological developments, even taking into account the complicated nature of the automotive sector and the various policy objectives. There are some concerns about the effectiveness of the TCMV and MVWG in terms of the development of the legal framework – possibly again a reflection of the limited resources available – but overall there is a positive assessment of their role in that respect. Certain questions have also been raised concerning the impact of changes resulting from the Lisbon Treaty on the capacity of the TCMV to respond to issues that go beyond the mandate from the Council and the Parliament. In such cases new legislation – with all the possible additional delays this may entail may be the only course.

It is almost universally held that the type approval framework had to be agreed at a European level and should increasingly be extended to a global level through the UNECE processes, even though the latter could benefit from certain reforms. Thus, a high level of European added-value is perceived. And, although the

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recent proposals in the CARS 2020 Communication on the future governance of the legislative process relating to the motor vehicle industry came too late to be discussed with stakeholders, they clearly welcomed the CARS 21 process and the opportunities provided by various public consultations

5.2 - Recommendations

The analysis suggests that there is clearly no need for a major overhaul of the type approval legal framework structure. The basic principles of the legal framework are appropriate and fit-for-purpose in achieving the major objective of the harmonisation and effective operation of the Internal Market. The framework also has the capacity and the mechanisms to adapt to technological developments.

There are no areas currently under the legal framework where the main stakeholders consider that a self-regulatory approach would have been preferable.

There has been an attempt to assess the effectiveness of specific requirements and the respective limit values. However, at a broader level we consider that there is sufficient evidence that demanding limits and requirements have made a positive contribution to technological development and innovation, particularly in those areas – such as in the case of air emissions and noise – where consumer demand and market forces cannot bring results on their own. What is more important is that there is a stable framework – including the measurement and monitoring methods with long term targets and appropriate transition periods and provisions that they are technology neutral.

The principal recommendations are therefore aimed at improving the existing framework:

- The architecture of the type approval framework can be improved in a number of ways, while maintaining the essential provisions:
 - The position of type approval legislation as a major supply-side instrument within the ‘integrated’ policy framework, advocated in CARS 2020, should be made clear through a definitive statement of the relative contributions to be expected from the supply-side instruments – principally those in type approval legislation - and demand-side policies – such as financial incentives or labelling schemes.
 - a ‘tidying-up’ of the type approval legislation is needed to make it easier to understand and to provide a more logical structure to the elements that have accumulated in a series of legislative acts but also to make future changes and additions less complicated.
- The objective of simplifying the legislation should continue to be pursued, but lessons should be learned from the experience of developing the General Safety Regulation. In particular, simplification is more than simply repealing existing legislation. It requires the perspective of the user to be central to the provisions that are made.
- With legislation as complex as the type approval framework, effective communication is essential, to help users, and especially smaller manufacturers being brought into the scope of the legislation for the first time, to understand what is required. Improving the structure of the legislation can contribute to this effective communication by making it easier to explain.
- There is a broad consensus on a need for a reform of testing procedures so that they reflect real world experience more closely. Given that these procedures are central to the credibility of the type approval system, a high priority should be given to achieving a satisfactory reform.
- Similarly, parallel efforts need to be made to resolve related issues such as taking account of the NO_x and CO₂ emissions resulting from air conditioning and other electrical systems

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- The practical implementation of the legal framework should be improved by ensuring consistency in the approaches adopted by Member State authorities and agencies. The mechanisms for coordination and information exchange among type approval authorities are already in place but it is necessary to strengthen the coordination between the TAAEG and TAAM and ensure that the issues raised are properly addressed within a reasonable timeframe. TAAM does not provide any form of legal certainty to outside stakeholders so it is important that these are taken-up and addressed in the TAAEG. It may also be helpful to have a guidance document developed jointly by the Commission and the type approval authorities that will clarify the basic principles to be followed in each process.
- The weaknesses in safeguard clauses and in particular the recall system need to be addressed, by making it easier for vehicles recalled in one Member State to be recalled elsewhere..
- Given the importance for the industry of the UN ECE process and its Regulations and, at the same time, the difficulty that various actors have in effectively participating and properly following the UN ECE process, the Commission and the Member State authorities should develop ways to keep interested parties informed and make their participation more effective.
- At the same time given concerns about the length of UN ECE processes, the Commission should actively promote proposals aiming to reduce delays, especially those relating to non-essential parts of the process.
- It is important to maintain a certain level of flexibility to accommodate national circumstances with no evident EU wide impact.
- The introduction of national type approval scheme (NSSTA) and individual vehicles approval provide the necessary flexibility and this can be particularly useful for many SMEs. A re-examination of the upper limits set for some of the categories could be useful in increasing this flexibility and making the NSSTA more attractive for some categories of manufacturers, provided that it does not create loopholes and have a detrimental effect on achieving the policy objectives
- The need to re-examine and revise the multi-stage type approval process is already recognised. This could include a review of the possible scenarios that are applicable to the different sectors that make use of the multi-stage approach, identifying areas where administrative or compliance demands are made on second-stage manufacturers and whether these are disproportionate or unrealistic. In relation to the expected adoption of market surveillance, it is recommended that its practical implementation should give priority to targeted pan-European cooperation projects with Commission coordination, focusing on areas where there are acknowledged problems and supporting enforcement with facilities for exchanging information and developing good practice. An on-line tool or mechanism whereby firms or other stakeholders can effectively report cases of non-compliance should also be considered.

Finally, we consider that the Commission needs to develop a comprehensive monitoring and reporting tool that will include a number of key output and result indicators, to support an on-going assessment of the legislation as a policy instrument and strengthen the process of evidence-based policy making. A more detailed description of this proposed tool is provided in the following section.

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5.3 - Recommendations for a set of Indicators to monitor the fitness of the legal framework

Basic principles

The selection of indicators should take into account the guidance of the Commission and DG ENTR that has already been established to support the development of such frameworks. This includes the ‘Operational Guidance on Indicators’ (released in February 2010) and the framework offered by the ‘Operational Guidance on Formulating the Objectives and Indicators of the Management Plan’, (released in October 2010). Guiding the formulation of the indicators should be the **recognition of the Intervention Logic** which sets out the objectives, implementation mechanisms and intended results of the policy or measure that is being assessed. In addition, the Secretariat General’s ‘Practical Guide on Objectives and Indicators’ emphasises the need for a practical approach to the definition of objectives and indicators and sets out a number of helpful examples of how this approach can be applied in particular circumstances. The Commission’s guidance also emphasises that this process needs to be accompanied by the **promotion of ownership** - engaging staff in discussion of the formulations to be used – and it should be kept simple, practical and tied to results-based management. Thus, in the case of the Motor Vehicle Type Approval legislation, the monitoring system to be deployed should ideally be even more broadly-based, commanding the support of the main industry groups and other stakeholders.

At the same time, the development of indicators should **avoid over-elaboration**. The system should not be so complicated that it is difficult to understand and, as well as being relevant to those using them, the indicators employed should be meaningful to an external audience, which will include non-experts. In addition, the **costs of measurement of indicators should also be contained**, and as far as possible, make use of existing or easily available indicators. This point is also relevant in that the Commission services have made it clear that in current circumstances resources for primary data collection are not available.

An important consideration in designing monitoring and indicator systems is to ensure that they are **compatible with other planning and monitoring systems established within the Commission** and more particularly within the Directorate General. This is necessary to ensure consistent planning and reporting mechanisms, but also to help economise on data collection. For example, the 2012 Management Plan for the Enterprise and Industry Directorate General sets out a series of general and specific objectives that are valid for the type approval legislation and refers to corresponding indicators.

At a practical level, in designing a monitoring system and establishing indicators, it helps to frame two central questions:

- What is the specific legislation or programme under consideration trying to achieve?
- What can best illustrate the extent to which the objectives set are in fact being achieved?

In responding to these questions there are a number of detailed considerations that should be taken into account in addition to the general orientations that have been outlined. Standard monitoring and evaluation practice emphasises that the objectives to which the indicators are to relate should be clearly expressed and **conform to the SMART criteria** (Specific, Measurable, Achievable, Relevant and Time-bound) in accordance with standard evaluation good practice. The indicators themselves should conform to the **RACER criteria** (Relevant, Accepted, Credible, Easy and Robust).

Following this logic, indicators should be developed with due regard to the principle of proportionality, they should be easy to measure and be kept as simple as possible. There should be consideration of the administrative burden imposed, the time and resources necessary for the collection of the information needed and the possible data constraints. As a result:

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- Indicators should not disrupt the measures they are trying to promote;
- Existing indicators and existing data should be used where possible;
- There should not be too many indicators. They are meant to assist understanding of how policy is developing, not obscure it in a mass of indigestible detail;

It is also worth remembering that indicators are not intended of themselves to give a complete picture. They are intended to ‘indicate’ important developments and sometimes will only do so indirectly, when it is not possible to capture the direct effects. The proposed indicators should contribute to the effective communication of the achievements of EU policy, illustrate its responsiveness to the needs of industry and the broader community and contribute to the effective discharge of the requirements of accountability on the part of those responsible for implementing the legislation. Finally, it is important to recognise that for indicators to have meaning they need to be stable over time, establishing continuity in the monitoring system.

Type Approval Indicators

On the basis of the above principles, we have developed a set of indicators that reflects the main policy objectives identified in intervention logic and examined in the Fitness Check. This has meant that, although some output indicators are proposed, they mostly relate to results and longer-term impacts.

In relation to the **competitiveness of the EU industry** we consider that some of the indicators included in the 2010 Industrial Policy Communication⁸⁷ and the annual Competitiveness Reports⁸⁸ could be used to reflect ultimate impact objectives. They include indicators reflecting the overall competitiveness of the different segments of the automotive sector such as growth rate of the industry production index, number of persons employed, growth rate of labour productivity and⁸⁹ relative trade balance or the revealed comparative advantage (RCA)⁹⁰.

All the above indicators are generally available from Eurostat – or can be calculated on the basis of Eurostat data - covering the motor vehicle sector (NACE C29) and the basic subsectors. Data collected for the Competitiveness Reports relate to many of the same variables. Furthermore, given their origin and the ease with which they can be collected, they can be said to comply with all of the RACER criteria for judging indicators. These indicators represent important aspects of the overall performance of the motor vehicle industry that is influenced by many factors beyond the legislation. Thus, they should be considered as providing an overview of the context in which the legislation is being developed.

In relation to the simplification of the legal framework the set of indicators proposed can only partly reflect the overall objectives. Many relevant aspects – such as the perceived simplicity or complication of the legal framework or the resources required – would require survey data. Other indicators, included in those proposed below – such as number of UNECE Regulation adopted - are also relevant and capture some parts of the specific objective. Sometimes the indications are indirect. For instance, the evolution in the number of type approvals of different types particularly in relation to the category of vehicles or special purpose

⁸⁷ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘An Integrated Industrial Policy for the Globalisation Era Putting Competitiveness and Sustainability at Centre Stage’ COM(2010) 614

⁸⁸ The latest report is : Commission Staff Working Document ‘European Competitiveness Report 2012’ SWD(2012)299 final

⁸⁹ An alternative indicator given is ‘Labour productivity per hour worked, annual growth rate (%)’

⁹⁰ Defined as: (Exports-Imports)/(Exports+Imports)

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vehicles – and possibly the balance between the different types – could indicate the level of confidence to the system and provide a first signal as to whether manufacturers consider it simple or complicated. Data on the total number of type approvals – and the use of the various alternative types – were not generally available during the course of the study but national authorities do have such information

Turning to the objective of the harmonisation and effective operation of the internal market the proposed set combines indicators reflecting the efficiency of various mechanisms – such as the recall process, number of refusals of TAs and, assuming that market surveillance will become mandatory and better coordinated, data on the level of non-compliant products identified. A number of aspects relating to the effectiveness of existing mechanisms cannot be captured by indicators based on easily available data. Considering possible results or impacts indicators on the level of intra-EU trade of vehicles and components, the number of manufacturers in the different segments that are active and the evolution of prices can provide signals that can possibly be related to problems arising from the type approval legal framework.

It may also be appropriate to have indicators for specific parts of the market, such as one relating to the level of competition in the after-sales market. If this is to be adopted, there would need to be further consideration of the most appropriate indicator and particularly what is feasible in terms of data collection, but an initial suggestion is made. For the safety and environmental policy objectives, there is a number of indicators already used by DG MOVE, DG ENV and DG CLIMA and thus tested and generally accepted, for which data are available (e.g. number of fatalities, evolution of different types of emissions related to road transport or specific vehicle types). They reflect expected results or impacts of the requirements arising from the different pieces of legislation although they also refer to direct outputs – to the extent that they refer directly to the data provided through the type approval process. Some of these indicators – such as the level of traffic noise in urban areas or the air pollution levels – were also proposed in the relevant impact assessment studies.

The table below, then, presents the proposed set of indicators showing the objective each indicator is related to, the type of evaluation question covered, the nature of the effect, the data source and an initial assessment as to whether it fulfils the RACER criteria.

Conclusions and recommendations

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Table of indicators for monitoring of type approval legal framework

| Policy objective | Indicator | Evaluation Criterion | Nature of Effect | Data source | RACER ⁹¹ | | | | |
|---|--|-------------------------|------------------|-----------------------------|---------------------|---|---|---|---|
| | | | | | R | A | C | E | R |
| Competitiveness of automotive industry | Automotive industry production index, annual growth rate (%) by sub-sector | Relevance/effectiveness | Impact | Eurostat | Y | Y | Y | Y | Y |
| | Number of persons employed in the different segments of the automotive sector, annual growth rate (%) | Relevance/effectiveness | Impact | Eurostat | Y | Y | Y | Y | Y |
| | Labour productivity per person employed in the different segments of the automotive sector, annual growth rate (%) | Relevance/effectiveness | Impact | Eurostat | Y | Y | Y | Y | Y |
| | Relative trade balance of the different segments of the automotive sector (RCA index) ⁹² | Relevance/effectiveness | Impact | Eurostat | Y | Y | Y | Y | Y |
| | Number of type approval exemptions for new technologies/new concepts | Efficiency | Output | TAA authorities | Y | Y | Y | Y | Y |
| Simplification of legal framework | Number of amendments to Framework Directive and Regulatory acts | Efficiency | Output | DG ENTR | Y | Y | Y | Y | Y |
| | Number of UNECE Regulations adopted | efficiency | Output | DG ENTR | Y | Y | Y | Y | Y |
| | Total number of type approvals according to different types (ECWVTA/ECSSTA/NSSTA and IVA) | Efficiency | Result | TAA authorities | Y | Y | Y | Y | Y |
| Harmonisation and proper operation of Internal Market | Number of type-approvals refused or withdrawn | Efficiency | Output | TAA authorities | Y | Y | Y | ? | Y |
| | Number of infringement cases to Member States | Efficiency | output | TAA authorities | Y | Y | Y | ? | Y |
| | Number of RAPEX notifications for motor vehicles | Efficiency | Result | RAPEX Database | Y | Y | Y | ? | Y |
| | Level of non-compliant motor vehicles and components identified in market surveillance activities | Efficiency | Result | Member States ⁹³ | Y | Y | Y | Y | Y |
| | Level of intra-EU trade of motor vehicles and components (volume/value) | Effectiveness | Result | Eurostat | Y | Y | Y | Y | Y |
| | Total number of individual manufacturers in the different market segments | Effectiveness | Result | DG CLIMA ⁹⁴ | Y | Y | Y | Y | Y |
| | Evolution of price index of motor vehicles | Effectiveness | Impact | Eurostat | Y | Y | Y | Y | Y |

⁹¹ Relevant, Accepted, Credible, Easy, Robust

⁹² $RCA = (E_{ij} / E_{it}) / (E_{nj} / E_{nt})$ where: E Exports, i Country index, n Set of countries, j Commodity index, t Set of commodities

⁹³ Expected to be available from market surveillance reports

⁹⁴ Data based on submission for compliance with Regulation 443/2009 on average CO2 emissions from vehicles

Conclusions and recommendations

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| Policy objective | Indicator | Evaluation Criterion | Nature of Effect | Data source | RACER ⁹¹ | | | | |
|--------------------------------------|--|----------------------|------------------|-----------------------------------|---------------------|---|---|---|---|
| | | | | | R | A | C | E | R |
| | Number of enterprises in (segments of) the after-sales market | Effectiveness | Result | Eurostat Industry associations | Y | Y | Y | Y | Y |
| Increase road and vehicle safety | Evolution of road safety indicators (number of fatalities, severe and slight injuries for vehicle occupants, pedestrians and cyclists) | Effectiveness | Impact | DG MOVE CARE Database | Y | Y | Y | Y | Y |
| | Share in the total motor vehicles fleet fitted with advanced safety systems covered by the legislation (e.g. ESR, AEBS, LDW) | Effectiveness | Result | MS market surveillance | Y | Y | Y | Y | Y |
| | Average level of CO ₂ emissions from new motor vehicles in the EU (gCO ₂ /km) | Effectiveness | Result | DG CLIMA/EEA | Y | Y | Y | Y | Y |
| Minimise CO ₂ emissions | CO ₂ emissions from road passenger and freight transport in Europe | Effectiveness | Impact | EEA | Y | Y | Y | Y | Y |
| | Proportion of vehicle fleet meeting Euro 5/Euro 6/Euro VI standards | Effectiveness | Result | EEA (TERM 34) | Y | Y | Y | Y | Y |
| Minimise air pollutant emissions | Average level of type approved values of NO _x , HC, SO ₂ emissions from the different categories of motor vehicles | Effectiveness | Result | EEA | Y | Y | Y | Y | Y |
| | Emissions of air pollutants (CO, HC, NO _x , PM) from road transport | Effectiveness | Result | EEA (TERM 003 indicator) | Y | Y | Y | Y | Y |
| | Evolution of emissions of CO, HC, NO _x , PM per passenger-km | Effectiveness | Result | EEA | Y | Y | Y | Y | Y |
| | Level of road noise and total environmental noise in urban areas | Effectiveness | Impact | EEA | Y | Y | Y | Y | Y |
| Reduce tyre/Road noise emissions | Evolution of exposure to and annoyance by traffic noise | Effectiveness | Result | EEA (Term 05) | Y | Y | Y | Y | Y |
| | Average values of tyre noise for the different categories of tyres type approved | Effectiveness | Output | Member States | Y | Y | Y | Y | Y |
| | Level of penetration of different categories of alternative fuels (share of cars registered that use alternative fuels) | Effectiveness | Result | EEA | Y | Y | Y | Y | Y |
| Promote the use of alternative fuels | % share of renewable energy in fuel consumption of transport by EU-27 Member State | Effectiveness | Result | EEA | Y | Y | Y | Y | Y |
| | Average values of recycling/reuse/recovery of motor vehicles according to type approval values | Effectiveness | Result | Member States | Y | Y | Y | Y | Y |
| Waste reduction from ELV | Rate of recycling/reuse and recovery/reuse in total ELV waste | Effectiveness | Impact | Eurostat | Y | Y | Y | Y | Y |

