



EUROPEAN
COMMISSION

Brussels, 31.5.2017
SWD(2017) 190 final

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Proposal for a Directive of the European Parliament and of the Council on the interoperability of electronic road toll systems and facilitating cross-border exchange of information on the failure to pay road fees in the Union (recast)

{ COM(2017) 280 final }

{ SWD(2017) 191 final }

{ SWD(2017) 192 final }

{ SWD(2017) 193 final }

Table of Contents

1.	INTRODUCTION.....	1
1.1.	Short description of the EETS legislative framework.....	1
1.2.	What is the European Electronic Toll Service (EETS)?	2
1.3.	Evaluation of the existing legal framework.....	3
1.4.	Contribution to the reduction of the regulatory burden on companies.....	4
2.	WHAT IS THE PROBLEM AND WHY IS IT A PROBLEM?.....	5
2.1.	Introduction to the description of the problem.....	5
2.2.	Description of the problems	5
2.2.1.	Problem 1: Barriers to entry and lack of truly competitive market for electronic toll collection services.....	6
2.2.2.	Problem 2: Foreign-registered vehicles can escape tolls.....	10
2.2.3.	Problem 3: Burdensome obligations on EETS providers.....	11
2.3.	How are different stakeholders affected, what is the scale of the problems and how will they evolve in the future	12
2.3.1.	Road users	12
2.3.2.	Toll chargers.....	14
2.3.3.	EETS providers	16
2.4.	How would the problems develop, all things being equal.....	17
3.	WHY SHOULD THE EU ACT?	18
4.	WHAT SHOULD BE ACHIEVED?	19
4.1.	General objective.....	19
4.2.	Specific objectives.....	20
5.	WHAT ARE THE VARIOUS OPTIONS TO ACHIEVE THE OBJECTIVE?.....	21
5.1.	Preliminary screening of potential main policy measures to achieve the identified objectives.....	21
5.1.1.	Measures aiming at reducing the cost and burden for EETS providers to enter new toll domains and to provide services therein (first part of specific objective 1)	21
5.1.2.	Measures to ensure a competitive functioning of the market (second part of specific objective 1).....	24
5.1.3.	Measures to facilitate the cross-border enforcement of tolls (second specific objective)	26

5.1.4.	Options to soften the current requirement for EETS providers to cover with their services all EETS domains within 24 months from their registration (first aspect of specific objective 3)	27
5.1.5.	Specific rules on light duty vehicles (second aspect of specific objective 3)	29
5.2.	Succinct assessment of other proposed policy measures	31
5.3.	Complete list of policy measures retained for further analysis	33
5.4.	Policy options retained for analysis.....	36
5.4.1.	Policy option 0: Baseline.....	36
5.4.2.	Policy option 1: Self-regulation to achieve specific objective 1 + legislative measures to achieve specific objective 2 and 3.	36
5.4.3.	Policy option 2: Legislative approach	37
5.4.4.	Policy option 3: A single EU ETC standard to facilitate technical and procedural interoperability + legislative measures to promote competition on the market and to achieve specific objective 2 and 3.	37
6.	WHAT ARE THE IMPACTS OF THE DIFFERENT POLICY OPTIONS AND WHO WILL BE AFFECTED?.....	38
6.1.	Economic impacts	38
6.1.1.	Impacts on operating costs for road users	38
6.1.2.	Impacts on operating costs and conduct of business for toll chargers.....	39
6.1.3.	Impacts on operating costs and conduct of business for EETS providers	43
6.1.4.	Impacts on conduct of business for OBU manufacturers	45
6.1.5.	Innovation impacts	45
6.1.6.	Competitiveness impacts	47
6.1.7.	SME impacts	47
6.1.8.	Impacts on the peripheral Member States and regions.....	48
6.1.9.	Impacts on third countries	48
6.1.10.	Summary of the economic impacts	49
6.1.11.	Impacts on regulatory burden reduction (contribution to the Regulatory Fitness and Performance programme).....	50
6.2.	Social and environmental impacts.....	50
6.2.1.	Impacts on jobs.....	50
6.2.2.	Fundamental rights impacts.....	51
6.2.3.	Impacts on the protection of personal data and right to privacy	51
6.2.4.	Environmental impacts	52

7.	HOW DO THE OPTIONS COMPARE?.....	52
7.1.	Effectiveness.....	52
7.1.1.	Effectiveness in achieving the general objective.....	52
7.1.2.	Effectiveness in achieving the specific objectives	53
7.1.3.	Effectiveness in achieving the objective to reduce regulatory burden for companies (REFIT objective).....	55
7.2.	Efficiency	56
7.2.1.	Cost-benefit analysis	56
7.2.2.	Comparison of other impacts.....	58
7.3.	Coherence	59
7.4.	Proportionality	59
7.5.	Preferred policy option	60
8.	HOW WOULD ACTUAL IMPACTS BE MONITORED AND EVALUATED?.....	60
	SO1: Remove market entry barriers and foster the development of a competitive market for electronic toll collection services.....	60
	SO2: Improve the level of enforcement of tolls from foreign-registered vehicles	62
9.	ANNEXES	63
9.1.	Annex 1: Procedural information concerning the process to prepare the impact assessment report and the related initiative	63
9.1.1.	References	63
9.1.2.	Organisation and timing	63
9.2.	Annex 2: Stakeholder consultation.....	67
9.3.	Annex 3: Who is affected by the initiative and how	81
9.4.	Annex 4: Analytical models used in preparing the Impact Assessment	83
9.4.1.	Introduction	83
9.4.2.	Modelling – assessment for HGVs.....	83
9.4.3.	Modelling – assessment for buses	84
9.4.4.	Modelling – assessment for cars.....	85
9.4.5.	Key assumptions used for the modelling of the baseline and of the impacts of the different policy options.....	86
9.4.6.	Reliability and appropriateness of the model	88
9.5.	Annex 5: Glossary	89
9.6.	Annex 6: List of provisions relative to the obligations of EETS providers active on the market for light vehicles vs. those active on the market for heavy vehicles.....	92

9.7.	Annex 7: Flow of costs (€ million/year) to users for using road toll infrastructure.....	93
9.7.1.	HGVs.....	93
9.7.2.	Buses.....	94
9.7.3.	Light duty vehicles	96
9.8.	Annex 8: Evaluation of investment costs for toll chargers in Policy option 3.....	98
9.9.	Annex 9: Composition of certification costs for EETS providers.....	99
9.10.	Annex 10: The road initiatives – the 'big picture'.....	100
9.10.1.	Introduction	100
9.10.2.	The EU road transport market	100
9.10.3.	Why is there a need for action?	101
9.10.4.	What are the main problems?	102
9.10.5.	Options and main impacts	102
9.10.6.	Expected synergies of the package.....	104
9.11.	Annex 11: Impacts on SMEs	105
9.11.1.	Consultation that captures the SME angle.....	105
9.11.2.	Identification of affected businesses	105
9.11.3.	Measurement of the impact on SMEs	106
9.11.4.	Assessment of alternative options and mitigating measures	106
9.12.	Annex 12: Electronic toll collection market in the EU	107

1. INTRODUCTION

The Impact Assessment report uses many technical terms and abbreviations. All of them are explained in Annex 5.

1.1. Short description of the EETS legislative framework

This Impact Assessment accompanies two proposals of the European Commission modifying Directive 2004/52/EC¹ and Commission Decision 2009/750/EC.² The latter form together the existing legislative framework for electronic toll collection (ETC) in the EU and provide for making all European ETC schemes interoperable through a European Electronic Toll Service (EETS). It is important for the understanding of the rest of this Impact Assessment that the content of the current EETS legislation is briefly explained.

Directive 2004/52/EC called for the setup of a European Electronic Toll Service (EETS), by which road users only subscribe to a single contract and use a single on-board unit (OBU) to pay electronic tolls all over the EU. To ensure that different tolling systems are technologically compatible and therefore ready to connect to this single tolling service, the Directive specified that all new electronic toll systems brought into service after 1 January 2007 which require the installation of on-board equipment shall use one or more of the following three technologies: satellite positioning (GNSS)³ which is recommended in the Directive; and/or mobile communications (GSM-GPRS) and/or microwave technology (DSRC).

Decision 2009/750/EC defined the EETS and provided for it to be offered by market players (EETS providers) on commercial terms. It outlined the "actors" of the EETS in four categories: **Member States, toll chargers** (TC), i.e. those who impose the electronic toll upon the road users; **clients**, i.e. road users; and **EETS providers**, i.e. intermediaries between the clients and the toll chargers. The Decision stated that the EETS providers should negotiate with all toll chargers in the EU the authorisation to provide the EETS on their road networks and offer the EETS to their clients.

The Decision specified the rights and obligation of all actors in more detail. Member States were to put in place the necessary regulatory framework to make the provision of EETS possible: in particular, they were to establish independent 'conciliation bodies' to supervise both the correct application of the rights and obligations of all partners. Toll chargers were to accept on a non-discriminatory basis all interested EETS providers and their certified equipment; they were to have the right to request full co-operation of the EETS providers to guarantee the correct functioning of the service and eventually the correct collection of the toll. EETS providers were to provide their services in all electronic toll domains in the EU within 24 months of their official registration by their Member State of establishment and to guarantee the quality and continuity of the EETS, in full co-operation with the toll chargers. Finally, EETS users were to ensure the correctness of all the data provided in the framework of the EETS and to comply with the

¹ Directive 2004/52/EC of the European Parliament and of the Council of 29 April 2004 *on the interoperability of electronic toll systems in the Community* (Text with EEA relevance), OJ L 166, 30.4.2004, p. 124)

² Commission Decision of 6 October 2009 *on the definition of the European Electronic Toll Service and its technical elements* (notified under document C(2009) 7547) (Text with EEA relevance) (2009/750/EC).

³ Annex 1 contains a glossary of difficult terms and abbreviations used in this document.

obligation to pay the toll; they were to have the right to sign contracts with the EETS provider of their choice and to pay all their tolls through this channel.

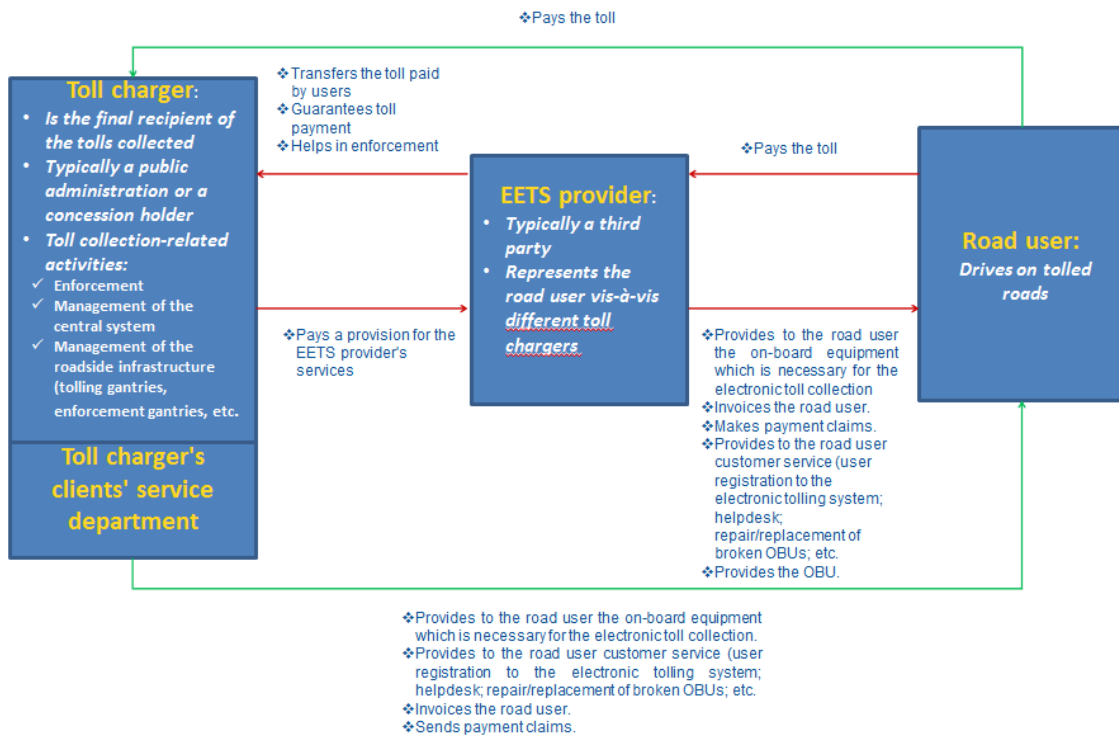
1.2. What is the European Electronic Toll Service (EETS)?

Figure 1 presents the relationships between the parties to an electronic toll collection system. Electronic tolls can be collected in two alternative ways: either the toll charger enters into a direct relationship (green arrows in Figure 1) with the road user, or a third-party "EETS provider" acts as intermediary between the two (red arrows).

There are more than 140 different toll chargers in the EU, which means potential complexity for the road user. Hence the attraction to the users of EETS providers as intermediaries: instead of dealing with up to 140 different entities to pay tolls for the different stretches of road used, the user only needs to interact with one entity: the EETS provider. There can be many EETS providers on the market, who must all offer access to all toll domains in the EU; road users can choose the EETS provider who offers the service best suited to their needs.

Using the services of an EETS provider can also be attractive for the toll charger. The latter's main activity and expertise is in the construction, maintenance and/or management of roads, so the need to service up to hundreds of thousands of toll payers from different countries comes at high cost and effort, and in any case distracts toll chargers from their core business. EETS providers can perform these activities for the toll charger as specialised providers of these services based on their expertise in the field and international presence.

Figure 1: What is EETS?



1.3. Evaluation of the existing legal framework

An *ex post* evaluation of the existing legal framework in the field of EETS was performed in 2015-2016 and updated with the most recent information in the beginning of 2017. The assessment covered Directive 2004/52/EC (EETS Directive)⁴ and Decision 2009/750/EC (EETS Decision)⁵. The *ex post* evaluation assessed the level and accuracy of implementation of the legal framework, the relevance of the objectives and the effectiveness and efficiency of the individual provisions in achieving the stated objectives. The *ex post* evaluation was based on a deep review of publicly available written sources and – like the impact assessment itself – on a thorough and inclusive consultation of stakeholders.⁶

The evaluation points out that the legislation failed to deliver on most of the objectives: costs of electronic tolling have hardly decreased for toll chargers and for road users, an EETS has not been set up (and interoperability hardly progressed) and OBUs have not – with few exceptions – been integrated with other devices. It also indicates that cross-border interoperability is expensive and difficult to achieve because of the significant differences in how the three technologies allowed by the EETS legislation were applied in the individual national tolling schemes. Besides, the lack of efficient provisions in the EETS legislation to ensure the enforcement of tolls from vehicles registered in another Member State is another obstacle to cross-border interoperability. Furthermore, the evaluation suggests that the current legislation is only partially relevant in terms of its scope, as the mandatory coverage by all EETS providers of all types of vehicles and all toll domains in Europe is found to be an excessive requirement in practice.

The results of the *ex post* evaluation are well reflected in this impact assessment – in particular in section 2 dedicated to the problem definition. Table 1 indicates how the conclusions of the *ex post* evaluation are reflected in the text of the report.

Table 1: Links between the conclusions of the *ex post* evaluation and the Impact Assessment.

<i>Main ex post evaluation conclusions</i>	Impact Assessment
Conclusions on effectiveness	
"Interoperability on a wider scale has been blocked by the lack of commitment and – in the worst case scenario – resistance of some Member States to open their markets"	The Impact Assessment recognises that the problems mainly lie with market deficiencies and national market entry barriers. These problems are described in details in section 2.2.1 ("Problem 1: Barriers to entry and lack of truly competitive market for electronic toll

⁴ Directive 2004/52/EC of the European Parliament and of the Council of 29 April 2004 on the interoperability of electronic road toll systems in the Community (Text with EEA relevance), OJ L 166, 30.4.2004, p. 124–143.

⁵ Commission Decision of 6 October 2009 on the definition of the European Electronic Toll Service and its technical elements (notified under document C(2009) 7547) (Text with EEA relevance), OJ L 268, 13.10.2009, p. 11–29.

⁶ The summary results of the main consultation activities performed in the framework of the preparation of the *ex post* evaluation and of the impact assessment are published under http://ec.europa.eu/transport/modes/road/consultations/2016-eets_en.

	collection services")
"The Decision fails to mandate a sufficiently detailed standardisation framework to support the needed harmonisation of electronic tolling systems in the EU"	The problem of missing references to standards which define the interfaces between toll chargers and EETS providers is specifically discussed in section 2.2.1.5 of the problem definition.
"The evaluation shows that the market rules defined in the Decision are biased to the detriment of the EETS providers"	This problem is analysed in section 2.2.3 "Burdensome obligations on EETS providers", and particularly in section 2.2.3.1 "Excessive requirements for EETS providers in Decision 2009/750/EC"
"Lack of effective provisions allowing for a cross-border enforcement of offenses to the toll obligation"	This problem is the topic of section 2.2.2 "Foreign-registered vehicles can escape tolls"
Conclusions on efficiency	
"[RFID] could provide a cheap alternative to DSRC in specific contexts"	The consideration and suitability of RFID for e-tolling is discussed in section 5.1.5 and in section 6.1.5 "Innovation impacts"
Conclusions on relevance	
"The mandatory coverage by EETS of all types of vehicles and all toll domains in Europe is considered an excessive requirement"	These findings of the <i>ex post evaluation</i> are the reason behind the change in the general objective of the initiative from the current ' <i>EU-wide interoperability for all</i> ' to 'More interoperability in tolling services in line with and proportionate to the road users' needs'. <u>This is discussed in details in section 4.1 "General objective".</u>
"EETS providers should offer their services everywhere where significant demand exists"	
"The objective of having three layers of interoperability – procedural, contractual and technical – is still relevant"	This objective is kept and expanded, as specific objective 1 (c.f. section 4.2 "specific objectives")

The full text of the *ex post* evaluation report is annexed to this staff working document.

1.4. Contribution to the reduction of the regulatory burden on companies

The initiative is mentioned as a REFIT initiative in point 5 of Annex 1 to the Commission Work Programme 2017.⁷ It is thus part of the Commission's Regulatory Fitness and Performance programme that aims at making EU laws simpler and less costly. The REFIT objectives will be reflected in the specific objectives of this Impact

⁷ https://ec.europa.eu/info/publications/work-programme-commission-key-documents-2017_en.

Assessment, and special attention will be given to the analysis of the impacts on regulatory burden on companies.

2. WHAT IS THE PROBLEM AND WHY IS IT A PROBLEM?

2.1. Introduction to the description of the problem

Years after the adoption of the EETS legislation in 2004 and 2009 (see above), the market remains largely fragmented, with around 140 electronic toll collection (ETC) systems in operation across the EU and Norway. The level of interoperability between these toll domains is far from satisfactory and generates costs to road users and e-tolling service providers. Whilst a small number of schemes offer cross-border interoperability (for example between the ETC schemes for heavy duty vehicles – HDVs – in Austria, Denmark, Sweden and Norway), the majority do not.

Additionally, despite the 2009 Commission Decision requiring the opening of ETC markets in all Member States to EETS providers, few EETS providers have so far been registered, and those that have registered do not offer coverage beyond a small number of adjacent Member States, although this is a legal requirement.⁸ Indeed, members of AETIS, the EU representative body for EETS providers, consider that the risks associated with offering a service in all Member States is too high due to costly and complex minimum contractual requirements for EETS providers and only partial implementation of EETS legislation in certain markets (these reasons are further explained in section 2.2 below). Consequently, instead of a competitive market for fully interoperable toll collection services, road users and toll chargers face a highly fragmented market characterised by a low degree of competition.