Interview programme

1

ANNEX 1 - INTERVIEW PROGRAMME

EU level

Commission officials

| | DG | Unit | Area of expertise |
|---|-------|------|--|
| 1 | ENTR | B4 | Sustainable Mobility and Automotive Industry |
| 3 | ENV | C3 | Industrial Emissions, Air Quality & Noise |
| 5 | ENV | C2 | Waste management – End-of Life Vehicles |
| 6 | CLIMA | C2 | Transport and Ozone |
| 7 | MOVE | C4 | Road safety |

Stakeholders⁹⁵

| Name of the association | |
|--|---|
| Industry associations | |
| 1 | AECC – Association for Emissions Control by Catalyst |
| 2 | ACEA – European Automobile Manufacturers Association* |
| 5 | APRA - Automotive Parts Remanufacturers Association |
| 7 | BIPAVER - The European Retread Manufacturers Association |
| 8 | CEA - European insurance and reinsurance federation |
| 9 | CECRA - European Council for Motor Trades and Repairers |
| 10 | CEFIC - European Chemical Industry Council |
| 12 | CLCCR - Liaison Committee of the Body and Trailer Building Industry |
| 13 | CLEPA - European Association of Automotive Suppliers* |
| 14 | CONCAWE - Conservation of clean air and water in Europe |
| 15 | ETRMA – European Tyre and Rubber Manufacturers Association* |
| 16 | EAA – European Aluminium Association |
| 17 | EAIVT - European Association of Independent Vehicle Traders |
| 18 | ECF – European Caravan Association |
| 20 | ESCA - European Small Volume Car Manufacturers Alliance |
| 21 | ETRTO - European Tyre and Rim Technical Organisation |
| 22 | FEM – European federation of Materials Handling |
| 24 | FIGIEFA/EGEA – International Federation independent wholesalers and retailers of automotive replacement parts |
| 25 | NGVAEurope |
| Non-EU industry associations | |
| 26 | GTB - The International Automotive Lighting and Light Signalling Expert Group |
| 27 | JAMA - Japan Automobile Manufacturers Association |
| 28 | KAMA - Korea Automobile Manufacturers Association |
| 29 | CAAM – China Association of Automobile manufacturers |
| 30 | IRU - International Road Transport Union |
| 31 | UITP - International Association of Public Transport |
| 32 | SIAM - Indian manufacturers association |
| Consumer and environmental NGOs | |
| 33 | ETUI – European Trade Union Institute |
| 34 | FIA- International Automobile Association |
| 35 | ANEC - European consumer voice in standardisation |

⁹⁵ This list includes a larger number of industry associations than the target of the interview programme. In bold letters we indicate those associations that we intend to give priority in the interview programme.

Interview programme

1

| Name of the association | |
|-------------------------|--|
| 36 | Transport and Environment |
| Experts | |
| 37 | ETSC - European Transport Safety Council |
| 38 | UNECE - World Forum for the harmonisation of vehicle regulations |
| 39 | VTI |

National level

| | Country | Role | Organisation |
|----|----------------|-------------------------------|--|
| 1 | Czech Republic | National authority | Ministry of Transport |
| 2 | Czech Republic | National Business Association | CIA - Czech Importers association |
| 3 | France | National authority | Ministry of Transport |
| 6 | Germany | National authority | Federal ministry of transport |
| 7 | Germany | National authority | Federal ministry of environment |
| 8 | Germany | National authority | Federal Motor Transport Authority |
| 9 | Germany | National Business Association | VDA |
| 10 | Ireland | National authority | Department of Transport |
| 11 | Ireland | National authority | National Standards Authority of Ireland |
| 12 | Ireland | National Business Association | Society of the Irish Motor Industry |
| 13 | Italy | National authority | Ministry of Transport |
| 14 | Italy | National Business Association | ANFIA |
| 15 | Netherlands | National authority | RDW Vehicle Technology and Information Centre- Assessment & Surveillance unit |
| 16 | Poland | National authority | Ministry of Infrastructure |
| 18 | Poland | National Business Association | Polski Związek Przemysłu Motoryzacyjnego |
| 19 | Romania | National authority | Ministry of Transport |
| 20 | Romania | National Business Association | RAROM |
| 21 | Romania | National Business Association | ACAROM |
| 22 | Romania | National Business Association | Marius TUDOR |
| 23 | Spain | National authority | Ministry of Industry, Commerce and tourism |
| 24 | Spain | National Business Association | ANFAC - Car manufacturers |
| 25 | Spain | National Business Association | SERNAUTO - Asociación Española de Fabricantes de Equipos y Componentes para Automoción |
| 26 | Spain | National Business Association | ASFARES - Asociación Española de Fabricantes de Remolques, Semirremolques, Cisternas y Vehículos Análogo |
| 28 | UK | National authority | Department of Transport |
| 29 | UK | National Business Association | Society of Motor Manufacturers and Traders |
| 30 | UK | National authority | Vehicle Registration authority (VCA) |

Interview programme

1

Manufacturers⁹⁶

| | |
|---|---|
| 1 | Large volume EU – based manufacturer |
| 2 | Medium size EU-based producer of trailers |
| 3 | Medium size EU-based producer of luxury cars |
| 4 | Large volume manufacturer with headquarters in the US |
| 5 | Large volume manufacturer with headquarters in Japan |

⁹⁶ For confidentiality reasons the names of the manufacturers are not presented.

Case studies

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CASE STUDY 1 – ASSESSMENT OF THE ADMINISTRATIVE BURDEN FROM THE IMPLEMENTATION OF THE LEGAL FRAMEWORK

1. Introduction – Objectives and methodology

1.1 - Objectives

The first case study aimed to analyse in detail and, to the extent possible, to quantify the administrative burdens related to the implementation of the type approval legal framework for firms in different sub-sectors along the automotive supply chain. Administrative burdens in the context of the TA legal framework are primarily related to costs resulting from information provision requirements, fees payable to the government or other entities in order to comply with the legal provisions and the human resources required to conduct the relevant work. The data collection and analysis aimed to assess the share of different aspects of the requirements resulting from the type approval legislation that pose significant burdens to firms in different subsectors.

The focus of the case study has not been on the compliance costs of the legislation – namely the costs to ensure compliance with the safety, environmental, noise – but such information was used to assess the relative importance of the administrative burdens.

1.2 - Methodology

The main source of information was data collected directly by firms with different roles in the supply chain. The data was collected through in-depth interviews following a mapping of the main requirements and procedures. The costs were grouped under the following main types:

- Human resources allocated for different activities related to the process of getting a TA.
- Fees for registration/certification.
- Testing costs⁹⁷.

Furthermore, in order to facilitate the discussion, the type approval process was broken down into the following key steps:

- Preparatory work prior to the initiation of the type approval process requiring the familiarisation with the legal framework and the relevant requirements and the collection of necessary information.
- Type approval process including the preparation and submission of information dossier, the testing of type with the involvement of technical services and the conformity of production
- Subsequent work following the issuing of the certificate of conformity.

⁹⁷ Testing costs are not strictly speaking administrative costs but in the case of type approval it is an essential element in order to have a vehicle or product type approved.

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- Work related to the collection or provision of information related to the Repair and Maintenance information obligations, in service conformity or the information related to the reusability, recyclability and recoverability of motor vehicles.

Firms were also asked to provide information concerning the costs of compliance with the different provisions of the legal framework. Estimates were provided by some of them allowing a comparison of the administrative burdens against the overall costs.

Despite obtaining the explicit support of the key respective industry associations, very few individual firms were willing to participate. In total, six firms agreed to provide detailed data and some of them provided data for only some parts of the process. No manufacturer of tyres was willing to provide any data. Thus, the data collection process fell short of the initial target of 3-4 firms per sub-sector that would provide a certain level of confidence as to the extent that the figures provided represent the typical costs faced by industry. As a result, the analysis of the data provided focused primarily on developing a better understanding of the drivers of costs and the importance of different aspects, and on making comparisons between different market segments. There was no attempt to generalise the costs to the sector/industry level.

Table 1 – Total number of interviews completed by sector

| Target subgroup | Completed |
|---|-----------|
| Manufacturers of vehicles sold in large volumes | 2 |
| Manufacturers of components | 1 |
| Manufacturers of vehicles sold in small volumes | 1 |
| Manufacturers of trailers and body builders | 2 |
| Total | 6 |

The information provided during the detailed interviews with manufacturers was complemented by additional information collected during the surveys that also asked for some cost estimates but also secondary sources of information including, among others, a Regulatory Impact Assessment conducted by the UK Government (Department of Transport) in 2009⁹⁸. This IA study collected data from a number of UK firms producing goods vehicles, buses coaches and trailers, sectors and some categories of passenger cars - but not passenger cars sold in large volumes.

2. Analysis of results

On the basis of all sources of information made available we have produced cost estimates for the different categories of vehicles. Table 2 summarises the estimates for the total TA costs and for the main parts of the type approval procedure. More detailed analysis for each of the six manufacturers is provided in section 3. Data on costs are presented per type approval or per model/product. A vehicle model typically includes more than one variant. Firms were often not able to provide data for an individual TA as they are working in parallel on multiple variants of a certain model for which a large share of the components – and the respective TA costs - were shared.

The analysis of the data provided during the interviews indicates that the cost for the type approval of a model for the category of large volume passenger cars manufacturers is typically in the range of €700,000-€1,000,000. In the case of a manufacturer of luxury cars sold in small volumes in the range of €250,000-€350,000 while for manufacturers of trailers and body builders the cost estimates are in the range of €50,000- €100,000. The data from one component manufacturer of equipment for commercial and heavy

⁹⁸ Department of transport (2009), Impact Assessment of Vehicle Type Approval and implementation of Directive 2007/46/EC in UK

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duty vehicles has indicated a cost of around €5,000 per type approval of components and systems but it is not possible to use this number for more general conclusions given the broad range of activities of firms in the sector. It is encouraging concerning the validity of the estimates provided that most figures are not deviating significantly from those provided in the UK study concerning the EC Whole Vehicle Type-Approval (EC WVTA) for the different vehicle categories excluding large volume passenger cars.

Table 2 – Summary of estimated EC whole vehicle type approval (TA) costs for different categories of vehicles

| | Manufacturers of vehicles sold in large volumes | Manufacturers of trailers and body builders | Manufacturer of luxury passenger cars sold in small volumes | Manufacturers of components |
|--|---|---|---|-----------------------------|
| Total administrative cost (€ 000s) | 700-1,000/model | 50-100/ model | 250-350/model | 5/product |
| Data from UK IA (€ 000s) | n.d. | 25-45/TA | 325/TA | n.d. |
| Total human resources (FTE) | 4-6/model | 0.5-1 /model | 2-4 /model | 0.05-0.1 /product |
| Resources dedicated to Information collection/preparatory work (FTE) | 1.5-3/model | 0.4-0.5 /model | 1 /model | 0.1 /product |
| Type approval and testing fees (€ 000s) | 100-500/model | 10-20/model | 50-100/model | 0.5/product |
| CoP (€ 000s) for whole firm | N.d. | 15 | n.d. | 3 |
| Other costs | RMI information and data collection for 3R: 1-2 FTE/model | n.d. | RMI information Data collection for 3R 1 FTE/model | n.d. |

Source: CSES;

The more detailed analysis of the costs for the individual parts of the process indicates some, but rather small differences in the weight/shares depending on the sub-sector. **Testing fees are generally within the range of 15-20% of the total costs.** In the case of vehicles –total expenditure depends on the number of systems or components that need to be type approved. Large manufacturers with their own testing facilities have the opportunity to make certain cost savings by using their own testing facilities, but there is no information on the actual savings arising.

The most important aspect concerns the human resources dedicated to the whole TA process, which usually range from 50% to up to 80% of the total TA costs estimates. Initial preparatory actions including information collection and other preparatory work prior to the application to a TAA authority represent the most important part of the process from the point of view of required human resources. The data provided indicate that it absorbs 30-40% of the total human resources allocated in the process for the large producers and more than 50% for the firms in the other sectors where testing fees tend to be lower.

For smaller sized firms, external support has also been used in the form of specialised consultants. Firms with limited prior experience indicated that this part of the process was challenging and the responses to the general survey suggest that many small enterprises had to hire one additional staff member with relevant experience to prepare for the type approval process. The other resource-intensive part of the process is the testing process – mainly for the large producers that conduct most of the testing in-house. According to the data provided, this represents 40-50% of the total human resources (2-3 FTE) for large manufacturers. It is less resource-intensive for smaller manufacturers with fewer tests that more often take place in the technical services laboratories.

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Extensive data were not made available for the **conformity of production** process – and most manufacturers considered it as part of the overall type approval and testing process and could not provide specific figures. The adoption of a quality system (like ISO 9000) to fulfil the relevant requirements and to obtain the quality certificate are the main costs elements although in a number of firms – both larger and smaller firms – the resources necessary were limited since a quality control system was already in place. The Conformity of Production (CoP) has its own information and process requirements but no firm considered them to be particularly problematic. The data from one body builder and one component manufacturer indicates that these requirements do not represent more than 5% of the total type approval costs and importantly, they apply to the whole range of vehicles or products. CoP certification does represent a recurring cost for which no data were made available but there was no indication provided that it is particularly challenging for firms in any of the subsectors.

Besides the CoP, other recurring costs include the necessary **updates of the type approval** for specific systems or products when there are substantial upgrades. These often include new tests – and the respective fees for technical services – and also a certain amount of human resources to monitor this process. One large manufacturer indicated that total annual resources required for TA were in the range of 0.1-0.2 FTE with testing fees being a small fraction of the initial costs. In the case of the luxury cars manufacturer subsequent testing costs for a specific model were in the range €5,000-10,000 on an annual basis.

The data provided by manufacturers covered only the EC WVTA. Even among the lower volume trailer or bodybuilders, none had made use of an alternative approach (EC small series or national small series) even when the manufacturer sells vehicles almost exclusively in their domestic market. The data from the ex-ante IA in the UK suggested that the administrative benefits from opting for the national small series type approval approach were expected to vary within a range of 30-80% of the cost for ECWVTA (see Table 3). Cost data for Individual Vehicle approval range between €600-€2,000 but the information provided from the manufacturers of trailers and 2 manufacturers of wheelchair-accessible vehicles converters in the UK suggests that these were probably overestimates. Typical figures provided for IVA for these categories are closer to a range of €300-€500. An important additional point was made regarding concerns about the relative attractiveness of the National Small series type approval (NSSTA) scheme. In the case of two producers, the upper limit of 75 vehicles for the use of the NSSTA made it preferable to follow the option of multiple IVAs. Costs for a NSSTA were estimated around €50,000 and given the additional compliance requirements, this was less preferable even in the case of more than 100 vehicles of a specific type.

Table 3 – Expected type approval costs⁹⁹ for different categories of vehicles and type approval schemes in the UK. Estimates based on data provided by enterprises prior to the introduction of the legislation¹⁰⁰ (€s).

| Sub-sector | ECWVTA | EC SSTA | National SSTA | | IVA | |
|---|---------|---------|---------------|--------|-------|---------|
| | UK IA | UK IA | UK IA | Study | UK IA | Study |
| Car Converters | 171,000 | 62,000 | 51,000 | | 938 | |
| Specialist Cars (sport cars) | 324,000 | 191,000 | 140,000 | | 1,063 | |
| Special Purpose Vehicles (except WAV) | 59,000 | | 45,000 | | 938 | |
| Special Purpose Vehicle Manufacturers (WAV) | 51,000 | | 40,000 | 50,000 | 938 | 300-500 |
| Minibus Converters | 86,000 | | 71,000 | | 975 | |

⁹⁹ Figures of costs provided cover fees to TA authorities, testing fees, the cost of the back-office technical support to the process and cost of Conformity of Production.

¹⁰⁰ Data provided in Euros based on an exchange rate of : £1 = €1.25)

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| Sub-sector | ECWVTA | EC SSTA | National SSTA | | IVA | |
|-------------------------|---------|---------|---------------|-------|-------|-------|
| | UK IA | UK IA | UK IA | Study | UK IA | Study |
| Bus/Coach Chassis | 73,000 | | 61,000 | | - | |
| Bus/Coach Bodybuilders | 98,000 | | 83,000 | | 1,925 | |
| Bus/Coach Manufacturers | 161,000 | | 136,000 | | 1,925 | |
| Van/Light Truck | 152,000 | | 130,000 | | 900 | |
| Heavy Truck Chassis | 155,000 | | 125,000 | | 1,125 | |
| Truck Body-builders | 29,000 | | 21,000 | | 1,075 | |
| Light Trailer | 26,000 | | 18,000 | | 769 | |
| Heavy Trailer | 46,000 | | 36,000 | | 1,063 | |

Source: Department for Transport, UK¹⁰¹

Feedback from a few national authorities and manufacturers in Germany and Spain also suggest that the use of the National SSTA approach is rather limited and many more firms selecting the IVA route. Data from the Netherlands suggests a decline in the number of national type approvals since 2007 for most categories of vehicles.