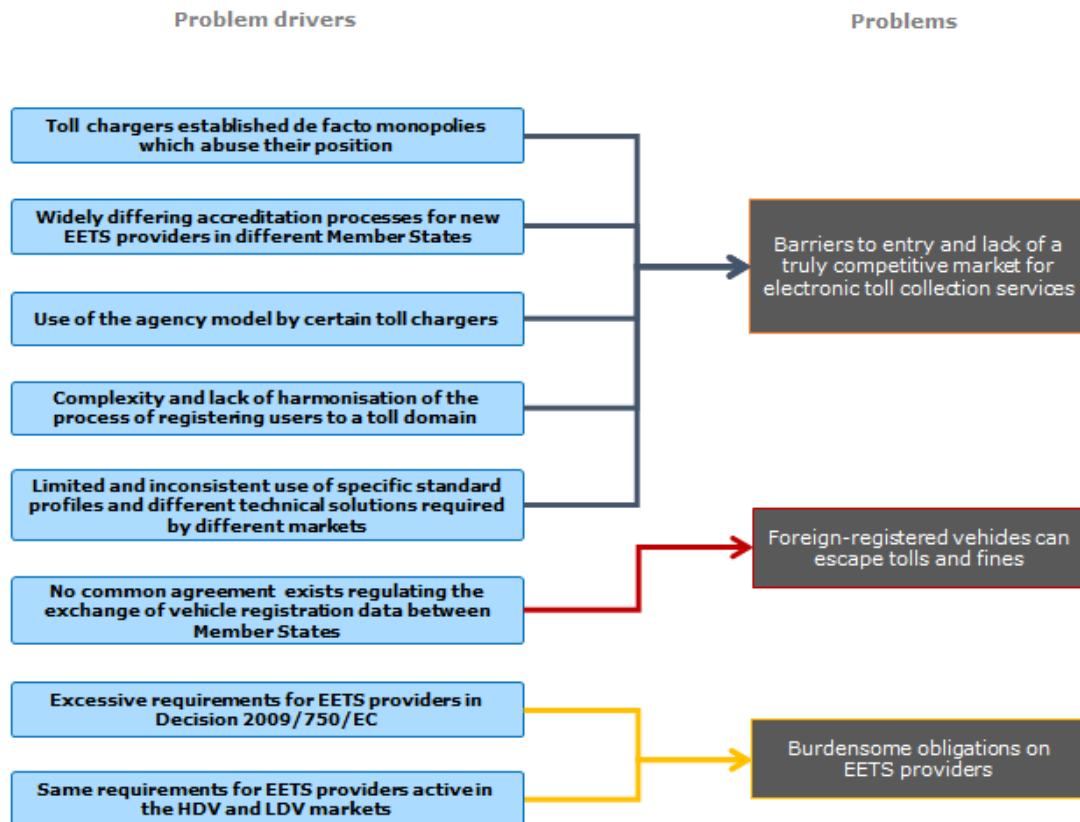
The result of this fragmented and uncompetitive market is primarily increased costs, both for the road users and for the toll chargers. For example, when driving across multiple EU Member States, road hauliers are likely to have to purchase or rent multiple On Board Units (OBUs) to communicate with different ETC systems and to make individual contracts with each toll operator, leading to additional administrative burden. Additionally, the lack of multiple toll service providers in each market stifles competition and promotes higher costs for both road users (in the form of higher fees for the provision of OBUs and means of payment like fuel cards) and toll chargers (in the form of higher remuneration requested by service providers). For toll chargers, fragmentation of the market also increases costs due to the high costs associated with the development, deployment and operation of bespoke tolling systems with bespoke equipment, systems and processes. Difficulties in recovering unpaid tolls from international road users also result in reduced revenues for toll chargers.

2.2. Description of the problems

This section details the problems and their drivers. The structure of the problem definition is presented in a problem tree in Figure 2 below.

⁸ The most "advanced" EETS provider at the current time covers only 5 countries with its services: Spain, Portugal, France, Belgium, Austria.

Figure 2: Problem tree diagram



2.2.1. Problem 1: Barriers to entry and lack of truly competitive market for electronic toll collection services

Many national markets for the electronic collection of tolls are functioning in a suboptimal, often anti-competitive manner. Road users can choose between only very few (mostly only one) toll service providers, which can use their strong market position to impose sub-optimal commercial conditions on both road users and toll chargers. These quasi-monopolies generally go unchallenged in the market, because potential new market entrants – EETS providers – are blocked by the high levels of cost and uncertainty linked to the process of accreditation to national ETC systems. So there are significant barrier to entry in certain markets, and less competition in the market with negative consequences for the toll chargers and the users of the concerned road networks.

There are five drivers to this problem, namely:

2.2.1.1. Toll chargers have established de facto monopolies for the provision of toll collection services which abuse their position.

In some Member States, the presence of vertically integrated companies providing services in the role toll charger as well as that of toll service provider, or the presence of long-established national toll service providers can present a potential barrier to entry to EETS providers and other toll service providers. Vertically integrated operators typically appear when Member States tender out to one company not only all activities related to electronic tolling, including the setup and operation of the system itself, but also the collection of the toll – an activity generally also performed, on competitive markets, by EETS providers. Such companies have a privileged position which they can use to prevent competitors from entering the toll collection market.

Vertically integrated companies are present, currently, in: Austria, Belgium, the Czech Republic, Germany, Italy,⁹ Poland, Slovakia, and soon Slovenia (once its new electronic tolling system is deployed in 2018). It is true that the level of openness and competitiveness of the market is different in each of these countries. Austria seems to be in the process of fully opening its toll collection market to competition, as six EETS/toll service providers are in the final stage of negotiations to entering the Austrian market. Belgium has so far opened to one EETS provider, in Italy several service providers have started the accreditation process, but in the other countries, no steps have been made towards an opening of the market so far.

Various EETS providers have raised their concerns about this situation. For example, a number of EETS providers applying for accreditation in Belgium have complained that the national toll service provider, Satellic, had unfair access to the toll chargers' representative ViaPass during the national system design and early tendering phase. This thereby allowed Satellic to streamline its accreditation efforts and design its OBUs to match the specification of the planned ETC system earlier than other toll service providers (e.g. Axxès) and thereby to have an unfair first mover advantage in accessing Belgian tolling customers. Another example is Germany, where the national service provider Toll Collect is seen to have an unfair advantage over EETS providers, given that there is no provision in national law or readiness on the side of national administration to remunerate toll service providers other than Toll Collect (even if they are registered as EETS providers), thereby presenting an unsurmountable barrier to entry in the German market for many EETS providers.

2.2.1.2. *Widely differing accreditation processes for new EETS providers in different Member States.*

Any EETS provider must undergo accreditation with each toll charger that he wishes to provide his services to, as provided for in Annex IV of the Decision. However, the accreditation procedures vary widely between markets, with significant variations in timeline, cost, procedures and technical requirements.

The duration of an accreditation procedure ranges from as little as 6 months (time that it took to accredit Axxès to the Belgian HGV tolling scheme) up to 20 months (estimated accreditation time to all motorway concessions in France or in Italy). In Germany, the time for accreditation is estimated to a minimum of 13 months.

All the toll chargers request a fee to cover their expenses during the certification process. These fees vary considerably between markets: for example €220,000 just for Viapass in Belgium but €350,000 for all the French toll chargers together. It is estimated that accreditation to just France, Italy, Austria, Belgium and Germany could cost between 6 and 8 million euro.¹⁰ Certification to all toll domains in the U could cost around 14 million.¹¹ To this must be added the potential costs of re-certification of certain elements of the OBU in case of significant changes to the toll charger's or EETS provider's system.

⁹ Telepass, the only toll service provider active in Italy at the moment of writing of this report, is not itself operating any of the ETC systems in Italy, but it is a subsidiary of the largest Italian toll charger, the motorway concession holder Autostrade per l'Italia.

¹⁰ Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

¹¹ 4icom, Expert Review of the EETS Legislative Acts, 2015, <http://ec.europa.eu/transport/modes/road/studies/doc/2015-09-ex-post-evaluation-eets-4icom.pdf>.

Furthermore, either in parallel to, or after, the technical tests, the EETS provider negotiates the contract with the toll charger. In the case where different parts of the network are managed by separate concession holders (e.g. 19 in France), these contractual negotiations can be very complex and time consuming as well. In Belgium, in addition to the contract with Viapass, a separate contract must be negotiated with an independent toll charger managing the Liefkenshoek tunnel near Antwerp.

2.2.1.3. *Use of the agency model by certain toll chargers.*

The Eurovignette Directive¹² makes a clear distinction between taxes and tolls, the latter being a fee for the use of the road. Yet some Member States qualify tolls as taxes in their internal legal order - this means that the toll operator becomes in effect a tax collector, and indeed in these circumstances the EETS provider is regarded as a collection agent (e.g. in Poland, Germany, Flanders, Brussels). On the other hand, where tolls are not classified as taxes, the toll represents payment for a service and the EETS provider can be regarded simply as a sub-seller (e.g. France, Italy, Wallonia, Austria). Hence the description of the alternative business models as respectively the 'agency model' or the 'reseller model'. For the agency model, the EETS provider cannot directly issue an invoice to the road user and must issue a separate statement, with the invoice coming directly from the tax authority – thereby complicating the overall toll collection process. This is not the case with the reseller model, where simple VAT invoices can be used between all the actors in the value chain.

As an example of complications which arise, consider the situation in Belgium. The three regional authorities concerned in the tolling system differ in their categorisation of tolls, two regarding them as taxes (Brussels and Flanders) and one as service remuneration (Wallonia). The different treatment of VAT between these regions has created enormous difficulties for EETS providers in designing a common billing system covering all toll domains within Belgium. In this respect, Belgium presents in microcosm difficulties that providers face in creating a uniform billing system for their customers covering the whole EU.

It was pointed out by several (prospective) EETS providers in their answers to the public consultation that where the toll is regarded as a tax and the agency model is adopted the EETS provider may be required to abide by the requirements of the PSD2 Directive¹³ and to be licenced as a financial institution. In the REETS (Regional EETS) project this was a difficulty said to have been faced by German providers wishing to operate in Austria.¹⁴

2.2.1.4. *Complexity and lack of harmonisation of the process of registering users to a toll domain.*

The **registration of vehicles in an electronic tolling system** can be extremely complex, in particular when the toll is considered a tax. Belgium provides truck drivers (whether represented by EETS providers or not) with a 15-page-long "vehicle documents guide" to explain the registration process. The necessary registration documents are different for

¹² Directive 1999/62/EC of the European Parliament and of the Council of 17 June 1999 *on the charging of heavy goods vehicles for the use of certain infrastructures* (OJ L 187 20.7.1999, p.42).

¹³ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 *on payment services in the internal market*, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (Text with EEA relevance), OJ L 337, 23.12.2015, p. 35–127.

¹⁴ www.reets.eu.

each tolling scheme, and this constitutes a great administrative challenge for EETS providers and road users alike.

Another problem reported to the Commission illustrates the issue: while the service provider holds in its database the number plates of vehicles as simple sequences of letters and numbers, one toll charger requires also the spaces apparent on the licence plate to be reproduced in the information which he receives. This then might force the EETS provider to duplicate its databases to suit the specific requirements of one toll charger in order to be accredited. If information is mistyped when the vehicle is registered in the system, the Commission was anecdotally informed that this is used as a basis for fines received by users.

2.2.1.5. Limited and inconsistent use of specific standard profiles and different technical solutions required by different markets.

Whilst the 2004 Directive defines three main technologies that can be used for electronic toll collection under Article 2, it only references a limited set of standards to define the specific mechanics of implementation with regards to DSRC-based and autonomous (GNSS) systems. However, existing standards relevant for ETC in Europe and EETS in particular are much wider. Many of these standards are referenced in the *Guide for the application of the Directive on the interoperability of electronic road toll systems*¹⁵ published by the Commission. However, it is largely outdated given the rapid development of standardisation in this sector, its application is not mandatory, and it provides too much flexibility for interpretation.

The EETS Decision created a Co-ordination Group of Notified Bodies in the field of ETC as a working group of the Electronic Toll Committee. The Decision provides that "the Coordination Group shall compile and maintain a comprehensive list of standards, technical specifications and normative documents against which EETS interoperability constituents' conformity to specifications and suitability for use can be assessed. The Coordination Group shall serve as a forum for discussing any problems that may arise in relation to the conformity to specifications and suitability for use assessment procedures and for proposing solutions to these problems".¹⁶ However, the low number of notified bodies (four currently) has contributed to a relatively low effectiveness of this co-ordination group in fostering harmonisation of procedures for assessing conformity with specifications and suitability for use.

Despite the fact that a number of specific 'profiled' standards now exist to define a more consistent implementation of EETS, these are not – apart from EN 15509 and ETSI 200674-1¹⁷ – referenced in the EETS legislation. Hence toll chargers have the flexibility to use toolbox standards (standards allowing several alternative applications for the same process) or even to introduce requirements which are incompatible with established standards. This is a particular issue regarding standards which define the interfaces between the toll charger and the EETS providers, which are of crucial importance for ensuring interoperability. From the public consultation it emerged that the most important reference missing is the one to **ISO 12855** and its profile **CEN TS 16986**,

¹⁵ https://ec.europa.eu/transport/sites/transport/files/media/publications/doc/2011-eets-european-electronic-toll-service_en.pdf.

¹⁶ Article 18 of the EETS Decision.

¹⁷ These two standards define the communication between the OBU and the roadside infrastructure by Dedicated Short Range Communication (DSRC).

which harmonise the exchange of information between the back offices of the toll charger and the EETS provider.

In summary, different technical solutions are adopted in different EETS domains and, whilst they may conform to the broad toolbox standards and technological choices referenced in the legislation, the differences between markets render technical interoperability more difficult and costly to achieve. Finally, standards are constantly evolving due to the evolution of technology and with unclear governance processes for updating the standards relevant to EETS, it is difficult to accommodate updates as they become available to ensure full compatibility between devices and processes deployed at different points in time.

2.2.2. Problem 2: Foreign-registered vehicles can escape tolls

Today, the authority to enforce tolls typically stops at the borders of the country. Enforcement authorities do not have the means to establish the identity of the owner of a foreign registered vehicle on the basis of the number plate and picture of the vehicle registered by automatic enforcement devices. This problem has three negative consequences. First, it leads to revenue leakages, which are relatively small on the scale of a whole large country, but can be very significant in particular situations (e.g. on a tolled road running close to another country, such as the AP-7 running in Catalonia between Barcelona and Perpignan)¹⁸. Some figures on the scale of the problem are provided in section 2.3.2.3 below. Second, the difficulty in recovering tolls and fines from foreign-registered vehicles creates frustration among "national" drivers (who get the feeling that "foreigners don't pay") and thus reduces the level of acceptance for the toll.¹⁹ Finally, because of the problems with the cross-border enforcement of tolls, many road managers stick to traditional tolls with barriers that generate a compliance rate of more than 99%,²⁰ even though they are less safe and more costly than free-flow electronic tolling systems and contribute to congestion. In addition, no common agreement exists regulating the exchange of vehicle registration data between Member States. A small number of Member States have agreements in place allowing for the exchange of vehicle registration data across borders, and the pursuit of unpaid tolls by authorities. This is for example the case of Austria and Germany. Enforcement data provided by the Austrian toll charger, ASFINAG, indicate that, as a result, the percentage of unpaid tolls not recovered from German vehicles (11%) is around half that from other EU vehicles (21%).

Where no bilateral agreements are in place, and in the absence of any EU agreement, recovering unpaid tolls across borders is complex; some toll chargers use toll recovery agencies, but most such companies provide a service that is less than satisfactory in terms of public accountability and ethics. They provide only a low level of transparency on their access to sources of information and personal data, and are reported to use

¹⁸ This motorway section has been mentioned as problematic in the aspect of foreign toll offenders by its manager.

¹⁹ It is interesting to mention that precisely in Catalonia, from where the example of a problematic motorway comes from, a citizens' action of disobedience ("no vull pagar") was launched in 2012, whereby drivers refused to pay for the use of motorways. Over 100.000 fines were issued by the end of the 4 month protest.

²⁰ Toll barriers are an effective enforcement tool, but even on toll plazas a few methods of avoiding the payment of the toll exist: massive protests, such as the one referred to in footnote 19; "small train", i.e. driving very close, bumper-to-bumper, behind the preceding vehicle, so that the system does not recognise the passage of the second vehicle; and, finally, destroying the barrier by driving onto it – this is mainly done by heavy goods vehicles.

controversial methods to recover debts.²¹ But in the absence of toll recovery agencies, it is effectively impossible to recover unpaid tolls from foreign registered vehicles.

2.2.3. Problem 3: Burdensome obligations on EETS providers

The *ex post* evaluation and the public consultation showed that certain requirements in the legislation, rather than promoting interoperability, have in fact contributed to blocking it. Excessive requirements for conducting EETS business means that some companies refrain from officially registering as EETS providers, which is a *sine qua non* requirement to enter certain important ETC markets, including Germany. These obligations also present a significant barrier to entry to new market entrants, adding cost and complexity to any prospective EETS provider considering registration to a new system. There are two main drivers of this problem:

2.2.3.1. Excessive requirements for EETS providers in Decision 2009/750/EC

The Decision sets out a range of requirements, rights and obligations that EETS providers must achieve in order to be officially registered and operate, under Articles 3 and 4. This includes the requirement to cover all EU electronic toll domains in the EU within 24 months of registration of the EETS provider. The evidence of experience from contractual negotiations between toll chargers and EETS providers suggests that this requirement is impossible to meet: discussions with just two or three toll domains and adapting the OBU to their toll specific requirements can take up to 2 years and engage a significant share of the human resources of the EETS provider. Covering all toll domains within this timeframe seems to be effectively impossible.

Furthermore, full EU coverage by the EETS requires such huge investments (over 14 million euro, cf. section 2.2.1.1), that only a couple of market players could afford it. The risk is that it will lead to the creation of an oligopolistic market, which will counter part of the benefits brought by interoperability (the risk being that the EETS providers collude on their pricing policies towards road users and towards toll chargers).

2.2.3.2. Same requirements for EETS providers active in the HDV and LDV markets even though markets are very different

There are intrinsic differences between the European tolling markets for light and heavy vehicles, and EETS providers tend to specialise in one or the other market. For instance, members of AETIS specialise in the provision of toll services to HDVs and have not so far expressed interest in offering similar services to LDVs. On the other hand, 'Tolltickets.com' and potentially other companies aim particularly at the light duty vehicle market.

However, the EETS legislation requires that a) each EETS provider services all types of user rather than only heavy or only light vehicles; and b) that each EETS provider must service light vehicles with GNSS-based OBUs even though no satellite tolling schemes exist in Europe for such vehicles.²² These requirements act for some companies as a disincentive to enter the EETS business and/or to register as EETS provider, and in any case certainly add to the lack of clarity of the rules in place.

²¹ Toll recovery agencies declined the invitation to present their position on the topic.

²² The relevant provisions of the legislation are quoted in Annex 7.

2.3. How are different stakeholders affected, what is the scale of the problems and how will they evolve in the future

All the main parties in the electronic tolling market are affected by the above-described problems, including road users, toll chargers and EETS providers.

2.3.1. Road users

Road users must install many OBUs in order to interact with the roadside infrastructure and/or back office of the toll charger in each relevant toll domain. There is a direct cost associated with the rental or purchase of the OBU (depending on local requirements), as well as indirect costs associated with the installation, maintenance and general management of several OBUs. Table 2 shows the evolution of these costs in the baseline, compared with a scenario of 'full interoperability'.²³ As a growing number of users are expected to use EETS OBUs to pay tolls where it is made possible (for the moment in Portugal, Spain, France, Belgium, Austria and soon for certain infrastructures in Denmark and Sweden), costs are declining over time, but remain above the level associated with a scenario of full EU-wide interoperability.

Table 2: Summary of baseline costs for road users (figures in brackets indicate the difference to a scenario of full interoperability)

Type of vehicle	2016 ²⁴ in €million/year	2020 ²⁴ in €million/year	2025 ²⁴ in €million/year	Full interoperability ²⁴ in €million/year
HGV ²⁵	196 (+60)	186 (+50)	179 (+43)	136
Buses and coaches ²⁶	2.1 (+0.8)	2 (+0.7)	1.9 (+0.6)	1.35
LDV (ETC) ²⁷	75 (+41)	70 (+37)	69 (+36)	33
LDV	62	62	62	0

²³ 'Full interoperability' corresponds to what would in practice be a rather abstract scenario, in which each vehicle would be equipped with only one OBU, and would need only this OBU to pay tolls anywhere in the EU. It is not linked to any specific framework conditions or policy option in the current report. For detailed assumptions, cf. Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

²⁴ Costs are calculated for users from all EU countries. The part of these costs borne by EU vehicles is 96% for HGVs, 63% for buses and coaches and 89% for LDVs.

²⁵ Includes the cost of lack of interoperability of electronic tolls which are within the scope of the EETS Directive only.

²⁶ There are no figures, even approximate ones, for the number of buses engaged in non-scheduled cross-border transport (such as organised tourist trips). Hence the calculation of costs is based only on the number of buses and coaches engaged in scheduled transport.

²⁷ Unlike the costs for HGVs and buses and coaches, the cost estimates for LDVs include not only costs related to the lack of interoperability of electronic tolls which are within the scope of the EETS Directive, but also the time losses related to the purchasing of vignettes (paper or electronic) and registering to urban charging schemes. The rationale for this different approach is: (1) vignettes are more frequent and proportionately more costly for cars than for trucks; (2) LDV drivers are typically private users and therefore on average less aware of the different systems in place. They are thus more prone to use the services of a third party to do all the procedural work for them (if available) than (professional) truck or bus drivers.

(vignettes)				
LDV (city tolls)	1.2	1.2	3	0
Total	336 (+166)	321 (+151)	315 (+145)	170

To illustrate the reality behind the figures in Table 2, Table 3 presents various actions which just one haulier had to undertake to equip with OBUs trucks bought over from another haulier, and on other specific conditions imposed by the respective toll chargers. It shows the complexity (and thus administrative costs and burden) of the "OBU management" processes.

Table 3: Operations required to prepare a new vehicle for compliance with the tolling systems in centrally located EU countries.