Table 4 – Number of national type approvals in the Netherlands¹⁰²

| Vehicle Category | 2007 | 2008 | 2009 | 2010 | 2011 |
|------------------|------|------|------|------|------|
| M2 | | | 4 | 4 | |
| M3 | 33 | 34 | 22 | 3 | |
| N1 | 6 | 7 | 16 | 15 | 1 |
| N2 | 26 | 7 | 18 | 16 | 3 |
| N3 | 107 | 37 | 73 | 44 | 16 |
| O2 | 39 | 26 | 4 | | |
| O4 | 15 | 23 | 6 | 11 | 9 |

Source: RDW

Other costs related to type approval

Beyond the type approval process, other administrative related requirements resulting from the legal framework concern the provision of information for repair and maintenance (RMI) according to the provisions of Euro 5&6/VI Regulations and for recyclability, reusability and recoverability (2005/64/EC). These are requirements that apply only to large volume passenger cars and commercial vehicle manufacturers. The information available indicates that large volume producers have dedicated teams working on the collection of the relevant data and the development and maintenance of databases. The data collected suggest that an **equivalent of 0.5-1 FTE per vehicle model work exclusively on this part to ensure provision of the information required.**

However, as far as the RMI is concerned, manufacturers charge fees for access to such information from independent repairers. Thus, a certain part – if not 100% - of the administrative costs are recovered. In the case of the data concerning the 2005/64/EC on recyclability, reusability and recoverability the feedback provided indicates that the collection of the relevant data required a significant initial effort at the time of the entry into force of the Directive but specific figures were not made available. The information from one manufacturer indicates that around one FTE is dedicated to maintaining the relevant databases. According

¹⁰¹ UK Department for Business Innovation & Skills - Automotive sector: international trade regulations, <http://www.dft.gov.uk/typeapproval>

¹⁰² According to the data provided there have been no national type approvals for the M1, O1 and O3 categories.

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to most firms, this would not have happened in the absence of a requirement even though synergies with other information and data collection systems were also possible.

Relative level of administrative costs

A key difficulty has been the assessment of the relative weight of the type approval costs for the different categories of manufacturers. Data on operating costs – that would probably be the most appropriate figure against which to assess the importance of administrative costs – were not made available. Similarly, information on total compliance costs – that would indicate the share of the type approval administrative burden in order to assess the total impact on industry – were not made available. One unverified source indicated that product development costs for manufacturers of large volume passenger cars often exceed €1 billion – a share of administrative costs of no more than 1% - although it is not clear which part of this investment is directly related to legal requirements.

In the case of the luxury cars manufacturer, the compliance costs for all 4 models were estimated at around €200-250 million. Administrative costs – if all costs for a period of 10 years and covering the four models and variants – were in the range of 1-2% of the compliance costs. Other comments provided from a few large manufacturers that participated in the survey also suggest that administrative costs represent only a small percentage of the total compliance costs.

In the case of a trailers manufacturer, the estimate for the compliance costs – which related primarily to the general safety regulation - did not exceed a total of €70,000, representing the budget for developing a test trailer - used for multiple tests beyond the TA requirements - and the work for a period of 3-4 months of a small team of engineers for some product design. For those categories of vehicles administrative costs tend to represent a more important share of the total costs related to the legislation, a conclusion also supported by at least one type approval authority.

Finally, a comparison with the more commonly available, but less relevant, annual turnover indicates shares of less than 0.1% - probably even less than 0.05% - for the large volume producers and generally in the range of 0.1-0.5% for the other categories of vehicles.

Table 5 – Summary of estimated relative type approval (TA) costs for different categories for vehicles

| | Manufacturers of vehicles sold in large volumes | Manufacturers of trailers and body builders | Manufacturer of passenger cars sold in small volumes | Manufacturers of components |
|--|--|--|---|------------------------------------|
| Total TA cost (€ 000s) | €700k-1,000k/model | €50-100k/model | 250-350k/model | 5k/product |
| Compliance costs | n.d. | €70k total for all type of trailers | €200-250 million for product development for 4 models | € 250k for product development |
| Ratio of TA/ compliance costs | n.d. | 100-200% | 2%-3% | n.d. |
| Ratio of TA costs /annual turnover (data for all products) | <0.05% | 0.3-0.5% | 0.1-0.2% | 0.3% |
| Vehicles sold/year | 800,000-1,000,000 | 200-2000 | 3,000 | |
| Total annual TA costs per vehicle sold (€s) | 5-15 | 50-250 | 250-300 | |

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Source: CSES survey

Estimation of the total costs for the motor vehicles sector

In this section we attempt to estimate the level of annual administrative costs for the whole automotive sector. Clearly, there are a number of limitations concerning the total number of type approvals (we only have data on total ECWVTA across the EU but not on the number of NSSTA, EC SSTA and IVAs), the partial coverage of the different sectors and the small number of responses. Furthermore, the estimate does not include the categories of special purpose vehicles and we have assumed that all M1 vehicles follow the same approach as that adopted by large OEMs. Costs for vehicles in the N1 category are also assumed to be similar to N1 – an assumption which the interview programme suggested was quite realistic. For the M2, M3 and N2 and N3 categories that can include both the manufacturer of complete vehicles but also bodybuilders we have adopted a wide lower and upper range taking into account the data from the UK study. The same applies to trailer manufacturers.

Given these important assumptions, we can estimate of a total of €1.4-2.6 billion for administrative costs linked to the total TA activity for 2011. This figure represents 0.3-0.5% of the €550 billion turnover of the motor vehicles sector in 2010¹⁰³. As expected, the costs for the M1 category represent around 65-70% of the total costs for the whole automotive sector. However, the data indicates a decreasing share of M1 TA while, as a result of the gradual entry into force of mandatory type approval in other subsectors.

Table 6 - Estimate of type approval (TA) administrative costs for the different categories of vehicles

| Vehicle Category | Number of type approvals | | Estimated costs /TA (€ 000s) | | Estimated total costs in 2011(€ 000s) | |
|------------------|--------------------------|-------------|------------------------------|----------------|---------------------------------------|------------------|
| | 2009 | 2011 | Low estimate | Upper estimate | Upper estimate | Lower estimate |
| M1 | 1411 | 1229 | 700 | 1,000 | 860,300 | 1,229,000 |
| M2 | 5 | 39 | 100 | 500 | 3,900 | 19,500 |
| M3 | 87 | 428 | 100 | 500 | 42,800 | 214,000 |
| N1 | 165 | 651 | 700 | 1,000 | 455,700 | 651,000 |
| N2 | 57 | 150 | 100 | 500 | 15,000 | 75,000 |
| N3 | 123 | 255 | 100 | 500 | 25,500 | 127,500 |
| O1 | 43 | 150 | 25 | 50 | 3,750 | 7,500 |
| O2 | 169 | 335 | 25 | 50 | 8,375 | 16,750 |
| O3 | 1 | 6 | 50 | 100 | 300 | 600 |
| O4 | 48 | 188 | 50 | 100 | 9,400 | 18,800 |
| Total | 2109 | 3431 | | | 1,425,025 | 2,359,650 |

Source: Own elaboration on the basis of RDW data and CSES survey

3. Detailed presentation of costs for individual manufacturers

This section summarises in tabular format the information about administrative costs collected from the six manufacturers.

¹⁰³ Including Manufacturers of motor vehicles (NACE 2910) and manufacturers of bodies, trailers and semi-trailers (NACE 2920).

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1. Manufacturer of passenger cars and commercial vehicles– large volumes

| | |
|---|---|
| Firm description | Large manufacturer (OEM) of passenger cars (category M1) and light trucks (category N1) with over 25,000 employees |
| Markets covered | All 27 Member States and presence in most markets at a global level |
| Type of vehicle considered | Small size M1 passenger car vehicle |
| Applicable legislation | <ul style="list-style-type: none"> • Framework Directive 2007/46/EC, • General Safety Regulation (EC) No 661/2009 • Pedestrian Protection Regulation (EC) No 78/2009 • Regulation (EC) No 715/2007 (Euro 5 and Euro 6). • Directive 2006/40/EC on emissions from air-conditioning systems • Directive 2005/64/EC with regard to their reusability, recyclability and recoverability of motor vehicles |
| Volumes sold | >800,000 units |
| Annual turnover | >€10 billion |
| Type approval procedure | EC Whole vehicle type approval Step-by-step process including around 160 separate type approvals for all variants |
| FTE dedicated in type approval/homologation | 10 FTE |
| Preparatory stage | Around 0.6 FTE for 3 years (total of 4 FTE working on 7 Type approvals in parallel) |
| TA application and testing – Human resources and duration | 8 FTE for a period of 6 months Testing fees: €100,000 for WVTA (figure does not include testing fees for individual systems/components) |
| Costs of CoP | Update of existing ISO series standard – no data on human resources/costs |
| Costs after initial TA | Around 0.6 FTE is dedicated for the whole TA period during which a model is produced (5-8 years) for necessary updates Additional testing fees for changes (no figure provided) |
| Costs for RMI/OBD information and Recyclability | n.d. |
| Cost for in service conformity requirement | n.d. |
| Total costs | €700,000-1,000,000 (estimate) |
| Relative share | TA costs for all models type approved less than 0.05% of annual turnover |
| Compliance costs | No information provided (confidential) Indication that administrative costs are a small fraction of the development costs |

2. Manufacturer of passenger cars and commercial vehicles– large volumes

| | |
|------------------------|---|
| Sub-sector represented | Passenger cars |
| Firm description | Large non-EU manufacturer (OEM) of passenger cars (category M1) and light trucks (category N1) >45,000 employees |

Case studies

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| | |
|---|---|
| Markets covered | All 27 Member States and presence in most markets globally – |
| Type of vehicle considered | M1 |
| Applicable legislation | <ul style="list-style-type: none"> • Framework Directive 2007/46/EC, • General Safety Regulation (EC) No 661/2009 • Pedestrian Protection Regulation (EC) No 78/2009 • Regulation (EC) No 715/2007 (Euro 5 and Euro 6). • Directive 2006/40/EC on emissions from air-conditioning systems • Directive 2005/64/EC with regard to their reusability, recyclability and recoverability of motor vehicles |
| Volumes sold | >1 million units sold in Europe (2011) |
| Annual turnover | >€30 billion |
| Type approval procedure | EC Whole vehicle type approval using multiple Technical services |
| Type approval approach | Step-by-step process including around 100 separate system type approvals |
| FTE dedicated in type approval/homologation activities | 50-60 FTE covering in parallel 10-15 models on an ongoing basis |
| Preparatory stage | 10 FTE for around 3 years for the TA of all models (ca. 1 FTE for each model for 3 years) – this does not include the TA paperwork preparation (more compliance related work) |
| TA application and testing – Human resources and duration | Testing costs: Estimate 300-500k (type approval of one WVTA and its variants- 1 model) 5-6 FTE dedicated for a period of around 6 months |
| Costs of CoP | Update of existing ISO series standard 10-15 FTE in the relevant department covering all models (1 FTE/model) |
| Costs since TA | Continuous update of TAs on an annual basis - small share of costs of initial TA (no estimate provided) |
| Costs for RMI information | Team of 10 working full time on information provision for all models – part was already happening for own dealers Most part of the costs are probably covered by fees to access info to independent repairers (market rate) |
| Cost for in service conformity requirement | n.d. |
| Total costs for type approval process | Estimate of around €1,000,000 for type approval process per model (basic and variants) |
| Relative share of costs | Total type approval costs less than <0.05% of annual turnover |
| Compliance costs | No information provided (confidential) |

3. Manufacturer of luxury passenger cars in small volumes

| | |
|----------------------------|---|
| Firm description | Producer of luxury cars with around 1,300 employees Key feature that distinguishes from large volume producers: product platforms usually lasting for a period of 15 years in comparison to 4-5 years and cover 4-5 models |
| Markets covered | EU27 and in many countries across the globe |
| Type of vehicle considered | M1 sport car |
| Applicable legislation | - Framework Directive 2007/46/EC, |

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|---|--|
| | <ul style="list-style-type: none"> - General Safety Regulation (EC) No 661/2009 - Pedestrian Protection Regulation (EC) No 78/2009 - Regulation (EC) No 715/2007 (Euro 5 and Euro 6). – yes - Directive 2006/40/EC on emissions from air-conditioning systems - Directive 2005/64/EC with regard to their reusability, recyclability and recoverability of motor vehicles |
| Volumes sold | 3,000 cars annually |
| Annual turnover | Ca. €500 million in 2010 |
| Type approval procedure | EC whole vehicle type approval – Single step |
| FTE dedicated in type approval/homologation | 8 FTE covering on average two main type approvals and 2 more variants for each type |
| Preparatory stage: Costs and duration | <p>€140k-180k/TA (estimate):</p> <p>1 FTE dealing with legal preparatory work and dossier for a period of 12 months/model</p> <p>Input from 50 engineers during the process ranging from few days to a few months (estimate of 1 engineer FTE/model)</p> <p>Subscription to specialised regulation library : €25,000 for all models</p> |
| TA application and testing – Human resources and duration | <p>€70k-90k/TA (estimate):</p> <p>€40,000-€45,000 for initial Type approval application and testing</p> <p>1 FTE dedicated to each TA for a period of 2-3 months</p> |
| Costs of CoP | No additional costs as ISO quality management system already in place Certification costs included in type approval fees |
| Costs after initial TA | <p>€40k/TA/year (average):</p> <p>Estimated total testing costs of €620k for 15 year period concerning a single platform (3-4 models).</p> <p>Total costs for all models around €4 million for the 15 years period</p> |
| OBD and data for the Recyclability, Reusability, Recoverability Directive | 2-3 FTE working on the information provision and relevant databases on a continuous basis for all models |
| Cost for in service conformity requirements | €20k/model/year |
| Total costs for type approval process | <p>Total initial costs related to 1 type approval around €270k-330k – subsequent costs in the range of €70-90k/year</p> <p>Total annual costs for all vehicles around €900,000</p> <p>Share of total administrative costs for all models in annual turnover : 0.1-0.2%</p> <p>Share of total administrative costs to product development and compliance for all models: 2-3%</p> |
| Compliance costs (product design) | <p>Estimated that the total costs of platform development of around €400 million, €200 million related to meeting legal requirements (compliance costs)</p> <p>Initial design stage before beginning of production of specific product platform lasts around 24 months – initial period 20 engineers work part time, gradually increasing to include close to 400 engineers towards the end of the process</p> |

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4. Manufacturer of trailers

| | |
|--|---|
| Firm description | Medium size (450 employees) UK based producer of trailers and semi-trailers selling mainly in the UK market |
| Markets covered | 3 EU countries (UK: 95%) |
| Type of vehicle concerned | Semi-trailer O4 |
| Applicable legislation | Framework Directive General safety Regulation |
| Total units sold | 2,000 |
| Annual turnover | €60-70 million |
| Type approval procedure | Whole vehicle type approval - Single step (consider small series for future types sold in smaller volumes) |
| FTE dedicated in type approval/homologation | 2 FTE for the first year of TA (expect 1 FTE for future TAs) (0.05% of people employed) |
| Costs for preparation | 2 FTE working for 2 months period for identification of applicable legislation and identifying areas where changes in design are required and for preparation of relevant information dossier (0.4FTE) |
| Costs for TA application and testing and duration | £7,500 (€9,300) paid to technical services for various tests |
| Costs of CoP | Application of ISO9000 standard but with only limited additional work as main elements were already present. CoP costs included in overall testing fees. |
| Other costs | n.d. |
| Total costs for type approval process | ca. £100,000 (€125,000) for the first TA (expect around half for subsequent Type approvals on the basis of learning curve and structures already in place) Whole duration of the process: 6 months Estimate of 0.1% of turnover |
| Compliance costs (cost for design/product development) | No significant compliance costs Estimate of €70-100k for multiple products £30,000 (€37,000) for the building of a test trailer for various necessary tests for compliance. 3-4 months of work of 2 FTE and 10% of the time of 2 engineers |

5. Manufacturer of road tanker/bodybuilders

| | |
|---|---|
| Firm description | Spanish Firm with 110 persons employed manufacturing road tankers for dangerous goods and food products. |
| Markets covered | Spain and 6 other EU countries |
| Type of vehicle considered | Road tanker (O4 category) – 5 different models produced |
| Applicable legislation | Framework Directive 2007/46/EC, |
| Total units sold | 190 units/year |
| Annual turnover | €14,000,000 |
| Type approval procedure | EC whole Step-by-step |
| FTE dedicated in type approval/homologation | 2 FTE |
| Costs for preparation | €50-80k for 5 models: €10k-16k/TA Total of 2 persons for 20% of their time on an ongoing basis (0.4 FTE) |

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| | External support from consultants for €21k |
| Costs for TA application and testing | €20k-25k/TA (estimate) Fees of €4,500 for ECWVTA plus 23 type approvals for separate systems required (€10-15k) Human resources of around 4 working days (0.015 FTE) Around €5,500 for the testing in own facilities and the technical services laboratory |
| Costs of CoP | Total of €5,100 (around €1,000/model): €2,400 for certification and €2,700 for adopting to ISO standard requirements for all 5 models produced |
| Other costs | n.d. |
| Total costs for type approval process | €40k-€60k/TA (0.3% of annual turnover) |
| Compliance costs (cost for design/product development) | No data provided |

6. Manufacturer of components

| | |
|---|---|
| Firm description | Supplier of equipment for commercial and heavy duty vehicles |
| Markets covered | EU wide |
| Type of component concerned | Light and light signalling, mechanical coupling and retro-reflective markings – total of around 50 different certificates |
| Applicable legislation | Framework Directive General safety regulation |
| Total units sold | 100,000 |
| Annual turnover | €70 million |
| Type approval procedure | EC type approval |
| FTE dedicated in type approval/homologation | 3 FTE |
| Costs for preparation | Estimated cost of €50,000 from internal staff and additional external support from experts of €100,000 for all products |
| Costs for TA application and testing | Fees for application to TAA in the range of €300-€1,500 for each product – Total of around €30,000 for all 50 products Equivalent of €30,000 in human resources dedicated during the process Testing fees to technical services for all products: €10,000 Additional costs of around €1,000 incurred at a later stage for changes to a few products. |
| Costs of CoP | €3,000 for the testing of the production system and issuing of certificate Firm already had a quality system in place so no additional investment were made. |
| Other costs | Estimated costs of €5,000 for the coordination of information collection with suppliers. |
| Total costs for type approval process | Estimated costs of around €250,000 for the type approval of 50 all products (average of €5,000/product) – Around 0.3% of annual turnover |
| Compliance costs (cost for | Budget of €250k allocated to product development to ensure |

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| design/product development) | compliance of products with General Safety Regulation provisions. |
|-----------------------------|---|

4. Conclusions

The following key conclusions can be made from an analysis of data concerning the administrative burdens resulting from the type approval legal framework:

- In the case of the large volume motor vehicle producers, a typical figure for the EC WVTA of a single model with possible variants is around €700,000-€1,000,000. Total annual costs for Type approval activities for large OEMs represent no more than 0.05%-0.1% of their annual revenue from the related products and around €5-15 per vehicle sold.
- The costs for the EC WVTA for smaller volume producers in the bodybuilders and trailers sector appears to be in the range of €50,000-€150,000, representing between 0.1-1% of their turnover. Cost per vehicle vary depending on the number of units produced. For a relatively small volume producer of around 200 units, the costs can be over €250/unit, a much higher cost per unit compared with large manufacturers.
- Information from a luxury/sports cars producer suggests that the costs for the type approval of a model with 1-2 variants is in the range of €250,000-350,000. Type approval costs represents around 0.1-0.2% of their annual turnover.
- The costs for the TA of an automotive component is, according to estimates based on data from one manufacturer, are around €5,000 per product. In the absence of more data and wide variability in the types of component products being manufactured mean that it is not possible to tell whether this is a representative figure.
- In the case of large volume OEMs or smaller volume luxury cars, TA administrative costs also appear to represent only a very small proportion of their total compliance costs. In contrast, in the case of trailers, bodybuilders and, most probably, all other categories of converters of vehicles, administrative costs are the most important cost element.
- According to the information provided, human resources are the main drivers of costs representing 50-80% of the total. Testing costs represent around 15-20%. In the case of small firms in categories not previously covered by the legal framework, most firms have hired at least one more extra staff member responsible for the administrative aspects of the type approval, the support from external consultant or, when this is not considered possible, the allocation of responsibility and work of more than 0.5 FTE to an existing member of staff, generally at a senior level.
- For small volume producers, the feedback provided indicates that in certain cases, the option of multiple Individual vehicle approvals can be less expensive than the use of the National Small Series type approval scheme. The main reason for this is that the rather low upper limits applicable for the use of the National Small Series scheme.
- The information available indicates a low level of use of the National Small Series scheme in a number of countries which in some cases is considered as not very different in terms of the amount of administrative work required from the ECWVTA. This picture is based on only a few EU Member States and may not apply across the whole of the EU27.

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- An approximate estimate of the total TA administrative costs for the motor vehicles producers covered by the type approval legal framework is close to €1.4-2.6 billion Euros, 0.3-0.5% of the turnover of the motor vehicles manufacturers sector in 2010.

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CASE STUDY 2 – THE USE OF THE TYPE APPROVAL LEGAL FRAMEWORK IN THE PURSUIT OF ENVIRONMENTAL AND CLIMATE CHANGE POLICY OBJECTIVES

Introduction

The second case study set out to consider how the type approval instrument operates in relation to environmental and particularly climate change objectives in the legislation.

Certain environmental objectives are directly addressed in the legislation that forms part of the type approval framework. Common technical requirements with regard to emissions of gaseous pollutants (carbon monoxide, oxides of nitrogen and hydrocarbons) and particulate pollutants were established by the Regulation (715/2007) on emissions from light passenger and commercial vehicles¹⁰⁴ and by the Regulation (595/2009) on the emissions of heavy duty motor vehicles (Euro VI)¹⁰⁵.

In addition, the Directive (2006/40/EC) relating to emissions from air-conditioning systems in motor vehicles aimed to control and eventually prohibit the use of certain fluorinated greenhouse gases with a high global warming potential.

Fuel efficiency and CO₂ emissions associated with tyre pressure monitoring systems and gear shift indicators were covered by the General Safety Regulation¹⁰⁶. Otherwise the control of CO₂ emissions was treated separately in the past, since it used to be covered by a voluntary agreement, but currently it is addressed in Regulation 443/2009¹⁰⁷ setting emission performance standards for new passenger cars and in the more recent Regulation (510/2011)¹⁰⁸ setting emission performance standards for new light commercial vehicles.

The use of the type approval instrument in the control of emissions other than CO₂ is addressed in the main report at various points. In defining the focus of this case study therefore, it was decided to concentrate on legislation using the type approval instrument in relation to CO₂ emissions, both because this would be complementary to the consideration of legislation forming the core framework, as defined by the remit for the Fitness Check, and also because, at an early stage, it was apparent that it illustrated clearly certain issues that have wider implications. In particular, there are parallel issues that relate to noxious emissions.

¹⁰⁴ Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information Text with EEA relevance

¹⁰⁵ Regulation (EC) No 595/2009 on the emissions of heavy duty motor vehicles (Euro VI); on type approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information and amending Regulation (EC) No 715/2007 and Directive 2007/46/EC and repealing Directives 80/1269/EEC, 2005/55/EC and 2005/78/EC.

¹⁰⁶ Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor

¹⁰⁷ Regulation (EU) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles

¹⁰⁸ Regulation (EU) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles

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It should also be clear that in defining the scope of the case study, the focus would remain on the use of the type approval mechanism as a particular policy instrument and that the corresponding policy framework defining the objectives to be reached would be that of the relevant legislation - Regulations 443/2009 and 510/2011 referred to above. The aim therefore has been to examine the effectiveness of the type approval instrument in attaining currently defined objectives. . At the same time, issues that have been addressed elsewhere recently, such as the use of the utility parameter, are not considered here.

Background

CO₂ emissions from motor vehicles are clearly a major issue. The EU is committed to a 20% reduction of greenhouse gas (GHG) emissions by 2020 (compared to 1990 levels) and while GHG emissions from other sectors are generally falling, those from transport have increased by 36% since 1990. Within this, road transport contributes about one-fifth of the EU's main greenhouse gas emission - carbon dioxide.

For passenger cars, which account for two thirds of the GHG emissions from the EU's transport sector, voluntary commitments were made in 1998/99 by the European, Japanese and Korean car manufacturer associations to reduce the level of emissions for new vehicles and consequently no legislative action was taken within the type approval framework.

Under this approach, there were significant improvements in vehicle technology and in particular in fuel efficiency leading to lower CO₂ emissions, but first of all, this was not enough to neutralise the effect of increased traffic and car size and secondly, the annual rate of reduction between 1998 and 2006¹⁰⁹ was only between 0.6% and 2.2% so the target of 140 grams of carbon dioxide (CO₂) per kilometer (g/km) for 2008 was missed.

The June 2006 European Council had unanimously confirmed¹¹⁰ that 'in line with the EU strategy on CO₂ emissions from light duty vehicles, the average new car fleet should achieve CO₂ emissions of 140 g CO₂/km (2008/09) and 120 g CO₂/km (2012). Following this, in October 2006, the Energy Efficiency Action Plan¹¹¹, announced that the Commission would 'if necessary propose in 2007 legislation to ensure that the 120 g CO₂/km target is achieved by 2012 through a comprehensive and consistent approach, in accordance with the agreed EU objective'.

The 2007 Commission Communication on the 'Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light commercial vehicles'¹¹² established a general strategy for addressing CO₂ emissions, including both demand and supply measures and with actions on engine technology being complemented by other measures targeting alternative fuels, driver behaviour and other technological improvements. The Communication also marked a definite shift from the voluntary approach to one with regulatory underpinning. It noted 'growing concerns regarding the progress made by the industry' under the voluntary approach and went on to say that although the progress achieved had gone some way towards the 140 g CO₂/km target by 2008/2009, in the absence of additional measures, the objective of 120 g CO₂/km would not be met by the 2012 horizon. It therefore concluded that 'as the voluntary agreement did not succeed, the Commission considers necessary to resort to a legislative approach'.

¹⁰⁹ As measured by the New European Driving Cycle (NEDC)

¹¹⁰ Renewed EU Sustainable Development Strategy, Council of the European Union, 8.6.2006

¹¹¹ Communication from the Commission 'Action Plan for Energy Efficiency: Realising the Potential' COM(2006)545 final of 19.10.2006 COM(2006)545 final

¹¹² Communication from the Commission to the Council and the European Parliament - Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light commercial vehicles COM(2007)19

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The subsequent Regulations that are the main focus of attention for this case study established targets for emissions to be achieved over the 2012-15 period in the case of cars and 2014-17 in the case of vans. Further reduction targets were established for 2020.

The Final Report of the CARS21 High Level Group¹¹³ devoted a chapter to 'Lowering CO₂ emissions', in which it advocated an integrated approach to CO₂ reductions and the Report also contained another chapter on 'Reducing pollutant & noise emissions'.

The Report commented that CO₂ reduction policy for road transport at an EU level has traditionally focused on improved vehicle technologies, making sure new vehicles are more fuel-efficient and relying on the gradual replacement of old vehicles. But it also pointed to additional policy measures, such as those influencing transport demand and consumer choice, and although acknowledging that these have, to a large extent, been decided at national or local level, it subsequently commented that the manner in which vehicles are driven will remain an important factor in determining overall CO₂ emissions and therefore further promotion of eco-driving, speed management and improved infrastructure could be useful.

The report did, however, devote a significant part of the text to addressing type approval procedures and testing. It commented that a 'credible, reliable, accurate vehicle test procedure, including a better test cycle and measurement procedures for CO₂ emissions, is a vital element of the strategy. Necessary changes to achieve this must be implemented in a manner which is fair and predictable.' Subsequently, it commented that the current procedures used for assessing emissions and fuel consumption of light-duty vehicles are not sufficiently representative of real-world driving and suggested that this should be addressed by the UNECE's WLTP process, but also by the EU, in response to 'legal obligations and a political commitment resulting from Regulations (EC) No 715/2007 (Euro 5/6) and No 443/2009 (CO₂ emission standards on passenger cars)'.

In parallel and independently from the WLTP process the EU has legal obligations and a political commitment resulting from Regulations (EC) No 715/2007 (Euro 5/6) and No 443/2009 (CO₂ emission standards on passenger cars) and No 510/2011 (CO₂ from vans) and from the 2010 Communication on a European Strategy on Clean and Energy Efficient Vehicles to propose a new, more representative test cycle and procedure by 2013 at the latest. In principle this objective could be achieved through an EU process; however, defining common procedures at UNECE level remains the preferred option, if all requirements can be fulfilled, since it would lead to worldwide harmonisation of test requirements with obvious advantages for the automotive industry.

The response of the Commission after the CARS21 Report is to be found in the Communication 'CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe'¹¹⁴, which begins by recognising the difficult circumstances faced by the industry in current market conditions.

In relation to lowering CO₂ emissions, the Communication refers to the 2007 EU strategy and its comprehensive approach, including both demand and supply-side measures, to reducing CO₂ emissions from light-duty vehicles before also commenting that the recent White Paper on Transport Policy, has proposals from the Commission defining the most appropriate measures to reduce road transport CO₂ emissions in a holistic way, based on a careful assessment of costs and benefits, addressing as appropriate vehicle efficiency, the use of vehicles and infrastructure.

¹¹³ CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union Final Report 2012, 6 June 2012

¹¹⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe' Com (2012) 636 of 3.11.2012

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The more detailed consideration of the operation of type approval mechanisms should therefore bear in mind their place within a broader policy setting and focus on the elements that the particular type approval instrument can best deliver.

Analysis

Regulation 443/2009 setting emission performance standards for new passenger cars and Regulation 510/2011 setting emission performance standards for new light commercial vehicles establish CO₂ emissions performance requirements for new passenger cars and vans respectively.

The Provisions of the Legislation

Regulation 443/2009 applies to motor vehicles of category M1 and aims to achieve the overall objective of average emissions for the new car fleet of 120 g CO₂/km. It sets average CO₂ emissions for new passenger cars at 130 g CO₂/km, to be achieved by means of improvement in vehicle motor technology, as measured in accordance with Regulation (EC) No 715/2007 and its implementing measures, while also envisaging a further reduction of 10 g CO₂/km from additional measures in the EU's integrated approach, so as to achieve the overall objective. From 2020 onwards, the Regulation sets a target of 95 g CO₂/km as average emissions for the new car fleet.

The application of the Regulation is tapered in that, over the period from 2012 to 2015, the proportion of each manufacturer's new passenger cars (those registered in the relevant year) to be taken into account in determining average specific emissions of CO₂, increases from 65% to 100% from 2015 onwards.

'Specific emissions of CO₂' means the CO₂ emissions of a passenger car are measured in accordance with Regulation (EC) No 715/2007, that is, using the regular type approval procedures. However, rather than applying to specific models, the CO₂ reduction targets are set in relation to average specific emissions over all the new cars registered in the EU for which a manufacturer is responsible. This aims to maintain the diversity of the car market and its ability to cater for different consumer needs. More precisely, CO₂ targets for passenger cars are defined according to the 'utility' of the cars on a linear basis. The indicator established for measuring this utility is the mass of the vehicle, as defined in section 2.6 of Annex I to Directive 2007/46/EC. This parameter is judged to be appropriate, since it provides a good correlation with emissions and results in more realistic and competitively neutral targets.

Manufacturers' compliance with the targets is assessed at an EU level on the basis of data collected by the Member States. Manufacturers whose average specific emissions of CO₂ exceed those permitted under the Regulation are obliged to pay an excess emissions premium in respect of each calendar year from 2012 onwards.

Regulation 510/2011 establishes emission performance standards for new light commercial vehicles (broadly category N1) and operates with similar procedures. In fact, it explicitly sets out to be consistent with the legislative framework for new passenger cars. For new light commercial vehicles, the average CO₂ emissions are set at 175 g CO₂ /km, by means of improvements in vehicle technology. From 2020, the average emissions target is 147 g CO₂ /km.

As with cars, the introduction of the legislation is made more flexible by stipulating a tapering of the proportion of each manufacturer's fleet covered by the emission requirements over each year in the period from 2014 (70 %) to 2017 and onwards (when the proportion is 100%).

Reporting procedures are again similar, except that the dates differ. The Member States started collecting information at the beginning of 2012, with a view to first transmitting it to the Commission in 2013 and the

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Commission imposing an excess emissions premium in respect of the period from 1 January to 31 December 2014 and every calendar year thereafter, where a manufacturer's average specific emissions of CO₂ exceed its specific emissions target.

Issues raised by Stakeholders

Within the remit of the Fitness Check, the main issue raised by stakeholders with respect to this legislation concerned the test cycle and in particular the testing procedures. Generally, these procedures are central to the whole type approval system and in the case of the legislation under consideration here, the test results for particular models are clearly critical in determining the average for the fleet as a whole.

In responses to survey and interview questions, Member State authorities and some NGOs raised the issue of the apparent difference between test cycle results and those that are observed in the real world. The emissions data are primarily the tool for assessing if key CO₂ reduction objectives are achieved de facto, but this issue has significance well beyond the question of the technical performance of the tests and the suitability of the mechanisms used under type approval legislation. Because of the prominence of information on fuel efficiency and CO₂ emissions in motor vehicle advertising, promotional material and manuals, a widespread perception that the 'official figures' do not reflect real conditions undermines the credibility of other policy instruments aiming to influence consumer behaviour and climate and environmental policy more generally. Furthermore, recognition of the issue is relatively longstanding.

Article 13 (3) of Regulation 443/2009 on emission performance standards for new passenger cars refers to the review of the procedures for measuring CO₂ emissions envisaged in Regulation 715/2007 on the emissions of light duty motor vehicles to be carried out from 2012 and states that:

'The Commission shall, in particular, make appropriate proposals to adapt those procedures to reflect adequately the real CO₂ emissions behaviour of cars and to include the approved innovative technologies as defined in Article 12 that could be reflected in the test cycle.'

The reference to the provisions in Regulation 715/2007 is to Article 14(3), which says :

'The Commission shall keep under review the procedures, tests and requirements referred to in Article 5(3) as well as the test cycles used to measure emissions. If the review finds that these are no longer adequate or no longer reflect real world emissions, they shall be adapted so as to adequately reflect the emissions generated by real driving on the road.'

The situation is recognised in the Final CARS21 Report, where it is acknowledged that discrepancies have been identified between CO₂ emissions measured at type approval and in real-world conditions.

Stakeholders suggested various ways that a growing difference could emerge between testing and real world conditions and in particular claimed that developments in technology meant that the tolerances allowed under the system originally defined could now be exploited, leaving the possibility of a systematic under-estimation of emissions.

It is generally agreed that Worldwide harmonized Light vehicles Test Procedures (WLTP), which will provide a global standard replacing the New European Driving Cycle (NEDC), is likely to make an important contribution to addressing the divergence between test and real world conditions. However, some have claimed that there are likely to be continuing issues. To help cast light on the points at issue, it is important to look at more detailed evidence on test performance.

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Evidence on test procedures

A 'Progress Report on implementation of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles'¹¹⁵ was published in November 2010. This report reviewed the whole range of both supply and demand side policies set out in the 2007 Communication and provided information on progress in reducing CO₂ emissions. It concluded that despite a low probability of achieving the 2012 target, the Strategy and its implementing measures have played an important role in driving a decrease of CO₂ emissions from light-duty vehicles.

In particular the prospects for the 2012-2015 are said to be encouraging. It claims that the targets specified in Regulation 443/2009 will be achieved and that the average specific CO₂ emissions from the new light-duty fleet will fall substantially by 2015 as a result of the regulatory measures announced in the Strategy.

The fleet average to be achieved in the period 2012-2015 by all new passenger cars (M1 category vehicles) registered in the EU is 130 g CO₂/km. As has been seen, as a result of a phase-in mechanism, the 130 g CO₂/km target only covers the whole fleet in 2015, but monitoring data up to 2009 showed that manufacturers were on track to meet the targets. The average specific CO₂ emissions from new passenger cars registered in the EU27 in 2011 were 135.7 g CO₂/km, as compared to 172.2 g CO₂/km in 2000.

Table 1: Average CO₂ emissions from new passenger cars registered in the European Union (not adjusted for changes in the test cycle procedure)

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| gCO ₂ /km | 172.2 | 169.7 | 167.2 | 165.5 | 163.4 | 162.4 | 161.3 | 158.7 | 153.6 | 145.7 |

The 2010 Progress Report commented that there were other considerations to be taken into account. Part of the reductions in 2008 and 2009 might have been due to the financial and economic crisis and the design of the scrappage schemes implemented in several Member States could also have been significant. Furthermore, in 2009 in particular, there was some downsizing of the car fleet with the average engine power, vehicle mass and engine capacity decreasing slightly in that year. Nonetheless, the decreasing trend in the monitoring figures since 2000 is evident and the data available at that point indicated that the average specific CO₂ emissions of 65% of new passenger cars registered in 2009 was already below 130 g CO₂/km three years ahead of the 2012 target.