Member State	Operation	Deposit for the OBU	Cost if not returning
Austria	Devices can be modified at a GO-MAUT point by drivers, the name of the new owner of the truck and the type of payment must be communicated to ASFINAG	5 EUR	-
Czech Republic	Devices must be returned by courier or to a Contact Point in the Czech Republic. Registration certificate of the trucks must be presented, the form "Claim (service, billing, request for info)" must be filled in. The deposit will be returned only if the OBU is returned undamaged – but if the device has not been used for more than 1 year, the deposit is not refundable	50 EUR	-
France and Spain	Devices must be returned by courier	0 EUR	170 EUR
Germany	Toll Collect OBUs are not transferable from a company to another. In this situation the devices must be removed by an authorized Toll Collect Service Partner. After the OBU is removed from the vehicle, a de-registration request to Toll Collect must be submitted. If the trucks are sold with devices, tolls will still be charged to the original company's customer number, and the cost of 400 euro will be paid by this company if not returning OBU. The re-installation of an OBU can only take place in an authorised workshop.	0 EUR	400 EUR
Hungary	After deregistration from HU-GO, trucks must be registered on the new company's HU-GO client name and the fleet management devices used by the new company must be connected to the HU-GO system	-	-
Italy	Devices must be returned to the fuel card company or can be used by other company only if it is a fuel card company.	0 EUR	30 EUR

Poland	Devices must be returned to a contact point, distribution point or border distribution point - deposit and unused credit will be returned on the fuel card	30 EUR	-
Slovakia	Devices must be returned by drivers or by courier to SkyToll a.s., including the form "Request for refund", drivers ID, registration certificate of the truck - the deposit and the unused credit will be returned in the bank account indicated on the form.	50 EUR	257 EUR

2.3.2. Toll chargers

For toll chargers, the main impact relates to the need to develop, provide to clients and support bespoke OBUs. Other impacts relate to the reduced competition for services in the national electronic toll collection markets, and to the difficulty in recovering fines from tolls evaded by road users established in other Member States.

2.3.2.1. Cost of making available bespoke OBUs to road users

OBUs and the management of relations with road users are significant cost elements mainly in GNSS-based systems, as shown in Table 4. In DSRC-based systems, EETS-independent elements, such as the central system and tolling gantries are responsible for the bulk of costs, and OBUs represent just a few percent of the overall costs.²⁸

Table 4: Summary of costs to establish and run a representative GNSS-based free-flow electronic toll collection scheme for heavy goods vehicles²⁹

Cost element	Initial investment cost (€m) (% of total costs)	Yearly operating costs (€m) (% of total costs)
OBU (production/distribution/mobile telecommunication) and relations with clients	120 (60%)	14.5 (48%)
Other	81 (40%)	15.5 (52%)
TOTAL	201	30

It appears from Table 4 that a representative GNSS-based nation-wide system could 60% lower initial investment costs and 48% lower operating costs if toll chargers could rely entirely on EETS providers for the management of contacts with road users and the distribution and servicing of OBUs.³⁰

²⁸ See detailed information on the cost of building and running different types of electronic tolling schemes in Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

²⁹ Source: Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

³⁰ Toll chargers typically purchase OBUs and rent them out to users against a deposit. Hence the procurement of 'national' OBUs represents a cost for the toll chargers. On the other hand, the cost of purchasing 'EETS' OBUs (those which can be used in many toll domains under an EETS contract) is borne by EETS providers.

In reality, many toll chargers will still need to service a large group of clients unwilling or unable to sign a contract with an EETS provider.³¹ For instance, vehicles which never leave the borders of the concerned Member State are unlikely to use the EETS, which by definition is interesting for vehicles involved in cross-border transport. Realistically, the potential savings from EETS for GNSS-based ETC systems are therefore lower, rather in the range of **15% (initial costs) and 20% (operating costs)**. With only four countries having put a GNSS-based system in place (Germany, Hungary, Slovakia and Belgium) and one in the process of implementing it (Bulgaria), **the potential savings on operating costs from the introduction of EETS into all their value chains are about €30 million per year** (20% of €30 million for each of the five systems), and the potential one-off reduction in the cost of establishing the Bulgarian scheme is about €30 million (15% of €201 million).³²

2.3.2.2. Cost of reduced competition for services in the national electronic toll collection markets

Beyond the "direct" costs of lack of interoperability of electronic tolls, some more "indirect" costs must also be considered:

- On those national markets which EETS providers could not enter because of the high entry costs and obstacles,^{33,34} toll chargers must maintain direct relationships with all road users.³⁵ There is a cost associated with supporting these relationships, including the cost of providing customer support / helplines, accounting and invoicing, contract management, etc. It has been raised by several respondents to the public consultation that EETS providers are better suited to be responsible for managing these relationships across multiple toll domains, benefiting from their experience and direct customer access on many national markets. Toll chargers, on the contrary, do not have the experience and international presence of EETS providers to provide international customer services in a cost-efficient manner.
- The lack of competition on the toll collection market, due to the low level of penetration of EETS providers,³⁶ can result in higher costs for the toll charger (because of the monopolistic or oligopolistic structure of the market for toll services). Toll chargers must accept worse contractual conditions for the collection of tolls than they could achieve if the market was fully competitive. This was raised in the public consultation by several toll chargers, EETS providers and toll service providers, who argue that if only a few strong companies are present on the EETS market, they will

³¹ See Figure 1 for an explanation of how road users can choose between being provided by EETS providers with an interoperable OBU, or by the toll charger with an OBU which is compatible only with this toll charger's ETC system.

³² All figures from Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

³³ For the moment, EETS providers are present in Portugal, Spain, France, Belgium (only one) and Austria. They are expected to enter the Danish and Swedish markets in early 2017 (these two markets are however very small: a few tolled bridges). In Italy, there is only one active service provider, who is also registered as EETS provider providing services in many Member States (Telepass). Finally, no EETS providers are active in the following major markets: Germany, Poland, Czech Republic, Slovakia, Slovenia, Greece, Croatia.

³⁴ See section 2.2.1 for further details on these obstacles.

³⁵ Some examples of countries with highest numbers of registered ETC road users: Italy (nearly 9 million); France (over 6.5 million); Austria (900 thousand – only trucks); Germany (950 thousand – only trucks); source: ASECAP.

³⁶ Cf. footnote 8.

be in a position to dictate to the toll chargers a price for their services that is above their market value. No quantification of this problem is however available.

2.3.2.3. Cost of the difficulty to recover unpaid tolls from foreign-registered vehicles.

Foreign-registered vehicles typically represent a disproportionately high share of total toll offences: 38% in Poland, 25% in Portugal, 40% in France and 89% in Austria. These figures vary inside each State, with higher shares of foreign offenders on road sections with high proportion of cross-border traffic. In absolute numbers, the foregone revenues are typically not huge, but still significant. In Austria, foreign HGVs were responsible for close to 110.000 offences, while some 95.000 cars have been detected as not having paid the vignette (in reality, the number of foreign offenders for the vignette scheme might be much higher, as only a share of all violations is detected or reported); According to Abertis, respectively 26% and 69% of foreign drivers fail to pay the toll on the Dartford Crossing in the UK and on the M50 ring of Dublin (Ireland).

The working assumption, based on expert input and anecdotal evidence, is that non-payment of tolls and fines by foreign registered vehicles leads to an average revenue leakage corresponding to 1% of the tolls collected.

In the absence of other means, certain toll chargers use the services of debt recovering agencies for the cross-border enforcement of tolls. Apart from the ethical and legal implications of this tool (discussed in section 2.2.2), the price to pay can range from 10-30% of the recovered sum. Many toll chargers thus simply write off the foregone revenues from foreign vehicles, contributing to a sentiment of injustice among compliant nationally-registered road users.

2.3.3. EETS providers

The heterogeneity of ETC systems in the EU contributes to the high cost of accreditation of EETS providers to the different toll domains. Annex 9 presents the typical structure of the costs of certification/accreditation of an EETS provider to a toll domain.

The average cost of an accreditation is around €100,000 for a DSRC toll domain and €1 million³⁷ for a GNSS toll domain (based on the Viapass example). For the EU as a whole, the payments requested by toll chargers for performing all the tests for systems applying to heavy goods vehicles alone are estimated at around **14 million euro**.

A major issue for EETS providers is the lack of business certainty. The legal obligation to offer their service across the EU in 24 months, the existing obstacles to enter certain national markets, unfair competitive practices of some vertically integrated operators, KPIs and other requirements of toll chargers being always subject to possible change: all these contribute to making the EETS business risky. For instance, Axxès made considerable investment to enter the Belgian market despite the lack of clarity as to the remuneration which it could ultimately count on. This remuneration is now subject to a conciliation procedure between Axxès and the Belgian Regions represented by Viapass in front of the Belgian Conciliation Body.³⁸ Similarly, the requirements of the new

³⁷ This figure includes, on top of the fee requested by the toll charger, the cost of activities on the side of the EETS provider.

³⁸ Article 10 of the EETS Decision requires Member States to establish Conciliation Bodies to supervise the correct application of the rights and obligations of all parties, in particular to resolve any potential disputes between toll chargers and EETS providers.

German ETC system, due to be introduced in 2018, are yet largely unknown – this is the source of a lot of business uncertainty for EETS providers, who need to start the accreditation processes very soon in order to be able to enter the German market from the day of the launch of the new system.

Because of the lack of certainty on the future business decisions of (prospective) EETS providers, calculations of the cost of the *status quo* for the sector are subject to a large element of uncertainty. Table 5 presents gross calculations on the market realities to illustrate this cost, based on the assumption that all current or prospective EETS providers participating in the REETS consortium enter the EETS market for HDV as announced.³⁹ **It appears from this table that the costs of initial accreditation under baseline assumptions correspond to more than 7 years of net operational profits of EETS providers.** Even disregarding the considerable uncertainties regarding the possibility to conclude contracts on crucial markets (such as the German market) at the end of the accreditation, the figures in Table 5 by themselves do indicate the lack of a good business case for the provision of EETS.

Table 5: Potential accreditation costs, gross revenues and net profits of EETS providers in the baseline (€ million).

Costs of accreditation	Yearly toll revenues	Potential turnover of EETS providers in the baseline	Potential net operational profits of EETS providers in the baseline
154 ⁴⁰	14,000 ⁴¹	420 ⁴²	21 ⁴³

2.4. How would the problems develop, all things being equal

A number of EETS providers have developed roadmaps stating their intentions to cover additional markets by 2020⁴⁴, however in many cases they may encounter barriers caused by the various complexities described above around the lack of harmonisation of processes and national legislation, as well as the lack of a level playing field in certain markets, varying technical, contractual and procedural specifications and sometimes complex and heterogeneous accreditation procedures between Member States.

For the baseline scenario, it is assumed that Member States will retain the same policy approach, except when a revision process has been launched (e.g. Italy is in the process

³⁹ Cf. http://eetsinfoplatform.eu/index.php?option=com_best_practice&view=bestpracticess&Itemid=145.

⁴⁰ 11 (prospective) EETS providers participate in REETS. This number is multiplied by the cost of accreditation to all EETS domains in the EU.

⁴¹ No figure on toll revenues from heavy goods vehicles is available for the EU as a whole. We assume that half of the revenues of ASECAP members (€28 billion) come from HDVs and the other half from LDVs. Source: <http://asecap.com/members-statistics.html>.

⁴² We assume an average gross remuneration of EETS providers at the level of 3% of tolls collected (source: Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**).

⁴³ We assume that, in a competitive market involving 11 EETS providers, the net benefits will be at the level of 5% of the turnover.

⁴⁴ These roadmaps are generally confidential and therefore cannot be disclosed, although some information is available from the REETS Cross-Border Deployment Plan, available here: http://eetsinfoplatform.eu/index.php?option=com_best_practice&view=bestpracticess&Itemid=145. This information and information from interviews with EETS providers have been aggregated and anonymised as part of the baseline assumptions; these assumptions allowed calculating the evolution of costs and other aspects of the problems as presented in section 2.3.

of opening up to EETS providers). Markets are therefore assumed to remain (partially) foreclosed in many Member States, i.e. in Germany, Poland, Czech Republic, Slovakia, Slovenia, Greece and Croatia.

Table 6 provides a summary of the estimated costs for road users and toll chargers stemming from the lack of EU-wide deployment of EETS. These costs are to be understood as the difference between the operating costs under baseline assumptions and the operating costs in a situation of full interoperability. The table is therefore a summary of the information provided in sections 2.3.1 and 2.3.2.

It does not include the costs of setting up new ETC schemes, such as the upcoming Bulgarian system, the costs of lack of effective tools for the cross-border enforcement of tolls, nor the costs of EETS providers (see Table 5) for which a comparison to a "full interoperability scenario" is not relevant. These cost categories are recalled in Table 7.

Table 6: Estimated costs of the lack of an EU-wide deployment of the EETS for road users and toll chargers (€ million)

Stakeholder category	2016	2020	2025
Road users	166	151	145
Toll chargers	30	30	30
Total	196	181	175

Table 7: Other costs associated with the *status quo* on the ETC market in the EU.

Stakeholder category	Cost description
Toll chargers	High price paid to toll service providers for their services, due to the lack of competition on the market
Toll chargers	Cost of tolls not paid by vehicles registered in another Member State which are not recovered because of the lack of efficient tools for cross-border enforcement (gross estimate: 1% of tolls collected, i.e. €300 million)
EETS providers	Cost of accreditation to EETS domains amounting to >7 years of expected net operational profits

3. WHY SHOULD THE EU ACT?

The problems are by their nature pan-European, because ensuring interoperability for ETC systems across the EU (a stated aim of the existing legislation) requires action that involves all EU Member States.

Much as cooperation between stakeholders and further proliferation of ETC systems in Europe is expected to increase interoperability to some extent, without changes in the EU legislation it seems clear that significant barriers to market entry will persist. In addition, although some Member States are announcing market opening measures, recent cases show that new ETC systems can still be costly to establish and excessively burdensome for EETS providers (e.g. in Belgium). Consequently, it is the right time for the EU to improve the legislative framework so that the ETC market can develop in a more optimal way with lower regulatory costs.

Nearly all of the problems described in section 2 are within the scope of application of Directive 2004/52/EC. The EU's right to act seems effectively therefore justified by the existence of this Directive. Most of the problems relate to issues on which the legislators have already given to the Commission the right to act under the Regulatory Procedure with Scrutiny (PRAC).

Currently, only the issue of cross-border enforcement of tolls is not explicitly covered by the EETS legislation, although article 4.10 of the EETS Decision provides that "EETS providers shall collaborate with toll chargers in their enforcement efforts". However, cross border co-operation in the enforcement of road-safety-related traffic offences is provided for in the so-called "Cross-border enforcement" Directive.⁴⁵ This Directive, which uses Article 91 of the Treaty as the legal basis, gives precedence to measures aiming at facilitating the cross-border enforcement of other road traffic related offenses, such as non-payment of tolls.

For all the problems identified in section 2, Article 91 of the Treaty (Transport) is the appropriate legal basis for any legislative solutions envisaged.

4. WHAT SHOULD BE ACHIEVED?

4.1. General objective

The **general objective** of the proposed initiative would be to contribute to the correct functioning of the Internal Market by ensuring more access to interoperability in tolling services in line with and proportionate to the road users' needs.

This constitutes a certain change compared to the current legislation, which provides that each user should have access to EU-wide interoperability, i.e. an EETS covering all toll domains across the EU.⁴⁶ The following considerations were behind the change in the objective:

- full EU-coverage comes at a cost for EETS providers (in excess of €14 million per EETS provider⁴⁷) which is very significant in light of the size of the EETS market, estimated at €420 million/year (c.f. Table 5); this high entry cost combined with the

⁴⁵ Directive (EU) 2015/413 of the European Parliament and of the Council of 11 March 2015 *facilitating cross-border exchange of information on road-safety-related traffic offenses*, OJ L 68, 13.3.2015, p. 9-25.

⁴⁶ The future evaluation of the Directive should also look at the market and technology development to see if full interoperability could be achieved at lower costs and if it would be more desired from the market functioning perspective.

⁴⁷ 4icom, *Expert review of the EETS legislative acts*, 2015, <http://ec.europa.eu/transport/modes/road/studies/doc/2015-09-ex-post-evaluation-eets-4icom.pdf>.

small size of the market leave space for few (possibly even only one) EETS providers. There is a risk that the market becomes oligopolistic (or even a monopoly);

- Interoperable tolling services which give access with one OBU to all toll domains from Portugal to Poland, and from Norway to Greece, are needed by very few users. Indeed, most haulage companies specialise in transport to- and from defined regions, while light duty vehicles (predominantly cars, but also vans) rarely cross more than 2-3 borders.
- The removal of the obligation to cover the entire EU will reduce market entry costs for smaller EETS providers, resulting in more competition on the market.

The objective implies that both users engaged in regional transport, and those in need of EU-wide interoperability, will find an offer which meets their requests.

4.2. Specific objectives

Reflecting the identified problems, there are three specific objectives:

Specific objective 1: Remove market entry barriers and foster the development of a competitive market for electronic toll collection services

Explanatory note on specific objective 1:

This specific objective builds on the current objective of the existing legislation to 'ensure technical, contractual and procedural interoperability of electronic tolls'. Indeed, the market entry barriers identified in section 2.2.1 are of technical (non-standardised interfaces between toll chargers and EETS providers, as described in section 2.2.1.5), contractual (c.f. the problem of EETS providers to obtain fair remuneration, described in section 2.2.1.1, and problems resulting from the use of the 'agency model' by certain toll chargers, described in section 2.2.1.3) and procedural (c.f. the inconsistent accreditation processes, described in section 2.2.1.2, and the lack of harmonisation of the process of registering users to a toll domain, described in section 2.2.1.4) nature.

However, specific objective 1 goes one step beyond technical, procedural and contractual interoperability, as it also sets the aim of achieving a competitive structure of the toll collection market – an objective currently not spelled out in the legislation.

Specific objective 2: Improve the level of enforcement of tolls from foreign-registered vehicles

Specific objective 3: Remove the excessive obligations on EETS providers

All objectives are consistent with other EU policies, and notably with the objective of completing the Internal Market and creating a Digital Single Market. Specific objective 2 has been checked for compatibility with the Charter for Fundamental Rights, and no major issues have been identified.

Specific objectives 1 and 3 have a clear link to the objective of reducing the regulatory burden on companies (REFIT).

5. WHAT ARE THE VARIOUS OPTIONS TO ACHIEVE THE OBJECTIVE?

5.1. Preliminary screening of potential main policy measures to achieve the identified objectives

Given that the identified problems are linked to a number of technical and regulatory issues, some pre-screening of possible approaches and measures has been done in order to limit the analysis to the acceptable and feasible options. In the public consultation the Commission asked respondents for their opinion on a long list of possible legislative measures to achieve the policy objectives presented in section 4. Further proposals were made by the stakeholders spontaneously. The most important of those measures are screened below against the opinions of the stakeholders, opinions of experts and other considerations such as their political acceptability or proportionality. Based on this screening, some of them are recommended for more detailed analysis in section 6, while others are discarded.

5.1.1. Measures aiming at reducing the cost and burden for EETS providers to enter new toll domains and to provide services therein (first part of specific objective 1)

Four **alternative** approaches were proposed and discussed:

I. Mandatory standardisation

Under this approach, entering new toll domains and providing services therein is made easier for EETS providers thanks to a much deeper harmonisation of tolling systems based on new precise standards.

Comment: Views in the public consultation were mixed regarding this policy measure. Three representatives of toll chargers/Member States (Vinci, ASECAP and Hungary), two service provider (WAG, DKV) and one technology provider (Xerox) supported some additional standardisation effort, while 4 toll chargers / Member States (ASFINAG, AISCAT, the Netherlands, Sund and Belt), one technology provider (Kapsch) and one service provider (Egis) were against, notably arguing that too much standardisation will increase the cost of tolling (ASFINAG, Egis).

It must be underlined that even those in favour of further standardisation effort do not necessarily support the imposition of such standards through legislation. The general view expressed by experts in the field is that the existing body of standards is wide enough to support interoperability to a satisfactory level, and any gaps can be corrected via limited standardisation activity.

Some support for this measure (imposition of very precise standards through legislation) was expressed by the association of light vehicle users (FIA) which indicated that "the European Commission should play a key role in setting a single standard and specifications for road operators for the benefits of citizens". The solution equally has support from the wider public (*vide* several articles in the general press calling for a "single EU-wide tolling scheme")

Preliminary conclusion: Retain for further assessment, because of the support for this option coming from a significant part of the road users community.

II. Market self-regulation

Under this approach, the industry organises itself to achieve the first specific objective, namely the removal of barriers to the deployment of EETS in a competitive market environment. The role of the Commission in this case is limited to setting the objectives (in agreement with industry representatives) and legally recognising the industry representative body – the 'EETS Facilitation Platform' – as an official partner for the achievement of the first specific objective.

Comment: Stakeholders from the electronic tolling sector have organised themselves in an inclusive co-operation platform (the 'EETS facilitation platform' – EFP) which gathers the main categories of stakeholders (Member State administrations, toll chargers, toll service providers) from 12 countries (11 Member States and Switzerland). The platform remains open to new members, and regularly expands (e.g. membership applications from four new service providers and one new national toll chargers are currently in the process of being examined). EFP is already strongly engaged in promoting harmonised practices and facilitating interoperability between European EFC systems, and played a non-negligible role in the achievement of first interoperability agreements between toll chargers and EETS providers in 2016. All this makes the EFP a potential partner with whom the Commission could jointly pursue the first specific objective.

The *self-regulation* approach is strongly supported by ASECAP (the European association of motorway concessionaires) and several other Member States/toll chargers participating in EFP, notably Germany, ASFAs (French association of concessionaires), AISCAT (its Italian equivalent), but also by Vinci, Norway, and even the association of EETS providers AETIS and some individual EETS providers like Total (although they see self-regulation as a complementary activity to some necessary changes in the legislation).

Preliminary conclusion: Retain for further assessment because of the support of many toll chargers/Member States, because of proportionality considerations, and because of the significant success of the activities deployed by EFP so far to promote interoperability in a number of Member States.

III. Establishment of a single European co-ordination body

The Spanish concession operator ABERTIS suggested the establishment of a central European Body which would replace national authorities and toll chargers in registering EETS providers and accrediting them to individual toll domains, and which would also play the role of a central clearing house. Some other players supported the idea (e.g. the EETS provider Total).

Comment: In recent political discussions the creation of new EU agencies was rejected primarily for budgetary reasons. Hence, the measure is not politically achievable. Furthermore, several major players, including France, ASFAs and Sund and Belt opposed the idea and insisted that accreditation of EETS providers to a toll domain should stay in the hands of the toll chargers.

Preliminary conclusion: Discard from further analysis, because the measure is very unlikely to receive the necessary political support and is not widely supported by the stakeholders.

IV. Regulatory changes coupled with some standardisation

Under this approach, several **complementary** measures were discussed:

- Harmonisation of accreditation procedures (incl. equipment testing) across all toll domains

Comment: This measure received nearly unanimous support in the open public consultation (56 out of 70 answers) and in the targeted stakeholder consultation (all service providers, users, toll chargers and Member States with the exception of France; however, the association of French toll chargers supported the measure). Given the strong support for harmonisation and the fact that other possible measures making the accreditation procedures easier and less burdensome would be much less effective (e.g. manuals of procedures or partial harmonisation) they are not considered as alternatives for this measure.

Preliminary conclusion: Retain for further analysis – universally supported

- Standardisation of interfaces between EETS providers and toll chargers

Comment: It is a crucial measure to ensure technical interoperability, and for this reason it is strongly supported by all EETS providers. Despite the fact that it might involve significant adaptation costs for toll chargers, the measure also received support from this community (notably ASFINAG, AISCAT, Norway, Hungary) with only ASECAP raising some opposition. The standardisation of interfaces is considered as minimum standardisation already increasing interoperability to an adequate level, while further standardisation is considered under approach (I).

Preliminary conclusion: Retain for further analysis – important for achieving technical interoperability and supported by the main impacted group – the toll chargers.

- Mandatory use of the reseller model in the contractual relationship between the toll charger and the EETS provider

Comment: This measure is very important for EETS providers (it is on the list of ten top priorities prepared by AETIS⁴⁸ as input to discussions with toll chargers in REETS) and has unanimous support of all of them. It was also supported by the equipment manufacturer Kapsch. The reseller model is the only one compatible with the objective of a single invoice for paying all tolls in the EU (in the agency model, there is a separate invoice for each toll domain). It also greatly simplifies the provision of the EETS service, as it leaves EETS providers free to define their invoicing policy. While toll chargers and Member States did not raise it as a problem in the public consultation, it can reasonably be expected that some of the Member States currently requesting the agency model, such as Germany or Poland, will do so in the future, if the measure is proposed. Indeed, the agency model is easier to apply in the schemes where tolls are regarded as taxes. However, the experience of one country (Austria) who recently accepted to change from the agency to the reseller model shows that the difficulty of the change is sometimes exaggerated.

As there are only two models of contractual relationships (agency and reseller), no other alternative regulatory measure could be considered here. The mandatory aspect of the measure is justified by the fact that many Member States with agency model are unlikely to shift to the reseller model voluntarily.

⁴⁸ European Association of (prospective) EETS providers.

Preliminary conclusion: Retain for further analysis (although the measure might prove controversial with certain Member States)

- Toll chargers to set up the necessary framework for manufacturers to test their equipment against the requirements of each toll domain.

Comment: This measure was suggested by the equipment manufacturer Kapsch, but is equally supported by EETS providers, for which it would largely ease the accreditation process. It also received the explicit support of the Toll Charger Sund and Belt. Toll Chargers who already opened their markets (e.g. concessionaires in France, Spain and Portugal, Belgian Viapass, etc.) should already have in place testing sites or equivalent facilities to perform tests with EETS providers. For instance the association of French motorway concessionaires ASFA has test lanes at the toll plaza in Eprunes. Performing certain the tests upstream with OBU manufacturers could also be a source of savings for the toll chargers, as the number of repetitive tests would diminish. Imposing common testing requirements at the EU level would be excessive given the differences in the toll domains.

Preliminary conclusion: Retain for further analysis.

A lighter assessment of secondary measures under this approach is provided in section 5.2 below.

5.1.2. Measures to ensure a competitive functioning of the market (second part of specific objective 1)

Two alternatives, and some complementary solutions within the second alternative were proposed and discussed in the framework of the public consultation:

I. Market self-regulation

Market players, and in particular national toll chargers/ Member State authorities, can agree voluntarily to apply certain rules to ensure fair competition on the individual tolling markets under their authority. The instruments used in this case would be the same as those described in section 5.1.1 (II) above.

II. Regulatory changes

- Establishing a non-exhaustive list of services provided by the EETS provider which should give rise to a remuneration by the toll charger

Comment: The measure was opposed by three toll chargers/Member States (Vinci, Norway, the Netherlands); however, Vinci and Norwegian toll chargers are known to already provide a (relatively) fair remuneration, while the Netherlands do not have any electronic tolling. The list of supporters of the measure is much longer and includes all EETS/service providers, as well as several toll chargers and Member States (ASFINAG, Austria, Hungary, Abertis).

Preliminary conclusion: Retain for further assessment

- Toll chargers to put in place the conditions to allow EETS providers to offer services in the toll domain as of its launch

Comment: This is one of the most controversial measures. While it was not specifically stated by toll chargers and/or Member States in the public consultation, it is clear that the measure is not welcome for them. Indeed, when deploying a new system, toll chargers/Member States want to first establish a stable closed scheme, and only then allow third parties to access it. Such an approach damages, however, the EETS market: once the national market is saturated with OBUs provided by the incumbent/single national service provider, it is very difficult for EETS providers to enter and regain market shares. The measure is therefore one of the most crucial requests coming from EETS providers, and also one of the measures which could determine the success or failure of the EETS project.

Preliminary conclusion: Retain for further assessment because of its importance for the success of EETS and despite possible opposition from certain Member States and/or toll chargers

- Separation of accounts between toll charger- and toll service provider kind of services

Comment: This measure received nearly unanimous support from all kinds of stakeholders, including all EETS providers, technology providers (Kapsch), users (UAPME, NHOLT, IRU) and toll chargers/Member States (France, ASFA, ASFINAG, AISCAT, APCAP, the Netherlands, Norway, Sund and Belt, Hungary, Abertis). It was also supported by 45 (65%) respondents to the open public consultation.

Preliminary conclusion: Retain for further assessment

- Turning Conciliation Bodies into market regulators with powers to enforce their decisions

Comment: Many players, including all EETS providers, road users (IRU, WKÖ, UAPME) and even two toll chargers (Norway, Abertis) supported this measure. It was also supported by 36 respondents to the open public consultation (most of them representing road users) with only 16 against. On the other hand, it was opposed by France, the Netherlands, Germany, Kapsch and by the Belgian Conciliation Body. The main argument against changing the role of the Conciliation Bodies is that their effectiveness in the current form has not yet been tested (the first case was presented to a conciliation body – the Belgian one – only in the second half of 2016). It is therefore too early to change the system, at least until more evidence of the functioning of the current system becomes available.

Preliminary conclusion: Discard from further assessment, because there is not enough evidence that the current system doesn't work correctly.

- Obligation for Member States to organise separate tenders for toll charger- and toll service provider kind of activities

Comment: The reaction to this measure was mixed. All EETS providers supported it. Norway, Kapsch (a major technology provider, but also a vertically integrated toll operator in the Czech Republic and Poland!), Egis and Xerox were also in favour. Germany, the Netherlands and Vinci were against. The measure is quite intrusive in the sense that it complicates the tendering for a new tolling system (the need to launch two parallel tenders instead of one), which already by nature is a very difficult and politically risky process for the concerned Member State. The relatively small opposition of Member States voiced in the public consultation might not be giving full account of the

real opposition to this measure. In addition, the separation of tenders is not essential to achieve a competitive market, as shown by the example of Austria.

Preliminary conclusion: Discard from further assessment (too intrusive, not proportionate)

- *De facto* separation of vertically integrated companies

Comment: This measure was supported by the EETS providers and only one toll charger – ASFINAG (only in the case when the company goes abroad). It was explicitly opposed by the Netherlands, Norway and even by the haulage association UETR, who feared that such separation would increase, for toll chargers, the costs of establishing and running the tolling system, and that this increase in costs would eventually be reported on the users.

Preliminary conclusion: Discard from further assessment (not proportionate, potentially increasing the cost of the system, which is contrary to the objectives of the EETS legislation)

- Giving the Commission the right to issue opinions on the tender specifications before they are published by the Member State

Comment: This measure was supported by EETS providers and by road users, as well as two toll chargers who are not concerned by the problem, because unlikely to tender out any activities (Abertis and Sund and Belt). It also received the support of 45 (64%) respondents to the open public consultation. On the other hand, the measure was explicitly opposed by Vinci, SEOPAN, Austria, the Netherlands and Norway. Overall, the main impact of the measure would be that it would extend the time needed to deploy a new tolling system. It is therefore likely to be opposed by many Member States, in particular those planning to deploy a new or renewed system in the future.

Preliminary conclusion: Discard from further assessment (potential opposition disproportionately high in comparison to the expected added value)

Some additional lighter measures have been considered in section 5.2 below.

5.1.3. Measures to facilitate the cross-border enforcement of tolls (second specific objective)

Three **incremental** options were envisaged to address the second specific objective:

- Requesting the EFP to find a solution for better enforcement of tolls (self-regulation)

Comment: Given that up to now Member States have not found a way to cope with the issue it is very unlikely that any recommendation of the platform would be followed. Actually, several members of the EFP (notably France, ASFA, SEOPAN, Austria, Poland) are among the stakeholders calling on the Commission to propose a regulatory framework for the cross-border enforcement of tolls. Besides, a voluntary scheme might not ensure sufficient data protection depending on the approach chosen.

Recommendation: Discarded from further assessment (not effective)

- The establishment of a mandatory mechanism for the exchange of information on the identity of toll offenders using the same tools as Directive 2015/413/EU on the cross-border exchange of information on road-safety-related traffic offences.

Comment: This measure was supported by 53 (76%) of respondents to the open public consultation. It also received nearly unanimous support from respondents to the targeted consultation, from all stakeholder groups: Member States, Toll Chargers, users, technology providers and EETS providers. There were two exceptions: Germany indicated that it believes that such a system is not needed, because current tools are sufficient (this view was opposed by all the other Member States who responded); IRU also opposed the measures, although the reasons for this opposition were not clear (the explanation said "The realisation of the single market for electronic tolling systems should result in an overall cost reduction for EU hauliers and should not lead to higher tolls or user charges when using EETS compared to national and local providers.")

Preliminary conclusion: Retain for further assessment – nearly universally supported by the stakeholder community

Two requests to make the measure more precise were made:

- Several respondents representing concessionaires (Vinci, ASECAP, SEOPAN, ASFA) asked that private entities are given access to the tool for cross-border exchange of information. This however does not seem justified, as it would not ensure sufficient level of personal data protection (**Preliminary conclusion: discard from further assessment**)

- Sund and Belt suggested that the tool for exchanging information on toll offenders be used independently on the type of vehicle with which the offence was committed; this suggestion is implicitly supported also by other stakeholders (**Preliminary conclusion: Retain for further assessment**)

- The establishment of a mandatory mechanism for Member States to assist each other in the recovery of fines related to the non-payment of tolls

Comment: This measure was suggested by Hungary and by the Polish General Inspectorate of Road Transport. No other stakeholder expressed an opinion on this issue. While this measure would considerably strengthen the effectiveness of the cross-border enforcement of tolls, it would go beyond what is foreseen by the established EU rules for the enforcement of road-safety-related traffic offences (Directive 2015/413/EU) and by the rules for the recovery of claims relating to taxes, duties and other measures (Council Directive 2010/24/EU), where the obligation of assistance is limited to claims in excess of € 1,500. The measure seems therefore disproportionate, but could be envisaged in the future once the effectiveness of the simple exchange of information has been assessed.

Preliminary conclusion: Discard from further assessment (but consider it as an option for future revisions)

5.1.4. Options to soften the current requirement for EETS providers to cover with their services all EETS domains within 24 months from their registration (first aspect of specific objective 3)

It appears clearly from the problem definition that the requirement as it is currently formulated in the legislation may well be excessive and impossible or at least

prohibitively expensive to meet. Participants to the public consultation were asked about their preference between several **alternative** options:

- Maintain the requirement for EETS providers to cover all the toll domains in the EU, but extend the deadline of 24 months
- Replace the obligation to cover all toll domains by the requirement to cover a certain high percentage thereof
- Replace the obligation to cover all toll domains by the requirement to cover a certain region of the EU and to complete it through partnerships with other EETS providers
- Replace the obligation to cover all toll domains by the requirement to cover the country of registration and all neighbouring countries
- Leave the question of timing and coverage by the service entirely to the discretion of the EETS provider

Comment: In the open public consultation, half of the respondents (34), mostly road users, recommended to leave the decision entirely to the EETS providers. 18 respondents proposed to maintain the current obligation to cover all toll domains, while another 18 suggest other solutions.

Regarding the targeted consultation, the solution which gathered by far the widest support was equally the one where EETS providers decide by themselves where to offer their services. Interestingly, this solution was supported by the EETS providers (with the exception of Axxès, who insisted on keeping the full EU coverage obligation), by the users (UAPME, UETR, WKÖ), who feared that the obligation to cover all EU would increase the price of the services, and by many toll chargers and Member States (Ireland, Vinci, SEOPAN, ASFA, ASFINAG, Austria, AISCAT, Sund and Belt, Switzerland). The main reason invoked by the quoted Member States and Toll Chargers was that the obligation of full EU-coverage would likely lead to the creation of a monopolistic EETS market, with negative consequences both for the users and for the toll chargers.

The solution where the obligation is maintained to cover the whole EU was mainly supported by three Member States which currently do not have or hardly have electronic tolling systems (Sweden, Finland and the Netherlands), but also by France (in contradiction with the position of French toll chargers – cf. previous paragraph) and by Germany.

Solutions in between, in particular the one where EETS providers are asked to complete the EU-wide coverage through partnerships, have been supported by a few stakeholders, and notably by Norway, DARS (the Slovenian toll charger), IRU (the main road haulage association), Hungary and Abertis.

Overall, the benefits of a full EU coverage, which is only needed by a relatively small proportion of road users, do not justify the risk of creating a monopolistic market. Hence it does not appear to be opportune to maintain the requirement that EETS providers cover the whole EU.

As to any intermediary solutions, there appears to be little agreement among stakeholders how they should be defined, and whether they would effectively address all the issues. This is confirmed in the public consultation, where none of the conceivable intermediate

solutions appeared to gather support from a group of stakeholders (toll chargers, EETS providers, users...) or indeed from a significant number of individual respondents.

Retaining any of these intermediate solutions for further analysis does therefore not appear to be justified. Hence the most accepted and reasonable approach appears to be to leave the decision on the coverage of EETS to the market, i.e. to the individual EETS providers.

Given the fact that the decision on the markets covered is left to the commercial decisions of EETS providers, there might be risk that no EETS provider decides to cover all/the majority of toll domains in the EU. However, the aggressive expansion policy currently practiced by two most advanced EETS providers (Axxès and Telepass) gives a clear indication of the willingness of the biggest players to offer interoperable tolling services on as many markets as possible. This was actually confirmed by Axxès in its answer to the targeted consultation, in which it expressed its preference for maintaining the requirement for EETS providers to cover all toll domains in the EU with their services.

Preliminary conclusion: Retain for further assessment the option where EETS providers decide where to provide their services.

5.1.5. Specific rules on light duty vehicles (second aspect of specific objective 3)

The following two **alternative** options were envisaged to reflect the specific characteristics of the market for EETS for light duty vehicles:

- Excluding light duty vehicles from the scope of the legislation

Comment: Numerous stakeholders argued that there is little demand for cross-border interoperability of tolls, and that therefore efforts should concentrate solely on the creation of an EETS for heavy duty vehicles. This position was presented by several toll chargers and Member States (France, Germany, ASECAP, ASFA, ASFINAG, Austria), as well as by the association of EETS providers AETIS and the EETS provider WAG. Interestingly, other representatives of the same categories of stakeholders had the opposite view, i.e. indicated that light vehicles should remain within the scope of the legislation and that demand for interoperability for such vehicles exists. This opinion was presented by the Netherlands, but maybe more importantly by several representatives of users (UAPME, UETR, WKÖ) and several EETS providers (notably Axxès, DKV and Tolltickets). Also 44 respondents to the open public consultation (63%) believed that light vehicles should remain within the scope of the EETS legislation.

It therefore appears that those with the best knowledge of the demand for services (users, EETS providers) believe there is a market for EETS for light vehicles and it should continue to be governed by EU rules.

Preliminary conclusion: Discard from further analysis

- Introduce specific rules for the EETS for light duty vehicles

The following three complementary measures were put to discussion:

- Allow EETS providers to equip light duty vehicles with OBUs which support short range microwave communication (DSRC) only

Comment: This solution appears natural, as DSRC is the only technology currently used in the EU in electronic tolling systems for light vehicles which require the installation of an OBU. The measure received explicit support from the toll chargers/Member States Vinci, Sweden, APCAP, Norway, Sund and Belt, DARS, and from the EETS providers AETIS, Total, Via Verde and DKV. No stakeholder expressed any opposition.

Preliminary conclusion: Retain for further assessment

- Allow EETS providers to provide services to their clients in systems which do not require the installation of OBUs, and in particular those using the automatic number plate recognition (ANPR) technology

Comment: ANPR is used in many systems used by light vehicles, and notably by urban tolling schemes (such as the London Congestion Charge or the Stockholm Congestion Charge). The extension of EETS into these schemes was explicitly supported by the toll charger Vinci, the technology provider Kapsch, the user representatives IRU and WKÖ, as well as by the service provider Egis. Explicit opposition was voiced by Germany and AISCAT only.

Preliminary conclusion: Retain for further assessment, although some opposition to the measure can be expected. Schemes with little cross-border traffic should be excluded from the scope to avoid unnecessary compliance costs.

- Allow the use of the RFID technology for tolling light duty vehicles

Comment: This measure was explicitly opposed by several toll chargers and Member States (France, Vinci, ASFA, ASFINAG, Norway, Sund and Belt) but also by the EETS provider WAG and the technology provider Kapsch. The main reasons invoked for rejecting RFID were the following: first, adding another technology to the list of technologies allowed to be used in the EU would render the achievement of interoperability yet more complicated.; second, RFID is a less efficient technology than DSRC, and is likely not to function correctly at higher vehicle speeds (above 50 km/h). Only two stakeholders (Hungary and DARS) voice some support for the measure.

The use of RFID for tolling in the European context presents a number of additional inconveniences:

- it uses frequencies (865-868 MHz and 915-921 MHz) which are also used by mobile communications (4G, GSM-R), and the risk of interferences to the tolling communications is very important.
- the power of the signal from the RFID antenna necessary for the system to function correctly could be up to several times stronger than the power allowed under European spectrum management legislation.

Preliminary conclusion: Discard from further assessment

5.2. Succinct assessment of other proposed policy measures

Table 8 provides a succinct assessment of less crucial policy measures which were discussed in the public consultation or proposed directly by stakeholders.