Furthermore, more recent data from the European Environment Agency database show that in 2010 average CO₂ emissions from new passenger cars was 140.3 g CO₂/km and in 2011 135.7 g CO₂/km.

However, although the report acknowledges that 'the Commission is committed to propose a new test-cycle to reflect more accurately the real world driving conditions as well as the specific CO₂ emissions and fuel consumption related to it', its conclusions were naturally based ultimately on the 'official' test results and did not take into account the possible divergencies in real world conditions.

These divergencies are a significant issue and an indication of their possible extent is provided by a well known study published as an International Council on Clean Transportation (ICCT) Working Paper by Peter Mock et al in April this year, entitled 'Discrepancies between type-approval and "real-world" fuel-

¹¹⁵ Report from the Commission to the European Parliament, the Council, and the European Economic and Social Committee 'Progress report on implementation of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles' COM(2010) 656 final of 10.11.2010

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consumption and CO₂ values¹¹⁶. This study set out to compare the CO₂ emission values of passenger cars from different sources and to quantify the discrepancy between laboratory type approval values and real-world values. It does this over the years 2001-2011 in order to determine if the gap between the two datasets has increased over time.

The 'real world' values considered are taken from two sources: information provided in more than 28,000 user entries into the German on-line fuel consumption database, www.spritmonitor.de, and testing of more than 1,200 vehicle models by Europe's largest automobile club, the Allgemeiner Deutscher Automobil-Club (ADAC).

Spritmonitor.de is an on-line database developed from contributions from more than 200,000 registered users who are asked to enter fuel consumption observed in daily driving for a particular vehicle model and configuration. The data provided consist of the amount of fuel (in litres) bought and the kilometer reading after each refueling event. The study used the data for selected models that together account for about 50 percent of annual sales in Germany.

The spritmonitor.de data are thought to provide a good indication of actual conditions, including, by averaging the results, the fact of taking into account different levels of usage arising from different driving styles.

The other source of comparative data is the EcoTest that ADAC has conducted since 2002. The EcoTest is 'designed to provide a fair, reliable and objective assessment of the environmental performance of cars' (ADAC, 2009). It is based on European vehicle emission and fuel consumption test procedures but is extended by 'procedures and parameters to cover a wide range of real-life driving scenarios in Europe'.

The extensions in the EcoTest, as compared with the regular NEDC cycle consist of distinguishing between NEDC cold and NEDC hot and then including an ADAC motorway test, which is a dedicated cycle for driving on a motorway with speeds up to 130 km/h. NEDC cold duplicates the EU type approval test, though a lower test cell temperature (22°C) is used, along with the actual weight of the tested vehicle, instead of a usually lower test weight and discrete inertia classes. NEDC hot is in many ways the same as NEDC cold, but starts with a warm engine and the air conditioning unit switched on (setpoint of 20°C). Test results over the period 2002 until 2011 relate to 1,284 vehicles.

A comparison of the results from the 3 elements in the ADAC EcoTest and the spritmonitor.de data with the performance using the NEDC cycle shows considerable gaps and that these have widened over time. The principle conclusion of the study is that :

'The difference between type approval and real-world CO₂ emission levels of new passenger cars in Germany has increased from about 8% in 2001 to about 21% in 2010. The widening of the gap is especially noticeable since 2007 when mandatory CO₂ emission standards for the EU were under development'.

The analysis does confirm that there was a decrease in the level of CO₂ emissions of new passenger cars in Germany since 2001. 'However, the magnitude of reduction in reality appears to be only about half of what is suggested by the type approval values (about 7% instead of 15% since 2001)'.

¹¹⁶ Peter Mock, John German, Anup Bandivadekar and Iddo Riemersma "Discrepancies between type- approval and "real-world" fuel- consumption and CO₂ values. Assessment for 2001-2011 European passenger cars' ICCT Working paper 2012-02 April 2012.

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The reasons for the divergence are to be found in the specific characteristics of the test cycle and the particular tests:

- Certain characteristics of the NEDC test cycle are said not to be representative of real-life driving behaviour (low accelerations, low maximum speed, high idling time, constant speeds instead of transients, favorable shifting points, etc).
- Cold start testing in the NEDC test cycle is performed at ambient temperatures close to 30 °C, while real life temperatures are generally lower, leading to higher fuel consumption. A study by TÜV Nord Mobilität for the German Federal Environmental Agency¹¹⁷ in 2010 found that an ambient temperature of 22°C instead of 28°C may lead to more than 4% higher CO₂ values. This corresponds to approximately 6 g/km for an average new car.
- The battery in the approval test is charged to 100% capacity.
- The type-approval test weight is lower than the real-life average.
- The air conditioning system and other power consuming equipment are not turned on for type-approved testing.

Factors possibly contributing to the increasing gap between test and real-life conditions include the increasing market share of vehicles being equipped with an air conditioning system, which is not active during the test cycle and the introduction of more start/stop systems in recent years, since these have a larger impact under the type-approval test cycle, where there are frequent idling phases, than in real-life.

The fixed speeds, gear shift points and accelerations of the NEDC offer possibilities for manufacturers to optimize CO₂ and pollutant emissions specifically for the corresponding operating points of the engine in order to achieve lower emission levels during type approval but not necessarily for real-world driving. The ICCT study also suggests that there is evidence of a more active exploitation of flexibilities and tolerances in the type approval test procedure, for instance in the 4% tolerance between measured and declared CO₂ values, allowed under Regulation 692/2008.

Some stakeholders have suggested that since the development of both motor vehicle and testing technology allows testing to be more accurate, the tolerances should be reduced. On the other hand, manufacturers point to the wide range of targets that need to be taken into account in the engineering solutions that are to be found and the value of some degree of flexibility in achieving these solutions cost effectively.

The divergence of test and real-world performance has generally been recognised. The CARS 21 Report, for instance, calls for a new test cycle and procedure, saying that ‘the current gap between CO₂ value measured at type approval and those representative of real world driving of a vehicle type should be minimised by the introduction of new type approval test cycle and procedures that are representative of real world driving’.

Similarly, the CARS 2020 Communication acknowledges that ‘in recent years, it has become clear that the current procedures used for measuring pollutants, CO₂ emissions and fuel consumption of light-duty vehicles (cars and vans) are not sufficiently representative of real-world driving’.

The generally preferred solution to this problem would be a successful outcome of the discussions under the 1998 UNECE global agreement on the World Light duty Test Procedure (WLTP) and the development of a "Global Technical Regulation (GTR)" with a set of test procedures for light duty vehicles.

¹¹⁷ TÜV Nord Mobilität. ‘Future Development of the EU Directive for Measuring the CO₂ Emissions of Passenger Cars - Investigation of the Influence of Different Parameters and the Improvement of Measurement Accuracy’ by the order of the German Federal Environmental Agency 2010.

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In the CARS 2020 Communication, the Commission announced that it ‘will actively support the development and implementation of a new driving test-cycle and test procedure to measure fuel consumption and emissions from cars and vans that is more representative of real-world driving, taking account of the characteristics of the EU market’. It goes on to say that the modalities for the inclusion into the EU legal framework of the new cycle and test procedures should be defined before 2014....’.

However, there are issues that the WLTP is not expected to address. It is likely that it will be based on the assumption of a full battery charge and will not deal with issues such as air conditioning systems and the use of other power consuming equipment, such as power steering and vehicle lights. These can all contribute to higher CO₂ emissions.

As has been pointed out, the increased use of air conditioning systems has made their inclusion as a factor in the reduction of emissions increasingly pressing. It should be said that the effects of air conditioning systems are not all going in the same direction, since having closed windows improves the aero-dynamics of the vehicle, improves fuel efficiency and reduces CO₂ emissions. However, overall, the effect has been to lead to an increase.

The approach at both an EU and UNECE level has been to consider treating air conditioning separately. The 2007 Communication on the results of the review of the Community Strategy to reduce CO₂ emissions listed minimum efficiency requirements for air conditioning systems as one of the elements in a set of measures to bring about CO₂ reductions.

In 2008 there was a Public Consultation on future regulation addressing a reduction of CO₂ emissions of light-duty vehicles by more efficient mobile air conditioning equipment and gear shift indicators and a safety regulation of mobile air conditioning equipment.

A number of issues were raised in this consultation, including whether physical testing under the type approval system or alternatively virtual testing was the more appropriate and also, if there were to be physical testing, how best to identify the effects of air conditioning.

More recently, the Commission has awarded a contract to develop a procedure to measure the energy efficiency of mobile air conditioning systems in vehicles as part of type approval. However, there has been no legislation to implement this approach.

Conclusions

Achieving EU environmental objectives in relation to motor vehicles through the use of the type approval instrument has been seen to depend critically on the performance of test procedures, since the testing of each type of vehicle is central to the type approval system. All the major provisions of the type approval legislation require specific performance levels under test conditions.

It is essential for all concerned that the testing procedures provide results that everyone can have confidence in. Yet, it has been recognised for some years that the performance in real world conditions against a number of environmental requirements is worse than that indicated by the results of tests. The specific case of CO₂ targets has been considered, but similar conclusions would apply to other emissions and for similar reasons. Furthermore, there is evidence that the divergence between the tests and real world conditions is increasing. In short, testing procedures are not currently delivering what is expected of them and are increasingly becoming unfit for purpose. There is a danger that this apparent flaw in the type approval mechanisms could undermine the effectiveness and credibility of the type approval system as an instrument for addressing environmental and climate change objectives

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Appreciation of this problem has meant that for years, there have been attempts to improve the testing procedures. In particular, work has been done through the UNECE on a replacement of the NEDC by a test cycle that at the same time will have wider application in the global market and be appropriate for both type approval systems and those based on self-certification. Progress is being made and it appears that a number of the faults of the NEDC will be addressed in the WLTP procedure.

However, there are certain issues that even the WLTP is unlikely to resolve, including the impacts of air conditioning systems and the use of other power consuming equipment, such as power steering and vehicle lights. The need to reduce emissions resulting from the use of air conditioning systems has been recognised at least since 2007 and in the meanwhile the problem has become worse as air conditioning in vehicles has become more widespread.

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CASE STUDY 3 - THE IMPACT OF THE LEGAL FRAMEWORK ON NON-EU BASED MANUFACTURERS

Introduction

Objectives of the case study and reasons for selecting this topic

This case study investigates the impact of the EU type approval for motor vehicles on non-EU manufacturers and how it compares with and the extent to which it influences other regulatory regimes. By focusing on these issues, this case study will, in particular, assess:

- The practical experiences and possible issues that non-EU manufacturers face in relation to the type approval process and procedures in the EU;
- How the EU legislative framework compares with the legal framework in third countries and the advantages and disadvantages of these systems;
- The role that the EU type approval framework and UNECE have to play in the development of automotive regulations in third countries;

Methodology

The case study has been based on desk research of industry reports with a focus on regulatory compliance issues in third countries, an analysis of data collected from COMEXT and the European Automobile Manufacturers Association, and an analysis of interview questionnaire responses from 3 non-EU automotive manufacturers located in **China**, the **Russian Federation** and **South Korea** and 2 non-EU automotive associations that represent **Turkish** and **Japanese** industry interests.

The interview questionnaire sought responses in a number of areas including whether Framework Directive 2007/46/EC has encouraged the harmonisation of the Internal Market, whether the work of UNECE has been effective in encouraging harmonisation efforts globally, whether the EU type approval process has influenced the development of other regulatory regimes, whether the EU type approval approach causes any particular compliance or administrative costs when compared with the US and other third countries, and whether any of the EU type approval requirements are problematic for those wishing to import products to the EU. The analysis and findings are based on evidence collected through a limited number of interviews and this should be kept in mind when interpreting the results¹¹⁸.

Background

Imports to the EU

Europe has become an important market for non-EU manufacturers of vehicles and automotive components. According to a recent study¹¹⁹ **the EU is the largest importer of automotive products with a global share of 46%. The combined total value of intra-EU and extra-EU imports is €416 billion.** The table below, provided by the European Automobile Manufacturers Association, ranks the most significant importers of passenger cars to the EU in recent years. The results indicate that, despite a recent decline, Japan remains the most important importer of passenger cars to the EU market (with a market share of 36.3% in 2009).

¹¹⁸ An additional 7 stakeholders were repeatedly requested to participate in the research but declined.

¹¹⁹ Export Import Bank of India (2008) Indian Automotive Industry: At the Crossroads.

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Table 1: Origin of EU passenger cars to the EU (€ million)

| | 2008 | 2009 | % change | % share in 2009 |
|---------------|--------|--------|----------|-----------------|
| Total | 30,058 | 21,743 | -27.7% | 100% |
| Japan | 10,821 | 7,896 | -27.0% | 36.3% |
| Turkey | 3,676 | 3,193 | -13.1% | 14.7% |
| United States | 6,036 | 2,990 | -50.5% | 13.8% |
| South Korea | 3,945 | 2,607 | -33.9% | 12.0% |
| India | 585 | 1,536 | 162.8% | 7.1% |
| Mexico | 2,405 | 1,499 | -37.7% | 6.9% |
| Brazil | 808 | 539 | -33.4% | 2.5% |
| South Africa | 300 | 469 | 56.4% | 2.2% |
| China | 564 | 360 | -36.1% | 1.7% |

Source: ACEA

Further analysis of a number of key EU trading partners over the 2000 to 2010 period (at constant 2005 prices) indicates that imports of passenger cars from emerging countries such as Turkey, India and China have significantly increased over the period (although China holds a relatively minor market share). The same is true of traditional trading partners such as the US but in the case of Japan and South Korea, the level of imports has decreased. However, Japan and South Korea continue to maintain a high share of the market.

Table 2: Value of Motor Vehicles Imports to the EU of at Constant 2005 Prices (€ million)¹²⁰

| Year | Japan | South Korea | US | Turkey | Brazil | India | Russia | China | Other | Total |
|--------------------------|---------|-------------|-------|--------|--------|--------|--------|--------|--------|---------|
| 2000 | €12,616 | €3,766 | €2372 | €612 | €259 | €108 | €76 | €6 | €1025 | €20,840 |
| 2010 | €7,275 | €2,310 | €3333 | €3204 | €368 | €1,266 | €27 | €455 | €2162 | €20,400 |
| Change % | -42.3 | -38.7 | 40.5 | 423.4 | 41.6 | 1067.8 | -64.4 | 7587.6 | 110.93 | 2.1 |
| % of total (2010) | 35.7 | 11.3 | 16.3 | 15.7 | 1.8 | 6.2 | 0.1 | 2.2 | 10.6 | 100 |

Source: COMEXT

Further analysis of a number of key EU trading partners over the 2000 to 2010 period (at constant 2005 prices) indicates that imports of passenger cars from emerging countries such as Turkey, India and China have significantly increased over the period (although China holds a relatively minor market share).

Table 3: Value of Imports to the EU of Parts and Accessories for Motor Vehicles¹²¹ at Constant 2005 Prices (€ million)

| Year | Japan | US | South | Brazil | China | India | Russia | Turkey | Other | Total |
|------|-------|----|-------|--------|-------|-------|--------|--------|-------|-------|
|------|-------|----|-------|--------|-------|-------|--------|--------|-------|-------|

¹²⁰ Data extracted from the COMEXT databases in relation to SITC code 781 (motor cars and other motor vehicles principally designed for the transport of persons).

¹²¹ Data extracted from the COMEXT databases in relation to SITC code 784 (parts and accessories of the motor vehicles of groups 722, 781, 782 and 783).

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| | | | Korea | | | | | | | |
|-------------------|--------|--------|--------|------|--------|-------|------|-------|-------|---------|
| 2000 | €3,174 | €2,982 | €416 | €202 | €122 | €69 | €22 | €464 | €1623 | €9074 |
| 2010 | €3,161 | €1,136 | €1,210 | €263 | €1,481 | €426 | €25 | €1713 | €2096 | €11,511 |
| Change % | -0.39 | -61.9 | 190.7 | 29.8 | 1110.7 | 520.5 | 17.4 | 268 | 77.4 | 26.9 |
| % of total (2010) | 27.4 | 9.9 | 10.5 | 2.3 | 12.9 | 3.7 | 0.2 | 14.9 | 18.2 | 100 |

Source: COMEXT

At the same time, the market share of Japan and more so, of the US as the source of imports of parts and accessories into the EU has declined. From around 33% of the total value in 2000 imports from the US currently represent less than 10% of parts and accessories imports, while the share of Japan has declined from 35% to 27%. China and Turkey have become much more significant.

Regulatory and Compliance Issues in relation to Non-EU Manufacturers in emerging Economies

A number of industry reports have previously examined the extent to which non-EU manufacturers in emerging economies are able to meet robust compliance requirements. Overall, it appears that the situation is not clear-cut and that generally speaking non-EU manufacturers that are first tier suppliers or have strong links with Western firms are more adept at meeting the requirements than those who fall outside this category.

For example, a report prepared for the US Congress suggested that independent Chinese manufacturers that do not have strong ties with foreign car producers struggle to meet international safety and emission standards. The extent to which automotive intellectual property rights are respected by Chinese firms was also questioned¹²². However, a much more positive outlook was presented by a study that examined Chinese component manufacturers with strong links with GM. It was noted that defect rates of Chinese parts decreased considerably from 1,397 per million in 2000 to 23 per million in 2003¹²³ (this was considered as an acceptable defect rate).

Similar research that has jointly analysed Chinese and Indian manufacturers reached similar conclusions. Although first-tier suppliers are able to meet international standards, the main weaknesses relate to second and third tier manufacturers whose ability to meet such requirements is developing in a slow and uneven manner¹²⁴. Furthermore, evidence on Indian manufacturers suggests that they need to invest in R&D programmes in order to meet the obligations outlined by international emission standards¹²⁵. In addition, in order to meet European emission standards, Chinese manufacturers have incorporated European engines and transmissions within their vehicles with a view to complying with the EU type approval requirements¹²⁶.

Practical Experience of non-EU manufacturers with the Type Approval Framework

The literature presented above suggests that meeting EU environmental and safety standards has been – and possibly remains – a challenge for some non-EU manufacturers. In this section we assess the practical experiences of non-EU manufacturers and associations when engaging with the EU type approval process.

¹²² Tang, R. (2009) The Rise of China's Auto Industry and Its Impact on the U.S. Motor Vehicle Industry

¹²³ Klier, T. and Rubenstein, J. (2008) Who Really Made Your Car?

¹²⁴ Sutton, J. (2004) The Auto-component Supply Chain in China and India: A Benchmarking Study

¹²⁵ Export Import Bank of India (2008) Indian Automotive Industry: At the Crossroads

¹²⁶ Chinese bus makers take on EU market:

<http://www.chinaautoreview.com/pub/CARArticle.aspx?ID=4912>

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The impact of Framework Directive 2007/46/EC and the replacement of EC Directives by UNECE Regulations under the General Safety Regulation are considered in terms of whether they have improved access to the Internal Market for non-EU manufacturers. An issue also considered was whether there are any barriers at European or national level that may hinder access to the Internal Market, along with any other related practical matters.

The Impact of Framework Directive 2007/46/EC

The interview respondents considered that the EU type approval system has been harmonised, simplified and in the majority of cases clarified as a result of the introduction of Framework Directive 2007/46/EC. While opinions differ as to the level of improvement, the new legal framework is seen as improving market access for non-EU firms, particularly since it represents a major single piece of legislation that removes the need for national type approval. In addition, the administrative aspect of the process is seen to be better for the needs of manufacturers in terms of applying for type approval certificates. For Chinese manufacturers, the EU type approval process is now thought to be more time and cost effective than the previous regime. Overall, the introduction of the Framework Directive has been viewed as a positive development.

The Replacement of EC legislation by UNECE Regulation under the General Safety Regulation

Opinions from stakeholders were divided as to whether the replacement of EC Directives by UNECE Regulations as part of the General Safety Regulation has had a beneficial impact on the Internal Market. One set of comments suggested that this legislative development has added an additional layer of requirements, has made the EU type approval process more complicated and has increased administrative burdens. From this perspective, this outcome appears to run counter to the spirit of the simplification of the type approval process. Greater levels of clarity were also seen to be necessary for the application method for separate partial approvals and the approval number system.

However, the replacement of EC legislation by UNECE Regulations is seen by other stakeholders as having a positive role by encouraging firms to complete the type approval process in an efficient way, based on a single set of rules for the global market. It has also strengthened global harmonisation efforts.

Assessment of Potential Barriers to the Internal Market

In response to a question about barriers within the Internal Market, most non-EU manufacturers indicated that as long as the EU type approval process is followed closely, there are no legislative barriers to entry. However, a number of practical issues were identified given the complexity of the legislation. These are outlined in more detail below.

The Russian manufacturer commented that the Internal Market is relatively open but requires a strong level of expertise to deal with the legislation. Firms are therefore required to invest significantly in EU type approval specialists, although this may not represent a barrier to manufacturers as such. However, given that the firm was an SME, the requirements are considered disproportionately burdensome to deal with considering their complexity and breadth. It was pointed out that new entrants to the market need to identify suitable supply chain partners and that it is difficult to make automotive systems from several suppliers to work together. Furthermore, when legislative changes are made, there is often insufficient time to adapt to new requirements (e.g. ABS) particularly if new vehicles are under development.

The Russian manufacturer thought positively of the relief measures for vehicles produced in small series. In fact, given that the manufacturer was associated with a small manufacturers association and had a broad understanding of the types of difficulties that small businesses face, it was made clear that the small series

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relief measures provide a means to enter the Internal Market for small manufacturers but ideally these could be extended to other technical areas.

According to the Turkish industry association, given that Turkey follows the EU legal framework, access to the Internal Market has been enhanced in recent years. It was indicated that positive benefits have been realised in terms of sales, but also quality and traceability of vehicles. However, Turkish automotive manufacturers do have to invest heavily and employ relevant specialists in order to meet EU regulatory requirements although this is often seen as a worthwhile investment.

While the EU type approval legislation does not present any particular barrier, various comments were made by the respondents on issues to do with the content or the clarity of the legislation. In some cases, this makes the interpretation of the legislation difficult. For example:

- Certain items do not appear in the list of regulatory acts for EC type approval of vehicles produced in unlimited series (for example, some Regulations have come into force but haven't been included in the list; 661/2009/EC will repeal many Directives but this could be indicated and it was suggested that the list would be enhanced if it included all other relevant regulations such as CO₂ emission regulation, tyre labelling regulations, jack standards etc);
- The implementation dates and other implementation aspects of certain Directives, Regulations or testing requirements are not clear and could be clarified;
- Criteria (such as emissions and environmental requirements) contain very detailed classifications and these have been amended on numerous occasions.
- Efforts are required to ensure that the legislation is constantly monitored. Ensuring the correct interpretation of the legislation was also perceived as an issue¹²⁷.
- Future EU vehicle noise regulation is also perceived as a potential threat to accessing the Internal Market. One manufacturer thought that this may lead to cars being built specifically for the EU market and the emergence of difficult to meet compliance requirements.

Although the complexity of the EU type approval was emphasised, it was also recognised that European policy makers are trying to strike a difficult balance between environment, safety and growth objectives. The EU was largely seen as being open and responsive to a range of stakeholder viewpoints. However, associations and manufacturers stated that they sometimes need to identify and raise issues after requirements come into force. Ideally, policy makers should fully examine the impact of certain measures during the policy formulation process.

The Persistence of National Barriers

All non-EU manufacturers and associations indicated that the introduction of Framework Directive 2007/46/EC has helped reduce national barriers. However, they still made reference to the persistence of some national barriers and obstacles (see also Case study 4), even though these were not seen as highly problematic.

For example, one issue is that the UK market requires vehicles to be installed with imperial/metric dual display instruments that are not commonly used or accepted by other EU countries. Another issue is that unless a manufacturer has a representation in France, the French authorities tend to be particularly stringent when considering the authorisation of vehicles. The Romanian authorities are said to require an application for a 'local approval' even when a CoC according to the Framework Directive is available. In Greece, additional statements are sometimes required in order to prevent misinterpretation of the type approval.

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Comparison of the EU legislative framework with the legal framework in third countries -

This section briefly describes the two main types of legislative approaches to the regulation of automotive products (the type approval framework and self certification) and the role of the UNECE and EU in establishing automotive regulation internationally and in Europe. The legislative frameworks of a number of important or emerging trading partners are then explored including Japan, the US, South Korea, Turkey, China and the Russian Federation.

Type Approval Framework and Self Certification Approach

As in the case of the EU, a large number of countries have adopted a type approval approach. Its basic principle is that is based on a ex-ante – prior to the entry of the vehicle in the market - administrative procedure by which the competent authorities of contracting parties to the Agreement declare, after carrying out the required verifications, that a vehicle, equipment or parts submitted by the manufacturer conform to the requirements of the given regulation. On the basis of this the manufacturer certifies that each vehicle, equipment or parts put on the market were produced to be identical with the approved product¹²⁸.

The other approach followed in a few countries, the so-called self certification, requires manufacturers or importers to independently determine that the vehicle or equipment complies with all applicable standards indicated by national legislation. No prior verification is required by a governmental agency or authorised testing body before the vehicle or equipment can be imported, sold, or used. Authorities perform ex-post product testing activities and if non-compliant products are identified then they may be removed from the market.

The UN ECE Agreements

In order to overcome national technical barriers to trade, the European Economic Community took the first steps towards developing international rules for the approval of components for motor vehicles in Geneva in 1958. This resulted in the **1958 UN ECE Agreement** that was amended in 1995 to allow for the participation of non-EU countries and . This forms a legal framework wherein participating countries agree upon a common set of technical prescriptions and protocols for type approval of components. In particular, the main features of this Agreement are harmonised specifications for automotive parts and mutual recognition of approvals granted, together with type-approval certificates issued by governments.

The 1958 agreement does not limit the EU from legislating independently where it is considered that there is a need for autonomous or more stringent action. However, it is recognised that the objective of the UN ECE is the adaptation of the UN ECE Regulations and the respective safety requirements so that they are compatible with the objectives and the principles of EU legislation.

In addition to the 1958 Agreement, the 1998 Global Agreement aimed to further enhance the process of international harmonisation bringing along a larger number of countries that were not contracting parties to the 1958 Agreement (e.g. USA, China). The main objective of the 1998 Agreement is the joint development of global technical regulations (GTRs) in relation to the safety, environmental protection, energy efficiency and anti-theft performance of wheeled vehicles, equipment and parts. These global regulations are intended to serve as the basis for national regulations and to eventually lead to the convergence of technical

¹²⁸ Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions,
<http://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/505ep29.pdf>

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standards. The contracting parties to the Agreement are not obliged to accede to the Agreement but if they do so then they are obliged to adopt the GTR. Unlike the 1958 Agreement, there are no provisions for the mutual recognition of approvals granted on the basis of global technical regulations. Their own national regulations can remain more or less stringent than the global ones. The Agreement provides for the creation of a compendium of national regulations which are candidates for harmonization or adoption as global technical regulations.

It should be emphasised that while the type approval framework has been the approach promoted by the UNECE, the contracting parties with alternative legal traditions, such as those based on self certification, are free to continue with such approaches although they may wish to include UN ECE regulations in national legislation.

Comparison of the EU Type Approval Framework with that of other regions

Even though all UN ECE contracting parties' type approvals are perceived as legally equivalent by the UN ECE, there are real and perceived differences in the extent and stringency of national regulations that have transposed UN ECE requirements and the methods applied by different national type approval authorities.

Japan is a signatory to the 1958 and 1998 (UNECE) Agreements and motor vehicles produced in large series generally fall under the Type approval system. The overall legislative framework is similar to that of the EU but there are differences in terms of specific requirements. Under this system, sample vehicles having the same structure, equipment, and performance as those of the vehicles intended for sale are examined for compliance with the safety and environmental regulations by the National Traffic Safety and Environment Laboratory (NTSEL). In addition, the uniformity of vehicle quality and performance is examined by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) through an inspection of relevant documents. Identical model vehicles that comply with the regulations are designated as a type. After the approval of the type designation, in order to confirm the conformity of production processes, the MLIT audits the manufacturers' ongoing inspection of type-designated vehicles. The Japanese approach includes a relatively advanced range of requirements in areas such as environmental protection and noise reduction¹²⁹.

In the case of Japan, the Japanese automotive association interviewed commented that although the EU and Japanese type approval frameworks have their own characteristics they are both equally rigorous and ensure the enforcement of high environmental and safety standards. No clear advantages or disadvantages were indicated. No particular benefits are available to manufacturers through either approach and if any disadvantages and advantages arise they tend to do so on a case by case basis.

China has also adopted a type approval system. Under this approach, vehicles need to be registered in the 'Index of Enterprise Produced Motor Vehicles and their Products'. Before being listed, vehicles need to pass a type approval test conducted by the Type Approval Organisation for New Motor Vehicle Products. However, China is only a member of the 1998 (UNECE) Agreement and this provides a greater level of regulatory flexibility than the 1958 Agreement.

The Chinese manufacturer interviewed mentioned that there are similarities in the overall framework of the EU and Chinese systems. However, the EU system was noted as being much more advanced, and contained a wider range of specific and complex technical requirements, particularly environmental requirements. As a result, the EU type approval system was viewed as being more difficult to follow, less clear and sometimes difficult to interpret. In addition, the Chinese system was perceived as performing better in terms of meeting the needs of manufacturers and has improved considerably in recent years.

¹²⁹ WP29 (2012) How it works. How to join.

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Turkey, as an EU Candidate Country, is required to follow the EU-type approval framework and is a signatory to both 1958 and 1998 UNECE Agreements. Applications for type approval of motor vehicles are lodged with the Technical Services Organisation (TSO) which is overseen by an Approval Authority (Ministry of Industry and Trade). The TSO carries out the necessary examinations as required by the EU type approval legislation. The component, system or separate technical unit type approvals issued by Approval Authorities in EU Member States are accepted by the TSO. A Vehicle Type Approval Certificate is issued to manufacturers that fulfil the requirements.

The Turkish association interviewed commented that while Turkey follows the EU type approval framework there are a few minor differences. These include different implementation dates for emission requirements and some differences in relation to the new Advanced Systems covered in the General Safety Regulation. Furthermore, in some cases Turkey stipulates the vehicle production date for the application of the legislation while the EU applies the registration date. Unlike some EU Member States, the Turkish type approval system is overseen by a single Approval Authority and Technical Services Organisation, and this is considered to be preferable in minimising competition between technical services bodies and maintaining technical service standards. Given the strong similarities between the two legal frameworks, the barriers to trade between the EU and Turkey have been greatly reduced.

Russia is also a member of the 1958 and 1998 (UNECE) Agreements. The Russian government has very recently introduced UNECE regulations within the Russian Compliance Assessment System, which is a type approval system, under the Technical Regulation for the Safety of Wheeled Vehicles. The Technical Regulation provides direct references to 112 UN Regulations and 2 UN Global Technical Regulations, and provides national requirements in relation to vehicle safety maintenance. As part of the type approval process, manufacturers must submit their vehicle for inspection to the territorial division of the State Inspection on Traffic Safety of the Ministry of Internal Affairs. On completion of the inspection, the manufacturer receives the results in the form a diagnostic card and an approval certificate¹³⁰.

In relation to the Russian type approval, a Russian manufacturer interviewed considered that the recent introduction of the UNECE approach means that it's far too early to gauge the performance of the system. It is not entirely clear how the system works and it needs to be determined if the Russian system will require the same UNECE certificates as the EU type approval framework. Also, there are additional national measures and it is still not clear how these work in practice. A basic observation is that overall it is less robust and stringent than the EU type approval and seems more bureaucratic given the number of procedures.

Comparison with Automotive Regulation based on Self-certification Systems

In contrast to the EU approach, in the United States and South Korea a self-certification system is used to ensure the safety of vehicles.

While following a self-certification approach **South Korea** is a signatory to both the 1958 and 1998 UN ECE Agreements¹³¹. To support the self-certification process, the government issues its own automotive safety standards but also draws upon EU/UNECE and US standards. Manufacturers internally certify that their manufactured vehicles meet the safety criteria outlined by the standards and the self certification evidence is indicated in the vehicle. Upon completion, the manufacturer notifies the specification of the vehicle to

¹³⁰ WP29 (2012) How it works. How to join.

¹³¹ In the case of South Korea, the technical requirements arising from the UNECE Regulations are used as the compliance test criteria for self-certification without the requirement for conformity of production as is the case of countries that follow a type approval approach. Furthermore, type approval marking granted by other Contracting parties to the UNECE Regulation cannot be recognized as the manufacturer's self-certifying marking

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the Korea Automobile Testing and Research Institute (KATRI). They also need to register their safety test facilities with the Ministry of Land, Transportation and Maritime Affairs (MLTM).

In order to ensure that market is performing correctly, the MLTM in cooperation with KATRI develop and execute an annual investigation plan for identifying defects in vehicles. If an investigation indicates non-compliance with the safety standards, a penalty is imposed and a recall ordered. However, a manufacturer may voluntarily accept the defects during the compliance test and report a recall plan with the aim of being dealt with less stringently by the authorities.

In the United States, manufacturers are legally responsible for ensuring conformity with the relevant legislation given that the system is based on self-certification. The National Highway Traffic Safety Administration (NHTSA) is authorised to issue Federal Motor Vehicle Safety Standards (FMVSSs) that specify performance requirements for new motor vehicles. U.S. Federal law prohibits any person from manufacturing, introducing into interstate commerce, selling, or importing any new motor vehicle unless the vehicle conforms to all applicable safety standards. Manufacturers are required by statute to self certify that their products conform to NHTSA's safety standards before they can be offered for sale. US is a member of the 1998 (UNECE) Agreement.

Comparison of the US Self Certification Approach with the Type Approval Frameworks

In comparing the European and US system, there was unanimous agreement among representatives from all regions that the US market is a more difficult market to enter as a result of the self-certification approach. The requirements place a greater burden on manufacturers, in requiring them to ensure that their data, products and documentation comply with the regulations. This is mainly because manufacturers cannot rely upon the support of independent technical services to approve commercial items. The system lacks formal testing structures and therefore ensuring compliance is more complicated for engineers to deal with.

In addition, while legal responsibility for approving vehicle types within the EU lies with public authorities, in the US, the manufacturer's documentation may not stand-up in court. Consequently, some non-EU suppliers of components do not allow their products to be used for vehicles intended for sale in the US in order to avoid legal risks and a possible recall process. It was confirmed that a market recall is a major risk with significant financial and reputational repercussions for manufacturers.

Concerning the comparative costs of the different self certification and type approval systems, the responses provided do not present a clear picture (the respondents considered both the administrative costs and compliance costs when providing their answers). EU type approval costs were noted as being lower than in Japan and China by some manufacturers but others suggested that costs are higher than in China and India and more or less the same as in Japan, South Korea and Turkey. Evidently, the costs incurred depend on the specific circumstances of the firms and it is not possible to reach clear conclusions. However, it can possibly be inferred that at least in some categories the EU type approval costs are not higher than in other regions.

In comparison to the US in particular, while pure administrative costs are probably higher in the EU, manufacturers pointed to the higher compliance costs for their products. In addition, insurance costs increase the costs of access to the US markets and this aspect can act as a barrier to new entrants, especially when they lack insurance history. Thus, while the US market is large enough to remain attractive to manufacturers willing to pay the additional insurance costs, the EU type approval approach, despite the more costly administrative process, involves a less expensive form of insurance and offers lower entry costs overall.

In terms of specific aspects of the EU type approval framework that were seen as particularly expensive a number of examples were given including crash testing, prototype development costs, the limited number of

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labs available that offer specific testing services and the limited number of authorised EU technical services for on the spot witness tests.

The role of EU type approval legislation and the UN ECE have in the development and harmonisation of automotive regulation in third countries

In this section we explore the role that EU type approval and the UN ECE have had so far in the development of automotive regulation in third countries. It is mainly based on inputs from a few manufacturers and industry associations.

In general, stakeholders commented that the growing membership of the UN ECE and recognition of the EU type approval system have encouraged the uptake of type approval systems. It was recognised that the main driver for third country governments is to encourage the development of national industry in line with developments internationally and to meet international environmental and safety obligations. Furthermore, it was noted that when harmonisation occurs it often benefits EU exporters to third countries. While the US remains a key country that would make it almost impossible to import a vehicle designed according to the EU type approval, the opportunities for EU exporters to export vehicles designed according to EU requirements were said to be increasing.