Table 8: Succinct assessment of other proposed policy measures

Measure	Comments	Recommendation
<i>Measures aiming at reducing the cost and burden for EETS providers to enter new toll domains and to provide services therein (first aspect of specific objective 1)</i>		
<ul style="list-style-type: none"> • Obligation for toll chargers to provide EETS providers digital maps of their toll domain 	Suggested by two EETS providers. Opposed by the Netherlands on the basis that digital maps are a commodity, and EETS providers would have to pay for it.	Discard
<ul style="list-style-type: none"> • Measures to prevent the misuse by toll chargers of commercially sensitive data of the EETS provider 	A badly needed measure, as EETS providers are obliged to share a lot of data relative to their client base with the toll charger. Supported by the Netherlands, user association FIA and EETS providers (AETIS, WAG)	Retain
<ul style="list-style-type: none"> • Streamline the acceptance of EETS providers to different toll domains in the same country through the creation of single national contact points 	Suggested by DKV, who complained about the cost and burden of negotiating simultaneously with many counterparts (notably in Spain and in Italy).	Retain
<ul style="list-style-type: none"> • Make the use of the English language mandatory for contacts between toll chargers and EETS providers 	Suggested by several EETS providers, the measure would facilitate the business environment, but would go against the principles of multilingualism in the EU and would encroach on the principles of commercial law in the Member States	Discard
<ul style="list-style-type: none"> • Harmonise the way vehicles are registered to individual toll domains (standard registration forms) 	Suggested by several EETS providers, the measure would reduce administrative costs and burden with no evident negative impacts for toll chargers.	Retain
<ul style="list-style-type: none"> • Prohibit the imposition by toll chargers of any specific requirements on the way the three 	Crucial measure, as contradictory specific requirements as to the functioning or construction of OBUs could completely jeopardise	Retain

technologies are applied by the EETS providers, which would go beyond established standards and are not measurable key performance indicators	interoperability.	
• Obligation for Member States to consult the Commission on planned new criteria for varying tolls. Right for the Commission to issue an opinion, after taking into account the position of EETS providers	The measure only brings more precision to an existing requirement, and is therefore not problematic.	Retain
• Obligation for toll chargers to foresee transition periods when upgrading their interfaces to EETS providers to a new version of a standard	Important measure without which large fleets of EETS OBU's on the market could become obsolete before they have been amortised.	Keep
<i>Measures to ensure a competitive functioning of the market (second aspect of specific objective 1)</i>		
• Prohibit discrimination by Member States or toll chargers between EETS- and non-EETS users in access to toll discounts	Suggested by Sund and Belt and several EETS providers. Discrimination between EETS- and non-EETS users is already provided for in the Decision; this provision makes a specific case about possible discrimination in the field of discounts.	Retain
Other measures		
• Increase the level of protection of road tolling applications in the 5.8 GHz frequency band (DSRC)	Suggested by Norway and several EETS providers. Tolling already benefits from significant protection in "SRD Decision" ⁴⁹ – DSRC antennas used for tolling can emit with an 80 times stronger power than other applications in the same band. Furthermore, the EETS legislation is not the right place to regulate the use of the radio	Discard

⁴⁹ Commission Decision of 9 November 2006 *on harmonisation of the radio spectrum for use by short-range devices*, OJ L 312, 11.11.2006, p. 66.

5.3. Complete list of policy measures retained for further analysis

Following the assessment in sections 5.1 and 5.2, the following list of measures is retained for further analysis; for each measure, a commentary is added as to its level of importance for the achievement of the objectives set in section 4:

Table 9: List of measures retained for further analysis

SO1 (first aspect): Facilitate accreditation and operation of EETS providers in toll domains

- (1) The Commission will request the European standardisation bodies to prepare an exhaustive list of very detailed standards for all the "interoperability constituents" (on-board units, roadside infrastructure, enforcement and back-offices) and processes linked to the electronic toll collection and EETS. It will then render standards mandatory by legislation. **Comment:** The measure is **essential** with respect to the standardisation of interfaces (also proposed in measure 4). Standardisation of internal processes inside each system could contribute to facilitating interoperability, but is not as important as the standardisation of interfaces which would allow different systems to "talk to each other". The measure is an alternative to measure 4 and to measure 2.
- (2) The industry organises itself to achieve the removal of barriers to the deployment of EETS in a competitive market environment. The Commission participates in setting the operational objectives and monitoring indicators in agreement with industry representatives and legally recognising the industry representative body – the 'EETS Facilitation Platform' – as an official partner for the achievement of the first specific objective. **Comment:** This measure is essential for the achievement of interoperability if no legislation is proposed. It is an alternative to a legislative approach (measures 3-10) and to a mandatory full standardisation approach (measure 1).
- (3) Member States should not make specific requirements on the way the three technologies listed in the Directive are applied, which would go beyond established standards (slim vs. fat OBU, special chips, etc.) – they can only impose measurable KPIs, and it's the EETS provider's business to see how to achieve these KPIs. **Comment:** This measure is essential to prevent the creation of insurmountable obstacles to interoperability in case different Member States have incompatible requirements. It is complementary with measures 4-11.
- (4) New or renewed tolling schemes must adopt an interface for information exchange with EETS providers based on the Interoperable application profiles for information exchange between Service Provision and Toll Charging CEN/TS 16986. **Comment:** This measure is essential, as compatible interfaces are a pre-condition to interoperability. It is alternative to measure 1 and to aspects of measure 2. It is complementary with measures 3 and 5-11.
- (5) The tolling authority must consult in advance the Commission and EETS providers on the choice of criteria for varying tolls. The Commission will issue an opinion as to the impact this choice of criteria will have on the ability of EETS providers to serve the market with existing OBUs. **Comment:** This measure is not essential, but could help prevent the creation of technical barriers to interoperability on certain market. It is complementary with measures 3-4 and 6-11.
- (6) The accreditation procedure for EETS providers, including required tests (and their cost), certificates, key performance indicators, applied standards, harmonized certification process description, tolled network description, contractual terms, key performance indicators, the tests plan and exceptions thereto, must be published in the toll domain statement at least 9 months before the launch of a new or renewed electronic tolling system. All the tests phase must not exceed a period of six months. The 6 month period does not include the trial operations in production environment. The certification process must start six months at least prior the start of operations. The same accreditation procedure must be used for all applicants. **Comment:** This measure is essential to prevent the creation of a monopoly when a tolling system is created or substantially changed. It is complementary with measures 3-5 and 7-11.
- (7) The Commission will adopt by delegated act the standard format of a toll domain statement which

will become mandatory for all toll chargers. **Comment:** This measure is not essential for interoperability. It is complementary with measures 3-6 and 8-11.

- (8) Each toll charger must propose a test environment where the OBU manufacturer can fine tune their OBU to secure the compliance with toll domain specific requirements and obtain certification. No re-testing of such a certified OBU (except for end-to-end tests) will be required from the EETS provider using the OBU. **Comment:** This measure is not essential to achieve interoperability, although it will help limit the cost of the latter. It is complementary with measures 3-7 and 9-11.
- (9) The accreditation procedure will integrate the certification of all the interoperability constituents and a suitability for use test. The first phase will include all verifications of the conformity of the interoperability constituents with respect to applicable technical standards and specifications; verifications may include documentation proof, laboratory and/or field tests. EETS Providers will provide the necessary declarations to demonstrate that their interoperability constituents are conform. The second phase will include all verifications allowing to validate the correct functioning and performances of the interoperability constituents; after a system integration phase, proper pre-defined tests will be carried out in both a controlled and productive environment, including pilots with real users. The successful (or not) conclusion of each of the steps of the accreditation procedure will be certified on the basis of measurable criteria and/or parameters (such as - for example - KPIs) that will be clearly defined within the toll domain statement. **Comment:** This measure is not essential for interoperability, but will help lower the costs and burden associated to its achievement. It is complementary to measures 3-8 and 10-11.
- (10) Member States must ensure that a co-ordinated accreditation procedure is available to EETS providers and/or OBU manufacturers for all electronic toll domains (e.g. all concessions) on their territory; in particular, it must be possible to perform laboratory tests of the equipment only once for all toll domains on the Member State's territory. **Comment:** This measure is not essential for interoperability, but will help lower the costs and burden associated to its achievement. It is complementary to measures 3-9 and 11.
- (11) The contractual relationship with the EETS provider must follow the "reseller model". **Comment:** This measure is not essential for the achievement of interoperability. It is however essential for allowing EETS users to receive one invoice for the use of all roads in the EU. It will also reduce the administrative costs and burden for EETS providers. It is complementary to measures 3-10.
- (12) The Commission will adopt, by delegated act, the format of a standard, electronic registration form of road users to a toll domain, which must be accepted for their registration in any electronic toll domain subject to EETS legislation. **Comment:** This measure is not essential for the achievement of interoperability, but will help avoid errors in the registration of users.
- (13) As the standards are constantly under evolution process, the application of latest version of a standard must not be a source of discrimination for EETS regarding their ETC services. A toll charger can request the latest version of the standard. Nevertheless, if some OBUs are already in operation in any of the MS then the toll charger must accept the OBUs compliant with a prior version of the standard even if some features or attributes are not available. The acceptance period is limited and fixed between the Toll charger and the EETS provider taking into account the lifecycle of the OBUs in operation. **Comment:** This measure is essential for the economic sustainability of the provision of interoperable tolling services. It is complementary to the other measures in the table.

SO1 (second aspect): Ensure a competitive functioning of the market

- (14) Separation of accounts between the operator of the toll collection system and the toll service provider, when both roles are performed by the same company. **Comment:** This measure is essential for the achievement of the objective of promoting a competitive market. It is complementary to measures 15-18.
- (15) Provide a non-exhaustive list of services performed by EETS providers which must be remunerated by the road manager at market value (e.g. providing OBUs, payment guarantees, data transfer, role in the enforcement process, etc.). **Comment:** This measure is essential to break the State-protected monopolies in certain Member States. It is complementary to measures 14 and 16-

18.

- (16) If a rebate scheme is proposed by the toll charger or by the Member State, then EETS clients must have access to the same rebates and frequent-user schemes as clients of the national toll service provider. **Comment:** This measure is not essential for interoperability, although it is important for avoiding discrimination between users. It is complementary with measures 1-15 and 17-18.
- (17) EETS Providers are only required to provide the Toll Chargers with the minimum information necessary to calculate and apply the charge, namely:
- the Vehicle's License Plate Number (including nationality);
 - the identifier of the user account
 - the identifier of the On-Board Unit
 - the applicable values of the vehicle's parameters upon which tariff is modulated

Comment: This measure is essential to ensure a competitive functioning of the market. It is complementary with measures 1-16 and 18.

- (18) In case of violation, the toll charger may request complementary information like address of the violator. In that case, the EETS provider would have to provide the requested information. **Comment:** This measure is the extension of measure 17 and must be proposed together with it.

(1) SO2. Cross-border enforcement of tolls

- (19) Provide for a mechanism for the mandatory exchange of information between Member States on the identity of vehicle owners who are proven or suspected of fraud to the toll system. The mechanism should be largely based on the provisions of Directive 2015/413/EU ("CBE") for the cross-border enforcement of road safety related offenses. **Comment:** This measure is essential for the achievement of the objective of facilitating the cross-border enforcement of tolls.
- (20) EETS providers must disclose upon request to system operators the identity of the presumed toll offenders who are their clients. This disclosure obligation is only valid in the framework of enforcement activities and the information on concerned EETS clients cannot be shared by the system operator with any of the EETS provider's competitors, even if one of the latter is part of the same organisational structure as the system operator. **Comment:** This measure is essential to facilitate the cross-border enforcement of tolls and to ensure a competitive functioning of the market. It is complementary with measure (19)

SO3 (first aspect): Reduce the unnecessary regulatory burden for EETS providers

- (21) No requirement anymore for EETS providers in terms of mandatory coverage, but EETS providers must make public and regularly update detailed and dated plans on extending the service to further toll domains. **Comment:** This measure is essential to encourage EETS providers to provide the service, and thus to achieve interoperability.

SO3 (second aspect): Rules on light duty vehicles

- (22) Make it possible for an EETS provider to offer EETS for heavy vehicles only or for light vehicles only. **Comment:** This measure is essential for the achievement of interoperability for light vehicles and to increase the legal clarity regarding the obligations of EETS providers.
- (23) The OBU used by the EETS provider-HDV must include the three technologies; The OBU used by EETS provider-LV must include DSRC (no obligation for satellite+GSM). **Comment:** This measure is essential for the achievement of interoperability for light vehicles. It is complementary with measure (21).
- (24) 'EETS providers light vehicle' shall be allowed by system operators, on a non-discriminatory basis, not only to provide the services related to electronic toll collection in electronic toll domains (EETS per se), but also to re-sell paper and electronic vignettes and serve their customers in

congestion and environmental charging schemes (e.g. London congestion charge) and restricted access zones. Comment: This measure is not essential for the achievement of interoperability, but it will make the EETS for light vehicles more attractive both for users and for the service providers.

5.4. Policy options retained for analysis

From the analysis in section 5.1 it appears that only part of specific objective 1 can be addressed in several alternative ways, namely through self-regulation, changes to the regulatory framework or standardisation. Regarding standardisation, it appears that only two meaningful alternative approaches (beyond the baseline) can be proposed:

- Harmonisation of both the interfaces between different market players and of the internal processes of each market player, proposed as part of PO3 below; and
- Harmonisation of interfaces only, proposed as part of PO2 below.

No meaningful standardisation options between these two could be identified.

For the achievement of objectives 2 and 3 no real alternative approaches could be devised from the policy measures retained for further analysis. Hence, the policy options are mainly built around the approach taken to address specific objective 1.

5.4.1. Policy option 0: Baseline

This is the option whereby the EU would not undertake any new action. In line with the standards of the Commission, it is assumed that no actions other than those already initiated by Member States and stakeholders would take place (hence, for example, it is assumed that the negotiations between EETS providers and toll chargers which already started in the framework of the EFP on the Italian market would be concluded; however, the conclusion of those negotiations which have not yet entered the proper accreditation phase – e.g. in Poland⁵⁰ – is not included in the baseline).

5.4.2. Policy option 1: Self-regulation to achieve specific objective 1 + legislative measures to achieve specific objective 2 and 3.

In this policy option, the problems linked directly to the letter of the EETS legislation (problems 2 and 3 – see sections 2.2.2 and 2.2.3) are addressed with regulatory measures, which take the form of measures (19) to (24) in Table 9.

Problem 1 is addressed through self-regulation, i.e. measure (2) in Table 9. In practice, the Commission would present to the EETS Facilitation Platform (EFP) specific objective 1 and a list of indicators to check the level of achievement of the objectives (see section 8 on monitoring). The objective and indicators could be presented in a Communication from the Commission and agreement sought in the form of a memorandum of understanding to be signed by the Commission and the members of the EFP. The Commission would agree with the EFP on a mechanism for regular monitoring of the level of achievement of the objectives and on a number of soft measures to

⁵⁰ GDDKiA, the main Polish toll charger, held information meetings with interested EETS providers, but discussions did not go beyond that stage.

facilitate co-operation (hosting of meetings by the Commission, disseminating the achievements, where needed financially supporting relevant projects, etc.).

5.4.3. Policy option 2: Legislative approach

In this policy option, all regulatory and market failures would be addressed with changes to the EETS legislation. These changes would take the form of all the measures listed in Table 9 apart from measures (1) and (2). The interdependence of the measures stems from the fact that they constitute a complete package of different measures necessary to address all aspects of the identified problems. For this reason it is also better to analyse their impacts together, as independently the impacts could be lower than the total impact of the package. This does not mean, however, that the measures could not be implemented independently, as their scope of intervention is complementary.

It is important to underline that policy option 2 contains some standardisation measures, concentrating on areas indicated as a priority by respondents to the public consultation. Concretely, policy option 2 proposes to legally impose the use by toll chargers of the ISO 12855 standard in its 2015 version, as well as of the profiled standard CEN TS 16986. Both standards refer to the interface between the back-offices of the toll charger and of the EETS provider. This mandatory harmonisation is thus limited to a single, important aspect, contrary to the total harmonisation of all processes proposed under policy option 3 (see below).

5.4.4. Policy option 3: A single EU ETC standard to facilitate technical and procedural interoperability + legislative measures to promote competition on the market and to achieve specific objective 2 and 3.

In addition to measure (1) from Table 9, which would be an alternative to most of the measures addressing first aspect of SO1, Policy option 3 contains:

- measure (11) which imposes the use of the reseller model in EETS,
- measure (13) which provides for a transition between different versions of the same standards,
- measures (14)-(18) which promote fair competition on the market,
- measures (19) and (20) relative to the cross-border enforcement of tolls,
- measure (21) which removes the obligation for EETS providers to cover all toll domains in the EU, and
- measures (22)-(24) which contain specific rules on the EETS for light duty vehicles.

6. WHAT ARE THE IMPACTS OF THE DIFFERENT POLICY OPTIONS AND WHO WILL BE AFFECTED?

6.1. Economic impacts

6.1.1. Impacts on operating costs for road users

The results obtained on the economic impacts on road users are illustrated with respect to HGVs, buses and cars. The total costs obtained in the baseline scenario are compared against the total costs estimated for each policy option.

All the policy options analysed show a positive net economic impact on road users through reduced cost of OBUs (including costs of installation, de-installation, purchase or rental costs, etc.) and cheaper management of contractual relations with the toll chargers, but the scale of benefits varies across the policy options. In terms of overall performance, PO3 shows the highest expected benefit for road users calculated over the period 2016-2025 compared to the baseline, i.e. € 407 million (net present value). PO2 follows (i.e. € 370 million) and PO1 generates the lowest positive impact on road users (i.e. € 117 million).

With respect to the three categories of users considered, HGVs would benefit most given the greater focus of EETS on international road freight transport. In this respect, the share of the benefits increases from 80% in PO1 and PO2 to 85% in PO3. Cars have the second largest proportion of overall benefits, equal to 20% in PO1 and PO2, reducing to 14% in PO3. Finally, the impact on buses is negligible across the policy options given the small size of the modelled fleet.⁵¹

With respect to the place of establishment, all users would individually benefit in the same manner. Collectively, users from Member States which are strongly focused on international road transport (Poland, Spain, Romania, the Netherlands, etc.) would benefit more than those from countries with proportionately smaller internationally oriented truck fleets (notably France).

Table 10 presents the results of the modelling of impacts on road users in all three policy options in terms of reduction of costs compared to the baseline. Gross flows of costs (rather than a comparison to the baseline) are presented in Annex 7.

Table 10: Flow of net gains (reduction of costs compared to the baseline, € million/year) to road users for using road tolling infrastructure

Policy option	Costs by category of vehicles	2016	2020	2025	Total 2016-2025
PO1	HGVs		8.0	28.0	120.0
	Buses		0.2	0.4	1.8
	LDVs		2.9	5.6	29.8
	Total net cashflow		11.0	33.9	151.4
	Discounted cashflow (NPV)		9.4	23.8	117.4
PO2	HGVs		40.9	65.3	380.0
	Buses		0.5	0.8	4.7

⁵¹ It has to be reminded, however, that the calculation only covers buses engaged in regular international transport, due to the lack of figures on non-scheduled international bus transport.

	LDVs		8.3	15.4	83.5
	Total net cashflow		49.7	81.5	468.3
	Discounted cashflow (NPV)		42.5	57.3	370.5
PO3	HGVs		40.9	86.2	442.5
	Buses		0.5	1.0	5.3
	LDVs		8.3	11.1	70.6
	Total net cashflow		49.7	98.3	518.4
	Discounted cashflow (NPV)		42.5	69.0	407.7

6.1.2. Impacts on operating costs and conduct of business for toll chargers

6.1.2.1. Savings on redundant OBUs

The measures included in the three policy options would promote interoperability and lead to an increase in the number of vehicles equipped with 'EETS' OBUs (i.e. OBUs that are interoperable across the EU) rather than 'national' ones. The expected evolution over time of the number of each type of OBUs is presented in Table 11.⁵²

Table 11: Evolution of the estimated number of 'national' and 'EETS' OBUs installed on-board vehicles used in international HDV transport. Comparison between the baseline and the three policy options

Number of OBUs (1,000s)	2016	2020	2025
Baseline National	1,598	1,397	1,203
PO1 National	1,598	1,292	928
PO2 National	1,598	881	411
PO3 National	1,598	881	284
Baseline EETS	215	290	379
PO1 EETS	215	309	456
PO2 EETS	215	447	650
PO3 EETS	215	447	650

The reduction in the number of 'national' OBUs would be a net saving for toll chargers. While toll chargers are likely to procure a larger fleet of OBUs than necessary (to avoid the risk of running out of OBUs if demand for 'national' OBUs exceeds expectations), this fleet would in any case be smaller under each policy option than in the baseline scenario. The highest benefits compared to the baseline are expected for PO3 followed by PO2 and PO1.

⁵² Table 11 only covers vehicles engaged in cross-border transport. It is assumed that vehicles which always stay within the borders of one Member State would all remain equipped with 'national' OBUs.

Table 12: Savings on reduced number of 'national' OBUs in the three policy options

	PO1	PO2	PO3
Combined (2016-2025) savings vs. baseline (€₂₀₁₆ million)	12.3	48.4	51.1

6.1.2.2. Higher level of payment of tolls

The mandatory exchange of information between Member States on the identity of vehicle owners (provided for in all policy options) would allow toll chargers to search and obtain more reliable information about the owner of a specific vehicle that has been detected in violation of a charging scheme. This would provide the possibility of establishing a procedure for the recovery of the toll due as well as of any additional administrative fees.

We assume that, when sent the invoice or fine to their home/office address, 50% of the offenders would pay voluntarily, even without any further assistance from the Member State of establishment/residence in the recovery process.⁵³

The increase of toll revenues due to this measure is thus anticipated to amount to about **0.5% of the overall aggregated EU-level toll revenues, i.e. some €150 million per year by 2025,⁵⁴ for all policy options.** This additional toll revenue would obviously constitute a loss for those currently not complying with the toll payment obligation, but this can barely be considered as a negative impact.

6.1.2.3. Cost of compliance to new requirements

In **policy option 2**, toll chargers, introducing or developing an electronic toll collection system would be obliged to integrate within their back-office architecture an interface compatible with the back-offices of EETS providers in conformance with the CEN TS 16986 standard (application profile for the ISO 12855 standard). This implies the need to adapt existing business processes as well as back-office infrastructure.

For toll chargers introducing new charging systems, the implementation of an interface in compliance with the CEN TS 16986 standard would basically come at no cost compared to the baseline. However, the situation would be different for those toll chargers who are already operating a system and that are currently using back-office systems and interfaces based on proprietary specifications. **The adaptation of these systems might come at a cost of €1-5 million**, depending on the complexity of the system.

The other significant cost of compliance to the requirements of policy option 2 is the need to set up at a national level a test environment where different manufacturers may perform pre-compliance verifications with their OBUs. It must however be said that such

⁵³ This assumption is based on the *Evaluation study on the application of the Directive 2011/82/EU (Replaced by Directive 2015/413/EU)* facilitating the cross-border exchange of information on road safety related traffic offenses (<http://ec.europa.eu/transport/sites/transport/files/facts-fundings/evaluations/doc/2016-03-16-evaluation-study-application-cross-border-final-report.pdf>), which established that approx. 50% of followed/investigated road traffic offences committed by non-residents are paid voluntarily after having received information letter.

⁵⁴ Based on the figures on toll revenues by countries available in the Support Study for the Impact Assessment Accompanying the Revision of Eurovignette Directive 1999/62/EC (Ricardo, 2017) and on the ASECAP website.

test environments already exist in some countries (e.g. the toll plaza at Éprunes in France). Hence, not all toll chargers would see this measure increase their costs compared to the baseline.

It is estimated that the cost of compliance for the above-mentioned requirements in PO2 would amount to an additional €200 million over the whole period 2016-2025 (net present value **€174 million**).

Greater standardisation of all aspects of toll charger-EETS provider relations is one of the core elements requested by the EETS partners to the EFP, and would certainly enter into any self-regulation agreement between the EFP and the Commission. This assumption finds its confirmation in the fact that all toll chargers who expressed their opinion thereon in the public consultation indicated support for making the application of the standard back-office interfaces mandatory. It is therefore assumed that similar harmonisation of back-office interfaces and testing would also take place as a result of self-regulation in **policy option 1**, and similar costs for toll chargers would be likely to materialise. Hence policy option 1 would lead to additional costs of compliance amounting to a total of €200 million over the whole period 2016-2025 (net present value **€174 million**).

In policy option 3 toll chargers (as well as toll service providers) would be required to upgrade their infrastructure, namely the roadside infrastructure (for tolling and enforcement) and the back-office infrastructure, in order to comply with the legislated technical standards. These upgrades would be likely to affect all toll chargers to varying degrees. The estimated cost of these upgrades for all EU toll chargers as a whole amounts to €1.1 billion (**net present value €886 million**). Detailed assumptions behind this figure are provided in Annex 8.

Table 13: Toll chargers - additional costs of compliance to measures included in the policy options

Policy option	Additional aggregated compliance costs (2016-2025) - € ₂₀₁₆ million
PO1	174
PO2	174
PO3	886

In addition to the above, Member States will need to cover the costs adapting existing mechanisms for the exchange of vehicle registration data to the specific needs of cross-border enforcement of tolls. According to information provided by EUCARIS, the costs will be as follows:

- €14,000 for developing the new functionality in the EUCARIS system;
- €100,000 for support at deployment and testing;

As costs will be shared by all Member States, each of them will have to pay one time around €4,000. This cost is so negligible that it will not be further reported in the rest of the report.

6.1.2.4. Other, non-quantifiable impacts on toll chargers

The increase in the number of EETS providers active in each market, induced by the different policy measures envisaged in all three compared policy options, would exert a downward pressure on the price of the services offered by the service providers (EETS-registered or not) to toll chargers. These impacts are assessed in more detail in section 6.1.6 on competitiveness impacts.

The entry of many EETS providers on national markets would also mean that toll chargers would have to support, over the whole evaluation period (2016-2025), the cost of additional manpower to manage the procedures of accreditation of EETS providers to their toll domains. It would be possible for toll chargers to transfer only some, not all, of these costs onto the EETS providers.

The separation of accounts between the toll service provider and system operation activities of vertically integrated operators (foreseen in policy options 2 and 3) would mean some additional effort for toll chargers in the design of tenders for the operation of new or renewed systems.

Finally, the measure included in policy option 2 and 3, which defines the contractual relationship with the EETS provider as strictly following the "reseller model", would be welcomed by service providers, as it would greatly reduce their administrative costs linked to the invoicing policy, but also facilitate the provision of other value added services and invoicing them together with the tolls. While it is likely to encounter some opposition from certain Member States (in particular Germany, but possibly also Poland, the Czech Republic, Slovakia or the Flanders and Brussels regions in Belgium, the change to the reseller model could also have positive consequences for them. Indeed, the operation of the toll chargers would be simplified by adopting the "reseller model", from an accounting and a tax perspective:

- In terms of accounting, the number of invoices to be produced by the toll charger for the toll transactions would dramatically decrease (only one invoice per reseller) and this would strongly facilitate the work of the toll charger.
- From a tax perspective, the "reseller model" is much simpler and widely accepted by the national tax authorities throughout Europe, as the roles would be much better defined and no ambiguity could exist with regards to the services provided by the toll charger or the service provider, in terms of the applicability for VAT.

Finally, it should be recalled that the "reseller model" is currently used by a large portion of active service providers (such as for example fuel and fleet card issuers) and therefore it is the model with which toll chargers are most used to dealing with.

Impacts on toll chargers would be similar in all countries with ETC systems in place. There would be neither costs nor benefits for toll chargers in the Member States in which no ETC systems exist.

6.1.3. Impacts on operating costs and conduct of business for EETS providers

6.1.3.1. Cost of accreditation

In PO2, a number of measures would be likely to have an impact on the cost borne by EETS providers for accreditation in different toll domains:

- The standardisation of the information exchange interface between EETS providers and toll chargers for new or renewed tolling schemes would ease the accreditation process in terms of interface compatibility tests. Interface compatibility testing accounts for around 15% of total accreditation cost (cf. Figure 5 in Annex 9). The consequences of the policy option are that this cost could be cut by two thirds so possible cost savings are at around 10% of the total cost of accreditation.
- Another measure included as part of the policy option stipulates that the test environment for OBUs should be provided by the toll charger. This would make it possible for EETS providers, having procured a certified OBU, to skip the OBU compatibility tests. This cost item accounts for around 5% of the total accreditation cost so we evaluate a possible cost saving of 5% of the total cost of accreditation.
- Finally, the harmonised accreditation practices across the different toll domains, as well as the limitation of the duration of the accreditation procedure, could lead to a reduction of the workload required for the evaluation of the various components of the accreditation process, as well as the possibility of re-using the same tools between accreditation activities for different toll domains. The possible cost savings are estimated at up to 25% of the total cost of accreditation.

The combination of all these measures could thus lead to a reduction in accreditation costs for EETS providers of up to 40%. This figure could however fluctuate from one toll domain to another, as the proportion of unavoidable cost items in the total may vary (e.g. end-to-end tests, certification fees covering the expenses of toll chargers, etc.). **The possible net present value of the cost savings for EETS providers could reach around €10 million by 2025.**⁵⁵

While PO1 does not contain any legal obligation to adopt the measures facilitating accreditation included in PO2, it is assumed that they will also be adopted by the toll chargers in the framework of self-regulation. This is a relatively safe assumption given the support provided by several Member States and toll chargers to these measures in the public consultation (cf. section 5.1.2). The process will however be slower, and the number of accreditation procedures to which the rules are applied will be lower. Hence **the cumulative cost savings by 2025 will only reach €7 million.**

In PO3, **the cost reduction potential due to standardisation amounts to 50% of the accreditation costs**, which would mean a possible total cumulative cost saving for EETS providers of **up to €14m by 2025**. On top of these impacts, the standardisation of all the interoperability constituents (OBUs, roadside infrastructure, enforcement and back-offices) would limit the scope and costs of accreditation activities and tests. This is

⁵⁵ This estimation is based on the assumption that three groups of 4 EETS providers will go through accreditation procedures in respectively: 3 GNSS toll domains and 8 DSRC toll domains; 2 GNSS toll domains and 6 DSRC toll domains; 4 DSRC toll domains (representing the likely fullest extent of EETS deployment by 2025). It is also assumed that the measures impacting the accreditation procedure costs will start to take effect from 2019.

especially the case for field tests, as well as technical administrative requirements for OBU and interface compatibility.

Table 14: Cumulative savings on accreditation costs

Policy option	EETS providers – cumulative savings on accreditation costs – 2016-2025) - € million
PO1	7
PO2	10
PO3	14

6.1.3.2. Revenues

Based on the experiences of Viapass in Belgium and of the former “Ecotaxe” in France, as well as the current talks between toll chargers and EETS providers on the subject, it can be assumed that, in the self-regulatory context of PO1, a variable remuneration amounting to 4% of the collected toll in GNSS toll domains and 1.5% for DSRC toll domains, could be agreed upon.

Extrapolating these figures to the EU-level, and using the assumptions on the expansion of EETS presented in footnote 55, EETS providers could expect in PO1 an additional remuneration amounting to around €300 million annually by 2025.⁵⁶

In the context of PO2 and PO3, with the introduction of legislation to promote fair competition on the market and the resulting stronger bargaining power of EETS providers (as an industry) to allow greater opening up of the EETS market, the remuneration could reach 5% of collected tolls in GNSS toll domains and 2.5% in DSRC toll domains. In addition, the number of toll domains covered by each of the EETS providers would be larger in PO2 than in PO1 (as well as the number of OBUs operated by them). Based on these assumptions, the expected additional remuneration of EETS providers could amount to some €700 million annually by 2025 in these two scenarios.

It is important to mention that the additional remuneration of EETS providers represents an expense to the toll chargers, who would pay for the externalisation of some of the activities which they currently perform themselves. While it constitutes a positive impact for EETS providers, the remuneration thus would have a zero social impact (as the increase of the remuneration of EETS providers is countered by the increase in payments by the toll chargers).

Table 15: Cumulative additional remuneration of EETS providers

Policy option	EETS providers – cumulative additional remuneration compared to baseline (2016-2025) - € million
PO1	300
PO2	700

⁵⁶ Based on the figures on Toll Revenues by countries available in the Support Study for the Impact Assessment Accompanying the Revision of Eurovignette Directive 1999/62/EC (Ricardo, 2017) and on the ASECAP website

PO3	700
------------	-----

6.1.3.3. Other, non-quantifiable impacts on EETS providers

A number of measures included in all three policy options would have an effect on EETS providers, which cannot however be quantified. Potentially the largest impacts could result from the measure which allows the provision of EETS to light vehicles with a DSRC-only OBU. This could unlock the market for EETS for light vehicles, currently not exploited (because EETS providers would be allowed to use the appropriate, cheap tool to serve the clients). The evolution of this market is however not possible with any reasonable level of precision.

Finally, a number of measures in PO2 would contribute to reducing the level of business uncertainty of EETS providers: mandatory acceptance during a defined period of time of OBUs using the previous version of a standard (also included in PO3) would give EETS providers reassurance that their equipment would not become obsolete before its time. The time limit for accreditation procedures would allow EETS providers to better plan the transition from accreditation to commercial operations. And finally the standard method of registering users to a toll domain would reduce administrative costs and the number of errors.

6.1.4. Impacts on conduct of business for OBU manufacturers

Under each policy option, the number of 'EETS' and 'national' OBUs is expected to change compared to the baseline (cf. Table 11). Independently of the policy option, the overall number of OBUs on the market would be smaller than in the baseline. This is due to a strong reduction in the number of 'national' OBUs, which would not be entirely compensated by the increase in 'EETS' OBUs. These effects are lowest for PO1 and highest for PO3.

In absolute numbers, the market for the products of OBU manufacturers in use would therefore go down (the number of OBUs in use in 2025 would be 198,000 units lower in **PO1 than in the baseline**; the difference will reach 521,000 units for **PO2**; and 648,000 units for **PO3**). At the same time, the number of EETS OBUs (all of which are of the expensive GNSS type) in use would increase for the same year, compared to the baseline, by 77,000 for **PO1** and 271,000 for **PO2 and PO3**.

Whether these changes would result in a positive or negative economic impact for OBU manufacturers would depend on the type of replaced 'national' OBUs. If most of them were of the DSRC type, the impact of policy options on OBU manufacturers is likely to be positive, because they would sell more of the expensive EETS OBUs using the GNSS technology, and less of the cheap DSRC OBUs. If most 'national' OBUs replaced are of the GNSS-type, the impact on OBU manufacturers would be negative (there would be more GNSS OBUs taken off the market than those brought onto the market).

6.1.5. Innovation impacts

A number of measures included in **PO2** would be likely to produce only limited positive impacts on innovation:

- Ensuring that Member States cannot make specific requirements on how the technologies are used should allow for manufacturers to pursue innovation more easily whilst still meeting KPIs from toll chargers.
- A number of provisions would serve to increase the interoperability of OBU equipment, such as any requirements for interoperable application profiles for information exchange, a standard format for toll domain statements, harmonised accreditation procedures that include the interoperable constituents, testing requirements published nine months in advance, test cycles that are no longer than six months and that toll chargers must provide testing facilities for OBU manufacturers to fine tune their equipment. This is because new entrants, as well as incumbents, would have earlier access to market requirements and specifications so they can develop interoperable innovations. Shorter test cycles would also allow innovations to be brought to market more quickly, whilst certification that applies in multiple markets would reduce the complexity and cost of testing and thereby potentially reduce barriers to bringing new innovative products to market. Overall, these measures would provide a stable system for interface with EETS providers while allowing innovation to be focused on other elements.
- By increasing transparency in relation to services provided by toll service providers and associated remuneration through measures such as providing a list of services performed by EETS providers, innovation could be targeted at specific service offerings, with more confidence as to the business case supporting the innovation.

A number of the policy measures imposed by legislation in PO2 would be likely to be introduced – though in a less harmonised manner – in PO1, with similar impacts on innovation.

Under **PO3** there would be potential for some innovation, although this would need to be consistent with the approved standards. Given the highly restrictive nature of these standards, any innovation would need to be carefully targeted and brought to market with the broad backing from industry. This would be generally likely to have a negative overall impact on innovation, given the likely costs of rolling out such changes across the entire EU ETC market and the uncertainty that any innovation will be accepted by all stakeholders to be put on the market.

Note on technologies:

An important issue to address in this chapter is the impact of leaving the list of technologies, which are allowed to be used in electronic tolling systems requiring the installation of an OBU, unchanged. By definition the impact will be null compared to the baseline, since the technological approach does not change in any of the policy options. However, it is important to assess if the extension of the list could not bring economic and social benefits. Three new technologies could potentially be considered:

- **Passive RFID** stickers in frequency bands surrounding 900 MHz are considerably cheaper than the semi-active DSRC tags used in the EU. However, as explained in section 5.1.5 above, the technology is unsuitable for use in most of the tolling applications in the EU. In addition, the RFID antennae emit in a very busy part of the spectrum, and could be prone to interferences with other applications, and notably mobile communications.
- **Bluetooth** could be another alternative to DSRC. However, the range of a Bluetooth

signal is much smaller than that of DSRC antennae, and would probably be insufficient for the needs of tolling and toll enforcement.

- **C-ITS** in the 5.9 GHz frequency band which is the immediate neighbour of DSRC (5.8 GHz) could potentially be used as platform for tolling applications in parallel to all the other road safety and telematics applications. This could only be envisaged once a considerable share of the fleet is equipped with C-ITS, which is not likely to be achieved within the coming decade.

It appears from this short analysis that the current list of technologies provided for in the legislation covers all the state-of-the-art technologies for tolling in present framework conditions.

6.1.6. Competitiveness impacts

Many of the measures included in PO2 and PO3 are designed to increase the level of competition on the market of electronic toll collection. Measures (3)-(13) would reduce the market entry barriers and administrative costs for EETS providers, thereby increasing the number of competitors for electronic toll collection services. While only measures (11) and (13) are included in PO3, the strict harmonisation of technical and procedural solutions applied in different toll domains, foreseen under this option, would have an even greater positive effect on the reduction of market entry barriers and on the increase in the level of competition.

Measures (14)-(18) would, in turn, help to ensure that these new entrants can compete on equal terms with incumbents, hence contributing to the establishment of a truly competitive market.

It is expected that self-regulation induced under PO1 would produce actions which go in the same direction as the hard policy measures foreseen under PO2 (and partly PO3), but, due to the uncertainty as to exact level of buy-in of the actors participating in self-regulation efforts, overall positive impacts on competitiveness would be likely to be lower.

6.1.7. SME impacts

Changes in the EETS framework would affect haulage companies, 97% of which are, according to Eurostat data, SMEs. The positive economic cumulative impacts on hauliers amounting to 92.5 € million in PO1, 300.9 € million in PO2 and 347.3 € million in PO3⁵⁷ can thus be assumed to be nearly entirely positive impacts on SMEs. In any case, the nature of the impacts would be the same for small and big companies.

The smallest hauliers are also likely to benefit most from the standardisation of forms for registering road users to a toll domain, which is reported today as an important source of administrative burden.

As toll chargers, EETS providers and OBU manufacturers are rather big companies, the respective impacts on them do not have to be looked from the SME perspective.

⁵⁷ See Annex 8 for the details of these figures.

The analysis of impacts on SMEs is further detailed in Annex 11 "impacts on SMEs".

6.1.8. Impacts on the peripheral Member States and regions

All policy options remove the obligation for EETS providers to cover all EETS domains in the European Union with their services. At first sight, this would have a negative impact on peripheral Member States and regions, which are seen by some EETS providers as uninteresting markets due to the low share of international traffic. In reality, however, the obligation to cover all EETS domains is already largely disregarded by EETS providers, whose activities concentrate on centrally located regions characterised by a lot of cross-border traffic. Hence, the negative impact of the measure is likely to be moderate, compared to the baseline.

On the other hand, the reduction in the cost of accreditation of EETS providers to new toll domains observed as a result of each policy option (see section 6.1.3.1) could mean that entering a peripheral market will become cheaper. Some of the markets could then become economically interesting for one or more EETS providers to cover, despite the relatively low potential number of clients. This view was strongly supported by EETS provider WAG in its response to the public consultation. According to WAG, the main reason why EETS providers "cherry pick" toll domains are the high administrative barriers imposed by toll chargers and the excessive costs of entering other toll domains. Compared to the baseline all options would have a positive impact – with PO3 bringing the highest and PO1 the lowest benefits to peripheral regions.

Furthermore, the increase in the interoperability of ETC systems in centrally located countries would benefit hauliers from peripheral regions in the same manner as all other hauliers. Indeed, it would allow them to access the main markets of activity with only one OBU. The removal of the obligation for EETS providers to cover all EETS domains in the EU would therefore have an overall positive impact on hauliers from peripheral countries and regions compared to the baseline, even if this positive impact would be relatively lower than for hauliers from centrally located Member States.

6.1.9. Impacts on third countries

Hauliers from third countries would benefit from the progress of EETS in the same manner as EU hauliers. The cumulative amount of estimated positive impacts on hauliers from third countries (compared to the baseline) is presented in Table 16.

Table 16: Cumulative (2016-2025) positive impacts on hauliers from third countries resulting from PO1, PO2 and PO3 (€ millions, not discounted)

Category of third country	PO1	PO2	PO3
Switzerland	2.5	5.3	5.6
EEA	2.0	3.6	3.8
Western Balkans	1.2	2.7	2.9
Other	5.6	12.9	13.8
Total	11.4	24.5	26

PO2 and PO3 would affect Norway in the same manner as EU Member States, since EETS legislation is of EEA relevance.

PO1 would have a significant impact on Switzerland, given the fact that this country is fully involved in the EETS Facilitation Platform – the partner for self-regulation in this policy option. Furthermore, the open character of the EFP would allow easier integration of other third countries, if they express their wish to join the interoperability project. In particular, Belarus, whose ETC system is technically very similar to the Polish, Czech and Austrian ones, could easily be covered by EU EETS providers.

Finally, in PO3, interoperability with the Western Balkans might be rendered easier if those countries decide to follow the EU acquis. On the other hand, interoperability with Switzerland, Belarus or Russia – unlikely to follow the EU acquis in this field – might become more difficult to attain than in the baseline.

Turkey, which uses a technology incompatible with the EETS framework (RFID), would remain outside the European interoperability project in all policy options.

6.1.10. Summary of the economic impacts

Table 17 provides a summary of the quantified net present value of the costs (-) and benefits (+) for actors to the electronic toll collection in the EU resulting from the different policy options. It does not include those quantified "zero sum" impacts which constitute costs for one category of actor and a benefit for another. These are presented in Table 18.