It is likely that membership of UN ECE is the main cause of this trend in a number of cases (e.g. Russian Federation) although there was some references made to the fact the EU type approval has influenced the introduction and development of the type of approval approach in countries such as China.

In addition, during the discussions, stakeholders commented that a number of other countries follow the type approval approach or accept imported vehicles with EU type approval. However, given that the situation is constantly changing it was difficult to determine with certainty whether the examples given are currently accurate and whether the countries indicated can be said to adopt either one or both of these practices. The countries identified include: Argentina, Costa Rica, Jordan, Croatia (as an EU Candidate Country Croatia closely follows the EU type approval) Lebanon, Malaysia, Morocco, Pakistan, Singapore, South Africa and Venezuela. Mexico was also mentioned as a country that accepts imports with EU type approval provided that the vehicle is fitted with two chassis labels and a US style Vehicle Identification Number.

Japanese stakeholders commented that EU type approval has not directly influenced the Japanese approach. However, there has been an indirect impact via UN ECE. Between 1998 to 2008 Japan adopted 35 UNECE regulations¹³². Furthermore, as with EU type approval, the Japanese approach is relatively advanced. The Ministry of Land, Infrastructure, Transport, and Tourism is working on a new target to reduce fatalities by 2020 through the introduction of new measures, for example, the application of ITS technologies that can detect pedestrians and other vehicles and the introduction of safety measures for quiet road transport vehicles (QRTV). In addition, the MLIT has enacted motor vehicle emission control regulations and motor vehicle noise control regulations in the Safety Regulations for Road Vehicles, in order to ensure compliance with the permissible limits stipulated in the Air Pollution Control Law and the Noise Regulation Law.

There are examples of EU requirements being directly referred to in the legislation and standards of other countries. For example, EU requirements have been specifically referred to in Chinese standards concerning the 'limits and measurements for emissions from light duty vehicles'. China has also adopted UNECE standards for emissions¹³³. A recent CARS 21 report observes that European emission standards provide a

¹³² B.Kisulenko,(2009), UNECE WORLD FORUM FOR HARMONIZATION OF VEHICLE REGULATIONS (WP.29) AND ITS CONTRIBUTION TO ROAD SAFETY IMPROVEMENT (presentation),

http://www.unece.org/fileadmin/DAM/trans/roadsafe/docs/moscow-Kisulenko_WP29Chairman.pdf

¹³³ Stares, S. (1995) China's Urban Transport Strategy

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good example of where several key markets (e.g. China) are following the EU's lead¹³⁴. Chinese automotive safety standards have also been heavily influenced by European standards¹³⁵. Similarly, the Russian Federation is closely following EU environmental legislation. In 2006, vehicles were required to follow the Euro-2 requirements, from 2008 the requirements of the Euro-3 requirements were in place, and since 2010 the Euro-4 requirements have been established. These have been perceived as providing positive benefits for EU exporters given their role in harmonising international markets.

However, it is generally agreed that although the US is a member of UN ECE, its self-certification approach will continue to persist. Although the US participates in meetings, the final outputs are rarely adopted. Nonetheless, the US has begun to accept one or two minor items such as UNECE requirements relating to seat belts.

Similarly, the self-certification model is certain to remain in South Korea. However, the EU- SouthKorea Free Trade Agreement encourages the future use of UNECE standards in order to support harmonisation efforts and limit non-tariff barriers. For example, South Korea already applies the UN ECE Regulations for diesel vehicles but also applies its own and US standards in other areas¹³⁶.

Conclusions

The data presented indicates that the EU is the world's leading importer of vehicles. While the EU continues to import vehicles and automotive parts from long standing trading partners, the volume of imports from emerging economies is increasing rapidly. Previous research suggests that importers from emerging economies to the EU may struggle in meeting advanced safety and environmental requirements. However, the situation is continually evolving and manufacturers with links with Western firms have invested heavily in ensuring that international standards can be met.

The interviews with stakeholders have indicated that compared with other regulatory regimes, the EU type approval framework is as an advanced and rigorous system for ensuring that vehicles and components adhere to a range of environmental and safety requirements and is on a par with other leading countries such as Japan in the safety and environment fields. While the legislation is perceived to be particularly complex, the key message from stakeholders is that the EU type approval does not give rise to any major barriers to accessing the Internal Market as such. However, manufacturers are required to invest significantly in appropriate expertise in order to ensure that the legislation is followed correctly and the compliance requirements are met. In addition, the legislation appears to disproportionately burden SMEs given their limited resources.

Other countries that are relatively new to automotive legislation of this kind (such as China and the Russian Federation) have adopted similar frameworks but have not reached the same level of stringency and potentially impose slightly lower administrative and compliance costs. From the perspective of Chinese manufacturers, the Chinese approach does better meet the needs of manufacturers and has a simpler approach. However, the stakeholders interviewed appeared committed to strengthening their exports to the EU despite the level of investment and work required.

¹³⁴ DG Enterprise and Industry (2008) Cars 21: Mid Term Review

¹³⁵ China Compulsory Certificate (CCC), http://www.aiag.org/staticcontent/asia/ccc_presentation.pdf

¹³⁶ The EU Korea Free Trade Agreement

http://eeas.europa.eu/delegations/south_korea/documents/eu_south_korea/presenter_1_motor_vehicles_parts_en.pdf

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The introduction of Framework Directive 2007/46/EC is seen by non-EU firms as contributing to the simplification and harmonisation of the EU type approval system and enhancing the accessibility of the Internal Market. However, as among EU manufacturers, there are different views about whether the introduction of the General Safety Regulation has had a positive effect. While some were convinced that it encourages harmonisation with international standards and reduces administrative requirements others perceived it as an additional burden that does not contribute to the simplification of the Internal Market.

In addition, in terms of practical difficulties that manufacturers face, there are areas of the legislation that remain unclear. This includes difficult to follow implementation dates, emissions and environmental requirements. National barriers within the EU also persist but these are not seen as highly problematic. The adoption of EU small series type approval provisions is considered as helpful in reducing some of these complexities and non-EU manufacturers that initially enter with only small vehicle volumes have built part of their business strategy around them.

On the positive side, the EU type approval is considered to be much easier to manage than the US self-certification approach and to be a more open system. Despite the absence of the EU type approval administrative costs, the US system is generally regarded as both more complex and more expensive, when the engineering compliance aspects and insurance against the commercial and litigation risks are taken into account. The EU type approval system is more effective and efficient in ensuring that manufacturers can appropriately manage the obligations expected of them and confidently place products on the market.

Despite the large differences between some approaches, harmonisation has been noted internationally in terms of the up-take of the type approval system and adoption of specific EU requirements. One beneficial aspect of this is that it removes technical barriers to trade for EU exporters. However, the rate of change has been difficult to determine and it's clear that further policy efforts should be undertaken to encourage the ongoing harmonisation of EU / UN ECE requirements in relation to third countries.

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CASE STUDY 4 - MEASURES AND REGULATIONS ADOPTED AT THE NATIONAL LEVEL CONCERNING THE PROCESS OF REGISTRATION AND PLACING IN THE MARKET OF MOTOR VEHICLES AND COMPONENTS

Introduction

The case study provides a review of measures and regulations adopted at national level that apply outside the type approval process and that can possibly create obstacles or additional burdens when accessing the EU market on the basis of a Certificate of Conformity.

The case study mainly concerns the process of registration and placing on the market of motor vehicles and components. This is a process that follows the issuing of a Certificate of Conformity by manufacturers and is a step beyond the type approval legal framework. It remains a responsibility of Member States. The objective of the case study is to identify any additional burden linked to the process, to assess the seriousness of the burdens in a qualitative way, and to consider the appropriateness of approaches followed by any specific Member State. In this way, the case study will aim to throw light on the question of whether the type approval legislative framework is sufficient to guarantee free entry to markets across Europe.

The main output of the case study is the development of an inventory of national measures, regulations and other practices that appear to represent obstacles to the harmonisation of the market. This is supported by an assessment of the reason why they exist, the problems they are intended to address and in turn the problems they create. Most of the measures under examination are very specific and it is not possible to quantify their effects. The analysis focuses on a number of these issues attempting to describe them where possible, and to identify how stakeholders are affected by them. However, the inventory does not claim to be exhaustive since it is based on feedback reported during the research phase. Nonetheless the team believes that the main considerations have been identified and the evidence presented is able to provide some insight into the impact of national divergences on the legal framework.

The study is based on desk research from industry reports, interviews with national and European stakeholders and on responses from the online survey of national authorities, technical services and manufacturers.

Background

Vehicle Registration framework

All Member States have a vehicle registration system for motor vehicles. It constitutes the administrative authorisation for their entry into service, involving the identification of the vehicle and owner and the issuing of a registration number. The registration data are also used for the taxation of motor vehicles including registration taxes but also taxes related to pollutant and GHG emissions. At the end of the registration procedure, Member States issue a registration certificate which certifies that the vehicle is registered in a Member State. Currently, the registration process is solely managed by Member States within the framework of Directive 70/156/EEC.

Within the context of the Directive, each Member States has its own system for the registration of motor vehicles in order to authorise their entry onto the public road network. The registration framework varies from country to country but, in the majority of cases, the information necessary is extracted from the

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vehicle's Certificate of Conformity (CoC). All Member States register cars, buses, lorries and motorcycles. In a number of Member States, the register of motor vehicles also includes information such as tax, insurance etc. The common attribute of all registration procedures in the EU include the necessity to submit the following:

- A certificate of conformity (for new vehicles)
- The previous registration certificate (for vehicles that have already have been registered)
- Proof of insurance
- Proof of ownership
- Proof of VAT payment
- Proof of roadworthiness
- Payment of road tax or vehicles registration tax (in some cases – see below)

In the case of new motor vehicles, the registration process is done by the importer, manufacturer of seller. In some cases however, the customer must register the motor vehicle his or herself. This is the case for either low series production cars not registered in the member States where it is importer of for “kit cars” built directly by the customer. Responsibility for the registration process varies among EU Member States. In some countries, the national authorities are in charge of the registration process. In **France**, for instance, the registration services are under the responsibility of the Ministry of the Interior, while the Ministry of Transport is responsible for carrying out the control of the first registration and registration withdrawals. In practice, however, there are registration offices in all French départements at the local level. In other EU countries, however the registration process is delegated to agencies, as in the UK, or to local authorities as is the case in the Czech Republic. Other countries have a mixed system; in the case of Romania, RAR has regional branches themselves in charge of the registration process. A related issue is the need to de-register a motor vehicle form one member States when exporting it to another Member State, although this is beyond the scope of this study.

Notification procedure under Directive 98/34/EC

During the research phase, a number of national authorities made reference to overlaps between different EU directives and regulations rather than to issues linked to national measures and regulations. This is mainly related to Directive 98/34/EC that imposes an obligation on Member States to notify the Commission and other Member States about draft technical regulations that will be set out in national law (including the transposition of Directives). This prevents a large spectrum of interpretation to be used in different Member States throughout the EU. The interpretation of the directive, was not seen to be an important problem, especially in comparison to issues linked to addition burdens and tax regimes listed below.

Analysis

The table below summarises the national measures and regulations identified that apply to vehicles in the registration process of some Member States and often pose additional burdens. These are discussed in more detail in the following section.

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Table 1 – list of issues relating to the measures and regulations at the national level

| Country | Type of issue | Description of the issue |
|------------------|--|--|
| France | Additional national registration burdens | In some cases, additional information to that provided in the CoC is required |
| Romania | Additional national registration burdens | Additional costs linked to “local registration” where more information is needed in addition to the CoC |
| Poland | Additional national registration burdens | Additional requirements for LPG vehicles |
| France | On road use | High visibility jackets, safety triangle spare set of beam lights and breathalysers need to be in the vehicle at all times |
| Belgium | On road use | High visibility jackets and safety triangle need to be in the vehicle at all times |
| Netherlands | On road use | Hammer needs to be in the vehicle at all times |
| 19 Member States | Tax regimes | See Table 2 |
| UK, Ireland | HGVs | Registration of the trailer and the tractor done as one MV rather than separate ones. This can cause issues when they are uncoupled. |
| UK, Sweden | HGVs | Differences in weights and measures of HGVs permitted to use public roads |
| France, Poland | HGVs | Unreasonable demands for information requirements on TVVs |

In at least three Member States, representatives of vehicle importer associations claimed that the registration burdens imposed necessitate the provision of information that goes beyond what is included in the Certificate of Conformity (CoC) approved by the Type Approval authorities.

As reported, on at least one occasion a non-EU manufacturer without a legal representative in **France** was refused the commercial registration of a vehicle on its territory requiring additional information over and above that required in the CoC. Furthermore, in cases of vehicle that are not produced in large volumes and the manufacturers has made use of the alternative type approval schemes, additional documents and information will be required by the local office in charge of registration.

In **Romania**, there is an additional “local” stage of registration imposed on top of the Certificate of Conformity and the national registration. Stakeholders importing cars into the country have complained that the Romanian system of regional registration is not harmonised, with some regions asking for additional information that creates extra administrative burdens and is being in line with the pan-European regulatory framework.

In **Poland**, the authorities require additional information and have more stringent rules specifically for the placing LPG vehicles on the market. While no clear information was provided, this additional registration concerns the extra 2 million retrofitted LPG cars in the country. In addition to the EU type approval, such

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vehicles must be checked by Polish authorities in a specialised service point to, among other things, verify the container's integrity. This is also the case for LPG vehicles directly placed on the market in Poland.

In some countries, the authorities require specific pieces of equipment to be carried in passenger vehicles. For instance, in the **Netherlands**, a hammer must be located in the car at all times. In **France** and **Belgium**, this is the case for high-visibility jackets and warning triangles, and since 2012, the same applies to breathalysers in France, although the absence of a breathalyser will not be sanctioned¹³⁷. Although these can be easily purchased by the end-buyer of the vehicle, they must be present in the vehicle at the point of registration. A number of trade associations and national authorities have pointed out that these requirements mean in practice that the entry of vehicles on the EU market on the basis of the certificate of conformity does not actually apply. However, manufacturers interviewed do not appear to consider them as material obstacles.

In April 2012, the Commission published a proposal for a *Regulation simplifying the transfer of motor vehicles registers in another Member States within the single market*. While this does not deal specifically with the issues listed above, the scope of the Regulation could pave the way for sharing best practice between Member States with regard to the registration of motor vehicles.

Differences in tax regimes at the point of registration

Taxation of motor vehicles and tax regimes is another area outside the scope of the type approval that poses obstacles to the harmonisation of the market. Taxation is a matter that is by the Member States and not harmonised at the union level. However, there is a direct link between the taxes applicable to vehicle and the information generated by the type approval system, in particular CO₂ emissions, as indicated in the CoC. Currently nineteen Member States have CO₂-related tax schemes, including 16 for which the level of CO₂ emissions determines the registration taxes. The variation in tax regimes is relatively important amongst Member States. Some manufacturers and national authorities have expressed a concern that non-homogenous labelling requirements could be seen as a hidden form of support for national manufacturing industry. In **Germany**, for instance, the system is seen as relatively less stringent than in other Member States as a means of supporting the domestic industry producing cars that are generally more powerful and less fuel-efficient than in other countries. In **France** on the other hand, the fuel consumption labels are far more stringent and are considered to favour local automotive brands that generally produce lighter, less powerful and more fuel efficient cars which can receive a tax break of up to €5,000.

The table below presents a summary of the registration tax regimes for the 19 Member States which levy taxes (registration or circulation taxes) based wholly or partly on CO₂ emissions. It shows some clear differences with for instance a vehicle emitting 150g/km of CO₂ being taxed the “normal” rate in Austria but having a malus imposed in France. In Cyprus, a malus is only imposed for vehicles emitting over 155g/km of CO₂.

¹³⁷Sécurité routière - Rétablissement des panneaux signalant les radars fixes <http://www.service-public.fr/actualites/002384.html> (in French)

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Table 2 – Tax regimes for registration in EU countries where it is related to CO₂ emissions

| Country | General principle | Details |
|--------------------|--|--|
| Austria | Fuels consumption tax levied upon registration. Bonus-malus system | From €300 bonus (<120g/km) to €25 per gram emitted between 160g/km and 180g/km, €50 per gram between 181g/km and 220g/km and €75 above 220g/km. |
| Belgium / Flanders | Registration tax partly based on CO ₂ emissions | N/A |
| Belgium Wallonia | Bonus-malus system | Bonus of up to €3,500 (under 80g/km) malus up to €2,500 for emissions above 255g/km |
| Cyprus | Registration tax adjusted on CO ₂ emissions | 30% reduction for car with emissions under 120g/km to 20% extra tax on vehicles emitting more than 250g/km |
| Denmark | Registration bonus-malus based on fuel consumption | Allowance of DKK 4,000 (€536) for any km above 16km (petrol) and 18 km (diesel) and DKK 1,000 (€134) for every kilometre below this threshold |
| Finland | Registration mainly based on CO ₂ emissions | Rate varies from 5% to 50% of the price of the vehicle |
| France | Registration costs based on CO ₂ emissions | A premium is granted on registration costs for vehicles emitting less than 105g/km (up to €5,000 for those emitting less than 50g/km). A malus is imposed on the registration of vehicles emitting over 140g/km, up to €3,600 (over 250g/km) |
| Germany | No registration costs linked to CO ₂ emission, only annual circulation tax. | The CO ₂ tax is linear at € 2 per g/km. Cars with CO ₂ emissions below 120 g/km are exempt (110 g/km in 2012-13, 95 g/km subsequently) |
| Greece | No registration costs linked to CO ₂ emission, only annual circulation tax | CO ₂ only has an impact on circulation tax |
| Ireland | Registration costs mainly based on CO ₂ emissions | Rates vary from 14% for cars with CO ₂ emissions of up to 120 g/km to 36% for cars with CO ₂ emissions above 225 g/km |
| Latvia | Registration costs mainly based on CO ₂ emissions | Rates vary from LVL 0.3 (€0.43) per g/km for cars emitting 120 g/km or less to LVL 5 (€ 7.18) per g/km for cars emitting more than 350 g/km. |
| Luxembourg | Registration costs mainly based on CO ₂ emissions | 100 g/km receive an incentive of €750. The incentive is doubled to € 1,500 for cars emitting maximum 90 g/km . |
| Malta | CO ₂ emissions factored into registration costs | N/A |
| Netherlands | CO ₂ emissions factored into registration costs | Car emitting less than 95g/km (diesel) and 110g/km (other fuels) are exempt from registration tax |
| Portugal | Registration tax is mainly based on engine capacity and CO ₂ emissions | The tax is equivalent to €4.03 per gram under 115g/km, to €149.39 per gram over 160g/km. |
| Romania | CO ₂ emissions factored into registration costs | N/A |
| Spain | CO ₂ emissions factored into registration costs | Rates vary from 4.75% (121 - 159g/km) to 14.75% (200 g/km and more). |
| Slovenia | CO ₂ emissions factored into registration costs | Rates vary from 0.5% (petrol) and 1 % (diesel) respectively for cars emitting up to 110 g/km to 28% (petrol) and 31% (diesel) respectively for cars emitting more than 250 g/km |
| Sweden | CO ₂ emissions have no impact on registration costs | CO ₂ only has an impact on circulation tax |
| UK | CO ₂ emissions have no impact on registration costs | CO ₂ only has an impact on circulation tax |

Case studies

2

Heavy Goods Vehicles

In the case of Heavy Goods Vehicles (HGVs), applicable national rules and regulations are more common than other types of vehicles. This is partly for historical reasons and is also related to traditional differences in the dimensions of HGV in some Member States.