Table 17: Cumulative (2016-2025) net economic impacts of policy options

NPV	Policy option 1	Policy option 2	Policy option 3
Road users	+117	+370	+408
Toll chargers (incl. costs of compliance to new requirements and savings on 'national' OBUs)	-162	-126	-835
EETS providers	+7	+10	+14
Total	-38	+254	-413

Table 18: Economic impacts which have a zero net social impact (they constitute benefits for one category of actors and a corresponding loss to another category of actors)

Source of cost/benefit	Category of actors experiencing benefits	Category of actors experiencing losses	Amount per annum PO1	Amount per annum PO2	Amount per annum PO3
Better enforcement of tolls from foreign registered	Toll chargers	Road users (toll offenders)	€150 million	€150 million	€150 million

vehicles⁵⁸					
Remuneration of EETS providers	EETS providers	Toll chargers	€300 million	€700 million	€700 million

6.1.11. Impacts on regulatory burden reduction (contribution to the Regulatory Fitness and Performance programme)

The economic impacts of the options are strictly linked to the reduction of the administrative burden, regulatory requirements, and compliance costs. Consequently, the cumulative net economic impacts of policy options correspond to the reduction of regulatory burden.

All the policy options allow for the reduction of certain regulatory requirements and administrative burden for companies but, depending on the level of imposed harmonisation, the additional compliance costs for toll chargers can substantially outweigh these benefits.

The results presented in Table 17 to a large extent correspond to the impacts on regulatory burden. It appears from this table that policy option 2 has a clear overall positive impact on the reduction of the regulatory burden for companies, despite some increase in the compliance costs for toll chargers. Policy options 1 and 3 also strongly contribute to the reduction of administrative burden for road users, the vast majority of which are SMEs (cf. section 6.1.7). However, this positive impact is outweighed by the negative impact on the compliance costs for toll chargers. Policy option 3 ranks particularly unfavourably in this respect.

6.2. Social and environmental impacts

By far the main impacts of the measures proposed in any of the considered policy options are economic. Social and environmental impacts would be small compared to the economic ones. Likely impacts under these two categories are listed below.

6.2.1. Impacts on jobs

The job categories most likely to be directly affected by the expansion of EETS under the various policy options include:

- Jobs linked to the electronic toll collection systems, either through toll chargers or toll service providers (including EETS providers)
- Jobs with road haulage companies
- Jobs with OBU manufacturers and associated R&D community.

Regarding the first category of jobs listed above, the impacts on two specific roles can be estimated quantitatively at a high level, as follows:

⁵⁸ This analysis is purely budgetary. From the point of view of the interest of the society and of the rule of law, better level of enforcement is obviously a positive impact.

- Toll booth operator jobs: There has been a general trend for the number of human toll booth operators to decrease year after year in Europe since the turn of the century. This is because the majority of toll operators have started to introduce automated toll gate systems and ETC. Overall, many toll systems have reached a point where human operators are only present at some specific sites during peak times such as weekends or holiday seasons and this trend is expected to continue and is likely to be accelerated by the wider deployment of EETS. However, despite the reduced need for toll booth operators, anecdotal evidence suggests that job losses from automation have been for the most part reabsorbed as former toll operators are re-trained for new positions such as customer support or security. Consequently no significant additional impact on the number of employees at toll booths can be anticipated under any of the three policy options in comparison to the base line.
- EETS provider jobs: The reduction of market entry barriers, as well as reduced costs for EETS providers through improved technical interoperability between markets, should lead to EETS providers entering new markets and expanding their service offerings. It can be expected that each new entrant would have approximately two additional employees per market entered. Under the model assumptions the maximum level of penetration for EETS is for twelve EETS providers servicing 7.5 markets on average each by 2025. This would result in the creation of approximately 180 additional jobs, which clearly is insignificant at the European level. There would also be a team of specialists required to support each EETS provider through the accreditation process in each market. It is estimated that a team of eight people per market would be needed to support the first year of implementation, but these roles would be of a temporary nature.

Regarding jobs with haulage companies, the main impact would be an increase in the level of job comfort. The reduction in the number of OBUs for truck drivers to manage would increase the comfort of truck drivers and reduce their potential stress linked to the need to comply with complex different tolling rules in the countries crossed.

Finally, regarding jobs with the OBU manufacturers, the impact would depend on the general economic impact on this sector. As explained in section 6.1.4 the sign (positive or negative) of this impact would depend on the relative change in the number of DSRC vs. GNSS OBUs. It is not possible to estimate this change with a high degree of certainty, and this is also therefore the case for estimates of the impact on employment in the sector.

6.2.2. Fundamental rights impacts

Overall, the progress of EETS in all policy options should facilitate cross-border travel and so support the free movement of goods and people. Improved enforcement in all policy options, as a result of the exchange of information on the identity of toll offenders, would deliver equal treatment of national and foreign-registered road users, particularly relating to toll violations. The concrete legislative measures in PO2 and PO3, but also the measures likely to be imposed by self-regulation in PO1, could also be expected to deliver fairer treatment of EETS providers compared to that faced by incumbent operators in the current situation. Those measures are not present in PO3.

6.2.3. Impacts on the protection of personal data and right to privacy

The innovation and potential expansion of EETS may have both positive and negative impacts on the protection of personal data and the right to privacy.

Under PO2 and PO3 it is suggested that EETS providers would only be required to provide toll chargers with the minimum information necessary to calculate and apply the charge. This aspect would not be specified in PO1. In case of violation, the toll charger may request complementary information such as the address of the violator. In such a case, the EETS provider would have to provide the requested information. This provision would have a positive impact on data protection as it respects the principle of data minimisation.

Another requirement under all policy options is to establish mechanisms for the mandatory exchange of information between Member States on the identity of vehicle owners who are proven or suspected of committing fraud against the toll system. The mechanism should be largely based on the provisions of Directive 2015/413/EU for the cross-border enforcement of road safety related offences. While there is always an additional risk if data is shared with third parties, as long as the EU regulatory regime on data protection is complied with, no negative implications with the rights to data protection and privacy can be expected.

6.2.4. *Environmental impacts*

The direct environmental impacts of the three policy options are negligible, compared in particular to the economic impacts. The main (positive) environmental impact relates to the lower number of OBUs manufactured under all policy options compared to the baseline (see section 6.1.4).

There could also be some indirect environmental impacts. For instance, an improved EETS framework would contribute to reducing the investment and operation costs of electronic tolling systems which might in turn incentivise the deployment of such systems on more roads and thus result in a wider application of the 'user pays' and 'polluter pays' principles.

Furthermore, better enforcement of tolls in barrier-free systems might push some of the motorway concessions to move away from toll collection at toll plazas and to replace the latter with free-flow systems (free-flow speed generates less emissions than bringing the vehicle to a halt and accelerating it again). The link between the measures included in the policy options and these potential impacts is however not direct, and the positive environmental impacts are therefore impossible to quantify with any reasonable degree of precision.

7. HOW DO THE OPTIONS COMPARE?

7.1. Effectiveness

7.1.1. *Effectiveness in achieving the general objective*

The effectiveness of policy options in reaching the general objective is presented in Table 19. PO3 appears as the most effective in reaching this objective; PO2 comes second; PO1 ranks third.

Table 19: Comparison of the effectiveness of policy options in achieving the general objective

General objective: contribute to the correct functioning of the Internal Market by ensuring more

access to interoperability in tolling services in line with and proportionate to the road users' needs		
PO1	PO2	PO3
Given that self-regulation is applied only in the Member States participating in the EFP, the needs of road users established in- or travelling to countries lying outside the EFP region could not be met.	This policy option levels the playing field on market for the provision of toll services, therefore in principle creating the conditions necessary for EETS providers to match the needs of the users which are their clients and thus it would also ensure a sufficient level of interoperability. Given the fact that the decision on the markets covered is left to the commercial decisions of EETS providers, there might be risk that no EETS provider decides to cover all/the majority of toll domains in the EU. However, the aggressive expansion policy currently practiced by two most advanced EETS providers (Axxès and Telepass) gives a clear indication of the willingness of the biggest players to offer interoperable tolling services on as many markets as possible. This was actually confirmed by Axxès in its answer to the targeted consultation, in which it expressed its preference for maintaining the requirement for EETS providers to cover all toll domains in the EU with their services.	By forcing full standardisation of all aspects of existing and future electronic toll systems, this policy option would achieve EU-wide interoperability which not only meets, but even exceeds the needs of the majority of road users.

Legend:

Most effective			No data/not effective			Most negative effect
----------------	--	--	-----------------------	--	--	----------------------

7.1.2. Effectiveness in achieving the specific objectives

The effectiveness of policy options in reaching the specific objectives is presented in Table 20. PO3 appears as the most effective in reaching the policy objectives; PO2 comes second; PO1 ranks third.

Table 20: Comparison of the effectiveness of policy options in achieving the specific objectives

Specific objective	PO1	PO2	PO3
SO1. Remove market entry barriers and foster the development of a competitive market for electronic toll collection services			
Reduction in market entry costs for EETS providers	€7 million (cumulated)	€10 million (cumulated)	€14 million (cumulated)
Increase in revenues for EETS providers (proxy indicator of their market penetration)	€300 million/year	€700 million/year	€700 million/year
Creation of a market for EETS LDV	The removal of the obligation to use a GNSS-OBU to serve the LDV market puts in place the conditions for EETS providers entering it	The removal of the obligation to use a GNSS-OBU to serve the LDV market puts in place the conditions for EETS providers entering it	The removal of the obligation to use a GNSS-OBU to serve the LDV market puts in place the conditions for EETS providers entering it
Impacts on competitiveness	Self-regulation is likely to deliver rules to make the market function in a fairer, less discriminatory manner. However, the quality and effectiveness of the rules would largely depend on the capability of partners to EFP to reach compromises beneficial to the development of a fully competitive market for ETC.	The policy option contains strong mandatory rules to force competition into the market. The like effectiveness of these measures is higher than in the case of self-regulation.	PO3 not only contains strong mandatory rules to force competition into the market, but also facilitates the entry of EETS providers into national markets by reducing to zero technical and procedural obstacles to interoperability. The effectiveness is higher than in PO1 and PO2.
Inclusion of peripheral MS	Positive but small impact on the extension of EETS services to peripheral MS.	Positive impact on the extension of EETS services to peripheral MS.	Largest positive impact on the extension of EETS services to peripheral MS.
Inclusion of 3 rd countries	Highest chance of including 3 rd countries, in particular Switzerland and Belarus, but also possibly the Western Balkans.	Automatic inclusion of Norway, possibility to integrate other 3 rd countries, but not	Automatic inclusion of Norway, potentially easier inclusion of the Western Balkans, but interoperability with other countries (Switzerland, Russia, Belarus) rendered

		as easy as in PO1.	(much) more difficult.
Summary specific objective 1	Least effective in reaching SO1	Second most effective in reaching SO1	Most effective in reaching SO1
SO2. Improve the level of enforcement of tolls from foreign-registered vehicles			
Increase in the recovery of tolls from foreign-registered toll offenders	€ 150 million/year	€ 150 million/year	€ 150 million/year
SO3: Remove the excessive obligations on EETS providers			
Remove the excessive obligations on EETS providers	Identified excessive obligations for EETS providers are removed from the EETS legislation	Identified excessive obligations for EETS providers are removed from the EETS legislation	Identified excessive obligations for EETS providers are removed from the EETS legislation
Summary for all specific objectives	Least effective	Second most effective	Most effective

Legend:

Most effective			No data/not effective			Most negative effect
----------------	--	--	-----------------------	--	--	----------------------

7.1.3. Effectiveness in achieving the objective to reduce regulatory burden for companies (REFIT objective)

Table 21 summarises the level of achievement of the REFIT objective, which is to reduce the regulatory burden for companies. It shows that all policy options contribute to reducing the regulatory burden for road users, ranking from PO1 (smallest contribution) to PO3 (largest contribution). The impact on the reduction of regulatory burden for EETS providers follows the same path (PO3 has the largest positive impact, PO1 – the smallest).

All policy options would contribute to increasing the compliance costs for toll chargers. PO3 ranks, by far, worse in this respect, while the negative impact of PO1 and PO2 is much smaller.

When summing up the impacts on regulatory burden, it appears that only PO2 has a significant net positive impact. PO1 has a small negative impact, but PO3 has a significantly negative one.

Table 21: Summary of cumulative (2016-2025) impacts on the level of regulatory burden for companies* (level of achievement of the REFIT objective)

	PO1	PO2	PO3
Regulatory burden for road users	- €117 million	- €370 million	- € 408 million
Regulatory burden for toll chargers	+ €162 million	+ €126 million	+ €835 million
Regulatory burden for EETS providers	- €7 million	- €10 million	- €14 million
Regulatory burden for all companies	+ €38 million	- €254 million	+ €413 million

Legend:

Most effective			No data/not effective			Most negative effect
----------------	--	--	-----------------------	--	--	----------------------

*(-) indicates a burden reduction and (+) increase in the level of burden

7.2. Efficiency

7.2.1. Cost-benefit analysis

Table 22 presents the main quantified costs and benefits of the different policy actors. The main conclusions regarding the efficiency of the policy options are the following:

- PO2 has the best net effect (difference between costs and benefits). PO1 comes second, with a slightly negative net effect. In PO3 costs strongly exceed the benefits.
- The main reason for the strongly negative cost-benefit relationship in PO3 is the cost of system adaptations to toll chargers, which is 5 times higher than in PO1 or PO2, and twice exceeds the expected benefits (respectively €886 million and €407 million). The 'partial' harmonisation approach proposed in PO2, concentrating on most essential harmonisation gaps identified in the public consultation (i.e. harmonisation of interfaces), therefore constitutes a clearly more efficient approach.
- Costs attributed to toll chargers can eventually be attributed to road users, because toll chargers pass their costs onto road users in the form of higher tolls.
- Two important trade-offs are observed:
 - From a purely budgetary perspective, increased effectiveness of toll enforcement means an aggregate transfer of wealth from non-compliant users to toll chargers; from the point of view of rule of law, however, this must be seen as a positive effect.
 - Remuneration of EETS providers means expenses for toll chargers: this money transfer is neutral from the point of view of society.

It is also useful to consider a longer time horizon when analysing the costs and benefits of implementation of various policy options, as with natural depreciation of the existing tolling infrastructure and OBUs the costs of implementing new standards might not be that high. However, at the moment there is no indication that in the future the costs of the policy options could be lower. The tolling infrastructure requires regular maintenance/update and it is not expected that it would require replacement at some point of time in the future, so the shift to new standards would always bear additional costs to toll chargers. The changes in the costs of OBUs are also difficult to predict and considering uncertainties about the market and technology developments any assumptions that in the long term the cost and benefits would be lower or higher would be speculative. This issue, though, should be further analysed when evaluating the Directive in the future.

Table 22: Costs and benefits of the economic actors

Actor – cost/benefit	PO1	PO2	PO3
Road users – benefits	+ €117 million (cumulated 2016-2025)	+ €370 million (cumulated 2016-2025)	+ € 408 million (cumulated 2016-2025)
Road users – costs⁵⁹	- €150 million/year (recovered unpaid tolls)	- €150 million/year (recovered unpaid tolls)	- €150 million/year (recovered unpaid tolls)
Toll chargers – benefits	+ €150 million/year (recovered unpaid tolls)	+ €150 million/year (recovered unpaid tolls)	+ €150 million/year (recovered unpaid tolls)
	+ €12 million (cumulated 2016-2025) (savings on 'national' OBUs)	+ €48 million (cumulated 2016-2025) (savings on 'national' OBUs)	+ €51 million (cumulated 2016-2025) (savings on 'national' OBUs)
Toll charger – costs	- €174 million (cumulated 2016-2025) (adapting systems to new requirements)	- €174 million (cumulated 2016-2025) (adapting systems to new requirements)	- €886 million (cumulated 2016-2025) (adapting systems to new requirements)
	- €300 million/year (remuneration to EETS providers)	- €700 million/year (remuneration to EETS providers)	- €700 million/year (remuneration to EETS providers)
EETS providers – benefits	+ €7 million (cumulated 2016-2025)	+€10 million (cumulated 2016-2025)	+€14 million (cumulated 2016-2025)

⁵⁹ The figures in this line result from more effective control of offenders. Although this means some previously unpunished users now have to pay tolls and fines, this cannot be considered as a negative impact from the point of view of the interest of the society and of respect of the rule of law. This explains why the cells have a green background, corresponding to positive impacts.

	+ €300 million/year (remuneration to EETS providers)	+€700 million/year (remuneration to EETS providers)	+€700 million/year (remuneration to EETS providers)
Total	-€38 million (cumulated 2016-2025)	+€254 million (cumulated 2016-2025)	- €413 million (cumulated 2016-2025)

Legend:

Most beneficial			No data/not cost nor benefit			Most costly
-----------------	--	--	------------------------------	--	--	-------------

7.2.2. Comparison of other impacts

Table 23 provides a comparison of other impacts, not yet analysed under the headings 'Effectiveness' and 'cost-benefit analysis'. The only outstanding impact is the one on SMEs, positive in all policy options, highest in PO3 and lowest in PO1.

Table 23: Comparison of other impacts

	PO1	PO2	PO3
Economic impacts			
Impact on OBU manufacturers	The sign of the impact on OBU manufacturers depends on factors which cannot be easily predicted. Hence the impact cannot be determined in the framework of this IA		
Impact on innovation	Some support through harmonisation and transparency	Increased support through harmonisation and transparency as implemented through legislation	Increased restrictions on technology that can be developed under standards. Some support through harmonisation and transparency
Impact on SMEs	Significant benefits to road haulage SMEs.	Very substantial benefits to road haulage SMEs.	Most substantial benefits to road haulage SMEs.
Social impacts			
Impact on Employment	Impact on employment is negligible at the scale of the EU	Impact on employment is negligible at the scale of the EU	Impact on employment is negligible at the scale of the EU
Fundamental rights of individuals and organisation	Minor improvements to fundamental rights	Minor improvements to fundamental rights	Minor improvements to fundamental rights

Protection of the personal data and right to privacy	Minor improvements to personal data protection and right to privacy	Minor improvements to personal data protection and right to privacy	Minor improvements to personal data protection and right to privacy
---	---	---	---

Legend:

Most positive impact			No data/no impact			Most negative impact
----------------------	--	--	-------------------	--	--	----------------------

7.3. Coherence

The initiative is part of the Energy Union Strategy and is therefore coherent with the other actions under this package. It is in particular coherent with the upcoming review of Directive 1999/62/EC ("Eurovignette"), as the interoperability of electronic tolls, facilitated by all the envisaged policy options, would facilitate the wider application of the 'user pays' and 'polluter pays' principles: the deployment, operation and compliance to distance-based electronic tolling systems will become easier and cheaper.

Overall, all options would ensure more coherence with other road initiatives than the baseline (see Annex 10). There seems to be little difference between the options, but as PO1 risks being less effective it might also be less in line with the timing introduced by the initiative on road charging, which would benefit from less burdensome e-tolling system to encourage the adoption of distance based charging. In addition, PO3 by introducing excessive requirements might be considered as less coherent with the Better Regulation agenda. As a consequence, PO2 is considered as most coherent with the other policies and the EU policy agenda.

The policy options were checked for their compliance with the Charter of Fundamental Rights, and no conflicts with fundamental rights were identified. The policy options have also been defined in coherence with the Better Regulation strategy; different approaches to solve the problems have been considered, including non-legislative ones.

7.4. Proportionality

As mentioned above, the inclusion of policy option 1 in the analysis guarantees that less constraining solutions than legislation are fully taken into account. In the case of PO1 leaving much scope to the market players to self-regulate ensures that this option is proportionate. The measures in policy option 2 have been defined following a thorough pre-screening of the full list of policy measures which were suggested by the stakeholders in the course of the public consultation, which took proportionality into account as one of the main evaluation criteria. Thus the measures of PO2 are considered proportionate to the scale of the problem they intend to address. In contrast, full standardisation envisaged under PO3 seems to be an excessive solution under the current circumstances, because it is not required by the market. Given its very high costs for the toll chargers, PO3 does not seem to match the objective of proportionality.

7.5. Preferred policy option

The analysis of the effectiveness of policy options in reaching the objectives shows that PO3 is the most effective, closely followed by PO2. PO2 ranks by far highest in terms of cost-benefit analysis. It also has positive other impacts overall.

While PO3 is slightly more effective than PO2, the latter is the only option with a positive cost-benefit ratio. Policy option 2 is therefore the preferred policy option.

8. HOW WOULD ACTUAL IMPACTS BE MONITORED AND EVALUATED?

The monitoring of the level of achievement of specific objective 3 is quite straightforward, as the objective relates to the adoption of specific legislation by the European legislator. The monitoring will therefore amount to checking if the legislation was adopted or not and whether it was properly implemented.

The monitoring of the level of achievement of the two other specific objectives is less straightforward. In order to appropriately evaluate certain impacts, the Commission would need Member States to report certain data on the functioning of national markets and the level of implementation of the legislation. Significant impacts of the legislation are expected to materialise relatively rapidly after its entry into force, i.e. after 5 years or even earlier, and by that time Member States should be required to provide their reports. The Commission should make an evaluation of the impacts shortly after, based on the information provided by the Member States. It seems appropriate, therefore, for the Commission to evaluate *ex post* the effects of the legislation around 2025 (depending on the time it takes for the legislation to enter into force). Below is a list of indicators to verify the level of achievement of the two specific objectives. These indicators should be used in the *ex post* evaluation to check the level of success of the legislation covered by the present impact assessment.