The research found some important variations among Member States with regard to the **registration of the vehicle**. One case concerns the registration documents for tractors and trailers. While in most Member States, there are different registration documents for the tractor and the trailer when a vehicle is received in the **UK** and **Ireland**, there is only one set of documents provided by the national authorities per truck (i.e. the tractor plus the trailer). This can create problems in terms of driving the lorry outside of the **UK** for international transporters since in a normal haulage operation, trailers and tractors are commonly interchangeable. The problem is typically circumvented by the issuing of a “certificate of ownership” by insurance companies for both the trailer and the tractor. This allows for the uncoupled use of the vehicle throughout the EU. It does however create additional administrative burdens for companies. According to a representative of the haulage industry, it is rather problematic that the insurance sector steps in to remedy a failure of the authorities in the registration process.

In **France** and **Poland**, national authorities ask manufacturers of large HGVs and buses to provide detailed spreadsheets with all the possible Type-Variant-Versions (TVV) – a document describing all the permitted technical combinations in the information document. For each TVV, the authorities ask for the provision of information related to registration which comes from type approval data. For a large manufacturer with multiple types, variants and versions, it is theoretically possible to have more than a million possible combinations of TVVs, even though only a few are actually produced. Thus, this requirement creates significant additional administrative burdens on top of the type approval costs. A similar situation exists in **Italy** where a manufacturer reported being asked to provide data on the CoC even though there were not indicated in the relevant Annex (IX) of the Framework Directive. There seems to be a need to develop a system that will allow Member State authorities and companies to ensure that the Certificate of Conformity data are consistent with the Type Approval data given the large number of TVVs to cover.

Finally, in the **UK**, there are problems caused by left-drive HGVs on UK motorways, which are estimated to be the direct or indirect cause of one third of all HGV-related accidents on British roads. A UNECE regulation has addressed this point by ensuring that an extra wing mirror is required for all vehicles. However, the UK authorities recognise that in order to solve the issue an unacceptable burden is being imposed on all EU HGVs for a problem that is only apparent in the UK and Ireland.

While the above examples are seen as posing problems to manufacturers, some differences in national measures and regulations are perceived more positively. In the **UK**, lorries are often higher than the normally accepted height of 4 metres in the rest of the EU. As most HGVs in the UK are owned by SMEs focused on domestic transport, this is not a particularly visible issue but it is seen as a barrier by companies wishing to expand internationally. Representatives of the road haulage industry, whilst welcoming the push for standardisation and harmonisation at the European level have underlined the role of national exceptions in encouraging innovations. Domestic transport often accounts for a much greater share of revenues and it is often a useful testing ground of new innovation. Thus, transporters can use the national differences to trial innovations in their own country to assess their performance before rolling it out internationally.

Case studies

2

Caravans, Motor-homes and trailers

Certain problematic issues were also identified in relation to caravans and motor-homes. The feedback provided indicates widespread difficulties in registering motor-homes in a different EU Member State to the one where they were manufactured. The lack of harmonisation between Member States can lead manufacturers to have to change their Certificate of Conformity depending on the Member State where the vehicle has been put on the market.

Motor-homes and caravan trailers also include components that are not usually found in other motor vehicles such as electrical or gas installations. In some cases, national standards are required to be followed (e.g. standards for gas or electrical installations). While the national standards are generally similar to those of EU standards, this often leads to some misunderstandings among manufacturers.

Finally, in Italy trailer manufacturers reported that rather than using the ECWVTA , Individual Vehicle Approvals for a significant number of vehicles is often preferred. As indicated, registration of trailers on the basis of ECWVTA Certificate of Conformity tends to take much longer than without any apparent reason.

Conclusions

The case study has identified a few areas where national rules and regulations appear to create certain obstacles to the direct access to the EU automotive market on the basis of a certificate of conformity.

In a number of cases, the evidence from one or few manufacturers or associations suggests that they can be burdensome even though it is not possible to assess fully the significance of their impact. The most common area where such obstacles arise concerns the registration process during which some Member States require additional information that goes beyond the information available in the CoC. They can create additional administrative costs that appear problematic in certain market sub-segments such as the producers of caravans and the motor-home industry, dominated by small firms. The situation is similar in the HGV sector where some national-specific requirements cause extra costs to firms and potential barriers to trade within the context of the internal market. Other examples include the registration of LPG modified cars in Poland and the local registration requirement in Romania.

In addition, different national tax regimes – mainly related to CO₂ emissions - also lead to different registration costs and market conditions for similar vehicles registered in different Member States. There are concerns that they can sometime be used to promote national industries and operate against competition.

The analysis does not suggest that the requirements set by Member States create fundamental problems to the function of the single market for motor vehicles and nullify the benefits of a single type approval process. However, they do pose additional costs to manufacturers and, in certain market segments, they appear as quite problematic.

References

3

Commission Documents

Automotive industry

- Communication from the Commission ‘Responding to the crisis in the European automotive industry’ COM(2009) 104 final of 25.2.2009
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions ‘CARS 2020: Action Plan for a competitive and sustainable automotive industry in Europe’ Com (2012) 636 of 3.11.2012
- CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union ‘Interim Report 2011’ Dec 2011
- CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union, Final Report 2012

Road safety

- **White Paper on European transport policy for 2010: time to decide** (COM (2003)370 of 12.9.2001) http://ec.europa.eu/transport/themes/strategies/doc/2001_white_paper/lb_com_2001_0370_en.pdf
- **White Paper Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system** (COM/2011/0144 final of 28.03.2011) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011DC0144:EN:NOT>
- **Communication COM(2010) 389 final** of 20.7.2010 - Towards a European road safety area: policy orientations on road safety 2011-2020 http://ec.europa.eu/transport/road_safety/pdf/com_20072010_en.pdf

CO₂

- **European Climate Change Programme (ECCP)** http://ec.europa.eu/clima/policies/eccp/index_en.htm
- **Sixth Environmental Action Programme (2002-2012)** (COM/2001/0031 final of 24.1.2001) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52001DC0031:EN:NOT>
- **Communication COM(2007)19** of 7.2.2007 - Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light commercial vehicles <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007DC0019:EN:NOT>
- **Communication COM(2010) 265 final** of 26 May 2010 ‘Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage’ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0265:FIN:EN:PDF>
- Report from the Commission to the European Parliament, the Council, and the European Economic and Social Committee ‘Progress report on implementation of the Community’s integrated approach to reduce CO₂ emissions from light-duty vehicles’ COM(2010) 656 final of 10.11.2010
- Communication from the Commission to the Council and the European Parliament - Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light commercial vehicles COM(2007)19

Pollutant emissions

- **Communication COM/2010/0186 final** - A European strategy on clean and energy efficient vehicles <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0186:EN:NOT>
- **Communication COM(2005) 446 final** - Thematic Strategy on air pollution - http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0446en01.pdf

References

3

Noise

- **Directive 2002/49/EC** of 25 June 2002 relating to the assessment and management of environmental noise (END Directive). <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0049:EN:NOT>
- **Report from the Commission** to the EP and the CS (COM/2004/160 final) of 10.3.2004 concerning existing Community measures relating to sources of environmental noise, pursuant to article 10.1 of Directive 2002/49/EC relating to the assessment and management of environmental noise http://eur-lex.europa.eu/LexUriServ/site/en/com/2004/com2004_0160en01.pdf
- **Report from the Commission** to the EP and the CS (COM/2011/0321 final) of 1.6.2011 on the implementation of the Environmental Noise Directive (Article 11 of Directive 2002/49/EC) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011DC0321:EN:NOT>
- Green Paper on the Future Noise Policy, http://ec.europa.eu/environment/noise/pdf/com_96_540.pdf

Alternative fuels promotion

- **Communication COM(2001) 547** of 7.11.2001 on alternative fuels for road transportation and on a set of measures to promote the use of biofuels. http://eur-lex.europa.eu/LexUriServ/site/en/com/2001/com2001_0547en01.pdf
- **Directive 2003/30/EC** of 8 May 2003 on the promotion of the use of biofuels and other renewable fuels for transport <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:123:0042:0046:en:PDF>

Reusability / recyclability of motor vehicles (end-of life vehicles)

- **Directive 2000/53/EC** of 18 September 2000 on end-of life vehicles - Commission Statements <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0053:EN:NOT>
- **Directive 2005/64/EC** of 26 October 2005 on the type-approval of motor vehicles with regard to their reusability, recyclability and recoverability and amending Council Directive 70/156/EEC. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32005L0064:EN:NOT>

Impact assessments and support documents

- SEC(2011)1505: Proposal for a Regulation on the sound level of motor vehicles: http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2011/sec_2011_1505_en.pdf
- SEC(2008)1908: Proposal for a Regulation concerning type-approval requirements for the general safety of motor vehicles: http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2008/sec_2008_1908_en.pdf
- SEC(2007)77: Communication on a competitive automotive regulatory framework for the 21st century - Commission's position on the cars 21 high level group final report: http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2007/sec_2007_0077_en.pdf
- SEC(2005)1745: Regulation on motor vehicles emissions: http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2005/sec_2005_1745_en.pdf
- FEHRL Study on Tyre/Road noise http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report_tyre_road_noise2_en.pdf

Other relevant EU documents/studies

- RPA (2011), Ex-Post Evaluation and Impact Assessment Study on Enhancing the Implementation of the Internal Market Legislation Relating to Motor Vehicles, Study prepared for prepared for DG Enterprise and Industry, http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report-internal-market-legislation_en.pdf

References

3

http://ec.europa.eu/enterprise/sectors/automotive/files/projects/annexes-internal-market-legislation_en.pdf

- Hydrogen-Powered Vehicles: A Comparison of the European Legislation and the Draft UNECE Global Technical Regulation (October 2011):
http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report-hydrogen-powered-vehicles_en.pdf
- Analysis for the development of legislation on child occupant protection (July 2010):
http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report-child-occupant-protection_en.pdf
- Accident analysis for the development of legislation on frontal impact protection (July 2010):
http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report-frontal-impact-protection_en.pdf

Commission Communications

- Communication from the Commission 'Action Plan for Energy Efficiency: Realising the Potential' COM(2006)545 final of 19.10.2006 COM(2006)545 final
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'An Integrated Industrial Policy for the Globalisation Era Putting Competitiveness and Sustainability at Centre Stage' COM(2010) 614
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'An Integrated Industrial Policy for the Globalisation Era Putting Competitiveness and Sustainability at Centre Stage' COM(2010) 614

Stakeholders consultations

- 2011 Consultation on Complementary provisions to Euro 5/6 and Euro VI:
http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2011-emission-standards/index_en.htm
- 2010 - Consultation on enhancing the implementation of the internal market for motor vehicles:
http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2010-internal-market/index_en.htm
- 2008 - Consultation of interested stakeholders on the CARS 21 mid-term review:
http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2008-cars21-mtr/index_en.htm
- Public Consultation on Future Regulation addressing: (1) Reduction of CO₂ Emissions of Light-Duty Vehicles by More Efficient Mobile Air Conditioning Equipment and Gear Shift Indicators; (2) Safety Regulation of Mobile Air Conditioning Equipment:
http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2008-future-regulation/index_en.htm
- 2007 - Public Consultation on outline proposals for a new Regulation of the European Parliament and of the Council on Advanced Safety Features and Tyres:
http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2007-safety-tyres/index_en.htm
- Public consultation on the future Euro VI emission limits for heavy duty vehicles:
http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2007-emission-limits/index_en.htm
- 2006 - Stakeholder consultation on a preliminary draft proposal regulation on hydrogen powered motor vehicles: http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2006-hydrogen/index_en.htm

References

3

- Consultation of interested stakeholders on the CARS 21 final report: http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2006-cars21-final/index_en.htm
- 2005 - Stakeholder consultation: Euro 5 emission limits for light duty vehicles: http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2005-light-duty/index_en.htm
- Public Consultation: The Automotive Regulatory Framework of the Next 10 Years: http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2005-next10/index_en.htm
- Stakeholder Consultation on a preliminary draft proposal for a regulation on the protection of pedestrians: http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2005-pedestrians/index_en.htm

Studies – Reports

- AEA (2011), Effect of regulations and standards on vehicle prices - Final Report to the European Commission – DG Climate Action
- Alix Partners, 2010, High Stakes 2010 Global Commercial Vehicle Outlook
- DACOTA project, Forecasting Road Traffic Fatalities in European Countries: Model Definition and First Results http://www.dacota-project.eu/Deliverables/DaCoTA_WP4_D4_2_Final%20after%20Revision.pdf
- UK Department of transport (2009), Impact Assessment of Vehicle Type Approval and implementation of Directive 2007/46/EC in UK
- E. Kawecka-Wyrzykowska, Evolving Pattern of Intra-industry Trade Specialization of the New Member States of the EU: The Case of the Automotive Industry, http://ec.europa.eu/economy_finance/publications/publication_summary14307_en.htm
- EEA (2011), Laying the foundations for greener transport TERM 2011: transport indicators tracking progress towards environmental targets in Europe, Report No 7/2011
- ETSC (2009), PIN Flash 13 - Boost the market for safer cars across the EU, http://www.etsc.eu/documents/Background%20tables_Flash13.pdf
- Export Import Bank of India (2008) Indian Automotive Industry: At the Crossroads.
- http://ec.europa.eu/transport/road_safety/specialist/statistics/index_en.htm
- http://ec.europa.eu/transport/roadsafety_library/publications/sarac2_4.1.pdf
- IEEP et al. (2010), FINAL REPORT – SUPPORTING THE THEMATIC STRATEGY ON WASTE PREVENTION AND RECYCLING, <http://ec.europa.eu/environment/waste/pdf/Final%20Report%20final%2025%20Oct.pdf>
- ACEA (2011), Automotive industry pocket guide, http://www.acea.be/images/uploads/files/20110921_Pocket_Guide_3rd_edition.pdf
- ACEA (2012), AUTOMOBILE ASSEMBLY & ENGINE PRODUCTION PLANTS IN EUROPE, http://www.acea.be/news/news_detail/automobile_assembly_engine_production_plants_in_europe/
- BOSCH (2011), Electronic Stability Control ESC on the rise in Japan, <http://www.bosch.co.jp/en/press/pdf/rbjp-111201-22-release.pdf>
- China Automotive Review (2011), Chinese busmakers take on EU market <http://www.chinaautoreview.com/pub/CARArticle.aspx?ID=4912>
- EEA (2012), Air pollutant emissions data viewer, <http://www.eea.europa.eu/data-and-maps/data/data-viewers/air-emissions-viewer-lrtap>
- Jato (2011), Incentives fail to stimulate european electric vehicle sales, <http://www.jato.com/PressReleases/Incentives%20Fail%20to%20Stimulate%20European%20Electric%20Vehicle%20Sales.pdf>
- KPMG (2012), KPMG's Global Automotive Executive Survey 2012, <http://www.kpmg.com/GE/en/IssuesAndInsights/ArticlesPublications/Documents/Global-automotive-executive-survey-2012.pdf>

References

3

- ICCT(2012), European Vehicle Market Statistics Pocketbook 2012
http://theicct.org/sites/default/files/publications/Pocketbook_2012_opt.pdf
 - ICCT (2012), Discrepancies between type approval and “real-world” fuel consumption and CO₂ values - Assessment for 2001-2011 European passenger cars
 - JRC Scientific and Technical Reports. Technical report - Task 7 ‘Europe-centric light duty test cycle and differences with respect to the WLTP cycle’ 2012
 - Klier, T. and Rubenstein, J. (2008) Who Really Made Your Car?
 - Peter Mock, John German, Anup Bandivadekar and Iddo Riemersma “Discrepancies between type-approval and “real-world” fuel- consumption and CO₂ values. Assessment for 2001-2011 European passenger cars’ ICCT Working paper 2012-02 April 2012.
 - Stares, S. (1995) China’s Urban Transport Strategy
 - Sutton, J. (2004) The Auto-component Supply Chain in China and India: A Benchmarking Study
 - Tang, R. (2009) The Rise of China’s Auto Industry and Its Impact on the U.S. Motor Vehicle Industry
 - The EU Korea Free Trade Agreement -
http://eeas.europa.eu/delegations/south_korea/documents/eu_south_korea/presenter_1_motor_vehicles_parts_en.pdf
 - TÜV Nord Mobilität. ‘Future Development of the EU Directive for Measuring the CO₂ Emissions of Passenger Cars - Investigation of the Influence of Different Parameters and the Improvement of Measurement Accuracy’ by the order of the German Federal Environmental Agency 2010.
- Weiss et al (2011), Analyzing on-road emissions of light-duty vehicles with Portable Emission Measurement Systems (PEMS), Joint Research Centre Scientific and Technical reports,
http://ec.europa.eu/clima/policies/transport/vehicles/docs/2011_pems_jrc_62639_en.pdf
-