SO1: Remove market entry barriers and foster the development of a competitive market for electronic toll collection services

- **Operational objective 1: Increase the number of service providers (registered as EETS providers or not) operating in each toll domain**
 - **Indicator:** number of toll service providers (source: EETS registers of the Member States)
 - **Target:** at least 3 service providers (registered as EETS providers or not) operating in each toll domain by 2025
- **Operational objective 2: Maintain a high number of EETS providers present on the market**
 - **Indicator:** number of EETS providers (source: EETS registers of the Member States)
 - **Target:** at least 6 EETS providers registered and operating in the EEA by 2025

- **Operational objective 3: Reduce the average cost of accreditation per toll domain**
 - Indicator: Average costs of accreditation per toll domain (source: for present value: research done in the framework of this impacts assessment; for future values: mandatory reports from the Member States)
 - Target: cost reduction by 40% by 2025
- **Operational objective 4: Reduce the time needed for accreditation of EETS providers**
 - Indicator: Maximum time needed for accreditation to each toll domain (source: mandatory reports from the Member States)
 - Target: maximum time equal to 6 months in 2025.
- **Operational objective 5: Implement the "reseller model"**
 - Indicator: number of EETS domains where the "agency model" is used (source: mandatory reports from the Member States)
 - Target: no toll chargers uses the "agency model" in their relations with the EETS providers by 2025
- **Operational objective 6: Apply CEN TS 16986 for back office interfaces**
 - Indicator: Toll chargers having implemented CEN TS 16986 (source: EETS domain statements of the toll chargers)
 - Target: at least 75% of toll chargers have implemented CEN TS 16986 for back office interfaces with EETS providers by 2025
- **Operational objective 7: Define a standard format for registering road users to a system**
 - Indicator: list of differences among toll systems with respect to the way road users are registered (source: EETS domain statements of the toll chargers)
 - Target: a standard format for registering road users to a system is used by all toll chargers by 2025
- **Operational objective 8: Achieve EU-wide interoperability of tolls for those users who demand this**
 - Indicator: number of OBUs with which a lorry can use all EETS domains in the EU+Norway (on selected TEN-T corridors)
 - Target: at least one EETS Provider offering EU-wide coverage by 2025 (one OBU)

SO2: Improve the level of enforcement of tolls from foreign-registered vehicles

- **Operational objective 9: Establish a system for exchange of information on toll offenders**
 - Indicator: progress in completion of the system (source: mandatory reports of the Member States)
 - Target: a functioning system of exchange of information on toll offenders between all EU Member States and Norway by 2025
- **Operational objective 10: Increase the rate of identification of toll offenders**
 - Indicator: number of detected offenses made by vehicles registered in another Member State which lead to an interrogation through the system for exchange of information on toll offenders set by this legislation (source: mandatory reports of the Member States)
 - Target: 50% of occurrences of unpaid tolls leading to interrogations through the newly established system of exchange of information on toll offenders in 2025.
- **Operational objective 11: Improve collection of unpaid tolls**
 - Indicator: % of fines and replacement tolls paid (source: mandatory reports of the Member States)
 - Target: 50% of fines or replacement tolls sent to offenders paid in 2025.

9. ANNEXES

9.1. Annex 1: Procedural information concerning the process to prepare the impact assessment report and the related initiative

9.1.1. References

Lead DG: DG MOVE (Mobility and Transport)

Agenda planning: 2016/MOVE/020 (revision of Directive 2004/52/EC) and 2016/MOVE/021 (revision of Directive 2009/750/EC)

9.1.2. Organisation and timing

Inter-service Group

An inter-service steering group (ISG), chaired by the Secretariat-General, was set up in May 2016 with the participation of the following Commission Directorates-General: Legal Service; Economic and Financial Affairs; Internal Market, Industry, Entrepreneurship and SMEs; Environment; Climate Action; Communications Networks, Content and technology; Joint Research Centre; Regional and Urban Policy; Taxation and Customs Union; Justice and Consumers.

Invitations were also sent to DG Competition; DG Employment, Social Affairs and Inclusion; DG Energy; DG Neighbourhood and Enlargement Negotiations.

The ISG met three times:

- On 31 May 2016, to discuss the inception impact assessment, the terms of reference for the external study, the consultation strategy and the questionnaire for the open public consultation, as well as subsequent reports of the support study and the draft impact assessment.
- On 7 December 2016, to discuss the intermediate report of the IA support study.
- On 24 February, to discuss the draft IA staff working document.

Public consultation activities

An open public consultation (OPC) was run between 8 July and 2 October (12 weeks).

A targeted consultation of professional stakeholders was launched on 5th October 2016 and was open for responses until 13th November 2016 (six weeks).

The external study accompanying the IA started on 9 September 2016. The inception report was approved on 10 November 2016. The interim report was approved on 24 January 2017. The draft final report was provided on 17 February 2017. The final report was approved on 30 March 2017.

Consultation of the Regulatory Scrutiny Board

The Regulatory Scrutiny Board received the draft version of the present impact assessment report on 1 March 2017 and following the Board meeting on 29 March 2017

issued a negative opinion on 31 March. The Board made recommendations. Those were addressed in the revised IA report as follows:

RSB recommendations	Modification of the IA report
Principal recommendations	
<p>1. The report does not explicitly set an objective of full interoperability of the electronic tolling systems in the EU and does not explain how the options contribute to interoperability</p>	<p>The general objective was revised to explain that the initiative aims at offering each road user access to the level of interoperable tolling services corresponding to his/her needs and requests, which includes the option of full interoperability.</p> <p>Furthermore, text was added under the first specific objective to explain that the latter is not only compatible with the objective of achieving three layers of interoperability (technical, procedural and contractual), but also includes the goal of fostering the establishment of a competitive structure of the EETS market.</p>
<p>2. The options do not provide a set of alternatives and fail to explain the real trade-offs and choices to the decision-makers. The rationale and the proportionality of the central option, which is a package of several measures, are not explained</p>	<p>Two new sections, 5.1 and 5.2, present the results of the pre-screening of the full list of policy measures which have been discussed with the stakeholders in the framework of the public consultation. For each measure, the pros, cons and the views of stakeholders are weighted to decide whether the option should be retained for further analysis or not.</p> <p>Furthermore, in line with the request of the RSB, PO3 was changed from a purely harmonisation option into one that also includes market measures.</p>
<p>3. The report does not reflect the views of stakeholders and in particular Member States</p>	<p>The views of the stakeholders, with a particular focus on the Member States, are now thoroughly presented in sections 5.1 and 5.2.</p>
Other recommendations in the RSB Opinion	
<p>1a. The report should strengthen the links with the conclusions of the evaluation study</p>	<p>A new Table 1 clearly explains how each of the main conclusions of the <i>ex post</i> evaluation has translated into the definition of the problems in the Impact Assessment</p>
<p>1b. Including a clear interoperability objective would also enhance consistency in the intervention logic [...]</p>	<p>The general objective has been amended to specifically refer to interoperability; the compatibility of the first specific objective with the goal of interoperability has been clarified in section 4.2.</p>
<p>2. The technological and future-proof aspects of the proposed measures should be clarified. This should include an explanation of the reasons behind the selection of a limited number of accepted technologies</p>	<p>The reasons for maintaining a restricted choice of technologies allowed to be used in electronic tolling requiring the installation of on-board equipment have been clarified in the end of section 5.1.5 (which explains the reasons for not allowing the use of passive RFID tags in the EU) and in section 6.1.5</p>

	"Innovation impacts"
Further recommendations from the Impact Assessment Quality Checklist	
The general objective should be linked to the Treaty	The general objective now makes reference to the objective of ensuring the good functioning of the Internal Market.
The costs for Member States [of cross-border exchange of information on toll offenders] are not assessed in the report	An assessment of these costs is now provided in section 6.1.2.3.
The operational objectives and monitoring arrangements in the report miss an indicator allowing the progress in [the field of interoperability]	The requested operational objective was added as operational objective 8.

The Regulatory Scrutiny Board received the revised version of the impact assessment report on 7 April 2017 and issued in written procedure a positive opinion with reservations on 24 April. The Board made further recommendations. Those were addressed in the revised IA report as follows:

RSB recommendations	Modification of the IA report
The report does not identify the core measures which are essential for the envisaged results, and assess their interdependence	In table 9, detailed explanation has been added, indicating for each retained measure if it is essential or not and with which measures it is complementary/for which measures it constitutes an alternative
It is still not clear how the proposed set of measures will contribute to achieving the envisaged level of interoperability in the EU and what the risks attached to the preferred option are	A new table 19 has been added which discusses the effectiveness in achieving the general objective and the risks that PO2 would actually not achieve it
The report does not explain why intermediate solutions between the most efficient and the most cost effective have not been considered	Text has been added in section 5.1.4 to explain why solutions between the "24 months-full EU coverage" and "total freedom for EETS providers to choose the markets on which they operate" have not been analysed. Text has been added in section 5.4 to explain why no intermediate solutions between "total harmonisation" and "harmonisation of interfaces only" have been analysed

Evidence used and external expertise

The starting point to the drafting of the problem definition part of this Staff Working Document was the *ex post* evaluation of the existing EETS legislation (annexed to this report).⁶⁰

The majority of information used has been provided by the stakeholders in the framework of the numerous organised stakeholder consultation activities, which are reported upon under http://ec.europa.eu/transport/modes/road/consultations/2016-eets_en. This was completed by information provided *ad hoc* by the stakeholders, either in position papers forwarded to the Commission, or at the occasion of meetings.

An important source of information was the EETS Facilitation Platform and its predecessor REETS.⁶¹

Finally, the report relies a lot on external expertise. This includes the IA accompanying study performed by Ricardo,⁶² the studies on the 'State of the Art of Electronic Tolling'⁶³ and 'Expert Review of the EETS Legislative Acts'.⁶⁴

Overall, the sources used for the drafting of the report are numerous, largely exhaustive and representative of the different stakeholder groups.

⁶⁰ *Ex post evaluation of the Directive 2004/52/EC of the European Parliament and of the Council of 29 April 2004 on the interoperability of electronic road toll systems in the Community and Commission Decision 2009/750/EC of 6 October 2009 on the definition of the European Electronic Toll Service and its technical elements, Final Report, Commission Staff Working Document, not yet published.*

⁶¹ www.reets.eu.

⁶² Not yet published.

⁶³ http://ec.europa.eu/transport/modes/road/road_charging/doc/study-electronic-road-tolling.pdf.

⁶⁴ <http://ec.europa.eu/transport/modes/road/studies/doc/2015-09-ex-post-evaluation-eets-4icom.pdf>.

9.2. Annex 2: Stakeholder consultation

Synopsis report

Revision of Directive 2004/52/EC and Decision 2009/750/EC) (legislative framework on the European Electronic Toll Service

Directive 2004/52/EC lays down the conditions for the interoperability of electronic road toll systems in the European Union. The Directive requires that all new electronic toll systems brought into service shall use one or more of the following technologies: satellite positioning (GNSS); mobile communications (GSM-GPRS); microwave technology (DSRC).

The Directive also sets up a European Electronic Toll Service (EETS), by which road users only subscribe to a single contract with an EETS provider in order to pay the charges related to any charging scheme requiring on-board equipment. The detailed definition required by Directive 2004/52/EC regarding technical, procedural and legal issues, has been finalised by the European Commission in Decision 2009/750/EC.

The ex post evaluation assesses the effects of the legislation on the European Electronic Toll Service (EETS) and its implementation over the period of 2004-2014. The Impact Assessment compares different policy options for addressing the problems identified by the ex post evaluation.

Consultation activities

In the context of the preparation of a back-to-back ex-post evaluation and impact assessment, the Commission performed five main consultation activities. The purpose of these activities was:

- Providing to the wide public and stakeholders an opportunity to express their opinion on the main issues related to electronic tolling and the way it is regulated at the EU level, as well as to express their position on the possible/desirable changes to the regulatory framework.
- Gathering specialised input (data and information, expert views) on specific aspects of the legislation (e.g. pros and cons of certain technologies, standards, legal questions, etc.) from tolling stakeholders, with the aim of filling the data and information gaps in view of the preparation of the ex-post evaluation, the impact assessment and the legislative proposal.

While specialized consultation targeted infrastructure providers (i.e. governments, concessionaires), users (hauliers, professional drivers, citizens, etc.), equipment providers (car manufacturers, on-board unit manufacturers, etc.), tolling service providers, standardisation experts in the field of electronic tolling and certification specialists, the citizens and undertaking were provided with opportunity to express their views in the course of the open public consultation (OPC) .

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

1) An open public consultation (OPC) in the form of an on-line questionnaire

The open public consultation was open between 8 July and 2 October (12 weeks). The questionnaire contained questions mainly relevant for the general public, giving the citizen a chance to express their views on electronic tolling without going into technical details. It gave however respondents who wished to provide a more comprehensive opinion the opportunity to expand on their views in several open questions, as well as to upload position papers and other documents as part of their contributions.

For the Commission, the aim of this consultation activity was to test broad policy choices (both in the current legislation and considered in the framework of the legislative review) with the general public. This aim was reached. The relatively low response rate (73 answers) could be due to a very technical nature of the initiative for regular citizens on one hand and reflect the interest of stakeholders professionally engaged in EETS in answering more specialized consultation activities on the other hand. The table below indicates the profile of respondents.

Stakeholder category	Number of responses	% of responses
On behalf of an industry association or a non-governmental organisation (NGO)	29	40%
On behalf of a company	21	29%
As a citizen	11	15%
On behalf of a public authority⁶⁵	9	12%
Other⁶⁶	3	4%
Grand Total	73	100%

Views presented in the consultation were to a large degree concurrent; however, there was a number of outliers.

2) A call for written contributions publicly addressed to all stakeholders

Stakeholders were given the opportunity to send spontaneously their contributions to the ex-post evaluation and impact assessment exercises. The invitation to do so was published on the consultation web page, as well as announced at conferences, events, etc. As mentioned above, respondents to the open public consultation were also explicitly invited to send written contributions in the form of free text documents.

In the call for position papers, contributors were explicitly invited to express their views on the problem(s) to be tackled, the issue of subsidiarity and the EU dimension of the problem, the policy options and their impacts. Contributors were also invited to evaluate the effectiveness, efficiency relevance and coherence of the existing legislation, as well as the added value of EU legislation so far, taking as the starting point the published evaluation roadmap.

The quality of the contributions was very unequal, ranging from very general statements with little use to opinions on specific point of the legislation. The latter gave the Commission a first indication on the position of some of the main stakeholders (including in particular the 4 public authorities – cf. table below).

⁶⁵ Public authorities from the following countries participated in the open public consultation: Czech Republic, Estonia, France, Germany, the Netherlands, Norway, Poland, Slovakia, United Kingdom.

⁶⁶ One "company and citizen", one employee of a ministry which did not choose "on behalf of public authority" and the European Employers' Association.

No deadline for submitting written contributions was given. A total of 22 relevant contributions were received so far. The table below indicates the profile of respondents.

Stakeholder Category	Number of responses
Tolling/motorway operators	9
Transport undertakings	9
Public authorities⁶⁷	4

3) A restricted consultation of professional stakeholders on issues related to the ex-post evaluation in the form of several tailored questionnaires with open questions addressed at different professional groups

The targeted stakeholder consultation as part of the ex-post evaluation for the EETS Directive 2004/52/EC and Decision 2009/750/EC was launched on 26th June 2015 and was open for responses until 1st September 2015 (10 weeks). The main objective of this consultation activity was to gather information and data to fill the Commission's knowledge gaps in the preparation of the ex post evaluation.

The questionnaires were sent to the following groups of stakeholders (a separate questionnaire to each group of stakeholders):

- Member States and toll chargers
- Toll service providers
- Commercial road users
- Private road users/automobile clubs

A total of 22 responses to four separate questionnaires aimed at different EETS stakeholder groups were received from the European Commission, as shown in the table below. It must be mentioned that consultees were invited to spread the questionnaire with other known interested parties – this explains that in some cases the number of answers exceeds the number of originally consulted parties). Due to the relatively low number of important stakeholders and good organisation of the sector, it seems reasonable to assume that a very representative body of stakeholders was reached in the frame of this exercise.

Stakeholder category	Number of stakeholders approached	Number of responses (% response rate)	% of responses
Member States and toll chargers	36	15 (42%)	68.2%
Toll Service providers	2	4 (200%)	18.2%
Heavy-duty vehicle	2	2 (100%)	9.1%

⁶⁷ Finland, France, Germany, Ireland.

electronic toll users			
Light-duty vehicle electronic toll users	2	1 (50%)	4.5%
Grand Total	42	22	100%

Besides the questionnaire, addressees were also provided with copies of the evaluation roadmap, and some of them decided to react to the preliminary assessment presented in the document.

The quality of the contributions was unequal, but roughly half of the answers provided hard data and ample information which fed into the evaluation Staff Working Document of the Commission. The other half contained mainly opinions and positions, which helped the Commission to understand the stakeholders' position about the effectiveness and efficiency of the currently applicable legislation.

4) A restricted consultation of professional stakeholders on issues related to the upcoming proposal on the revision of the EETS legislative framework.

The targeted stakeholder consultation for the Impact Assessment on the revision of the EETS legislative framework was launched on 5th October 2016 and was open for responses until 13th November 2016 (six weeks). Respondents were also given the opportunity to provide any further comments at the end of the questionnaire. To ensure the widest possible coverage, a call for expression of interest was published on the Commission's consultation website for stakeholders wanting to be consulted in the framework of this exercise (in addition to the distribution of the questionnaire with the established list of contacts of the Commission).

The main objective of this consultation activity was to gather information and data to fill the Commission's knowledge gaps in the preparation of the problem definition part of the Impact Assessment, but also to test with the stakeholder community the possible policy option and measures which could become part of the Commission's proposal.

A total of **35 responses** to the questionnaire were received. The number of responses was therefore considerably higher than in the framework of the similar consultation for the ex post evaluation, and the average quality of the contributions was also higher. A number of excellent contributions were received containing deep analysis of the problems, statistics and other figures, and recommendations for concrete policy solutions, and they contributed to considerably strengthen the evidence base for the impact assessment and for the drafting of an initial list of potential policy measures.

The table below indicates the profile of respondents.

Stakeholder category	Number of responses	% of responses
Public authority/administration	8	23%
Toll Service Provider	6	17%
Industry Association	5	14%

Toll Charger	5	14%
Represent more than one stakeholder category	4	11.5%
Toll system operator	4	11.5%
Consultancy	2	6%
Road users	1	3%
Grand Total	35	100%

5) Reactions to the evaluation roadmap and the inception impact assessment

Stakeholders were given the opportunity to react to the published evaluation roadmap and the inception impact assessment. No contributions were however provided.

Conclusive remarks

While the absolute numbers of responses to each of the consultation activities are relatively low, they must be seen in the particular context of the electronic tolling market: a relatively small and specialised market with a limited number of well organised stakeholders. Many stakeholders did not decide to answer individually, but rather contributed to the drafting of co-ordinated positions of industry representative bodies.

Obviously there were differences in the positions expressed in individual contributions, but a general consensus emerged as to the assessment of the current situation and the changes to be made to the legislation. This is particularly visible in the answers to the open public consultation, where a clear majority opted for the same or similar answers to each question. This consensus is less clearly visible – at first sight – in the other consultation activities, but this is mostly because they implied free text answers. Detailed analysis of the latter confirmed however the trend of answers converging to common positions of all stakeholder groups. This convergence is certainly the result of a high degree of organisation of the industry around the REETS consortium⁶⁸ in which the main categories of stakeholders (Member States, toll chargers, EETS providers) have been working together for the last 4 years to develop commonly agreed answers to the identified problems.

Remaining information gaps after the public consultation were filled with the help of consultancies hired by the Commission to assist it in the preparation of the ex post evaluation and of the Impact Assessment. The consultants performed further interviews of the most important stakeholders to extract additional data, evidence and opinions. These interviews will be reported upon in the final report of the consultant due for mid-March 2017, which will be published on the Commission's website. The Commission has also held a large number of individual meetings with stakeholders, including some of those who did not decide to contribute to the public consultation in writing. These meetings typically covered many issues, and it is difficult to extract and report upon just the parts of them related to EETS. Finally, to cover the very specific aspects of standardisation of interoperability constituents in electronic toll collection, the Commission held a full day seminar involving representatives of 3 notified bodies, the European Committee for Standardisation and two equipment manufacturers in the

⁶⁸ www.reets.eu

framework of a meeting of the Notified Bodies Co-ordination Group (NoBos-CG) on 29 September 2015. This meeting was organised in the framework of one of the regular meetings of the NoBos-CG. Minutes from this meeting are not publicly available. The consultants reached out to some of the participants to this meeting to further discuss some of the topics touched upon during the seminar.

Results of consultation activities

1) Open public consultation

Passenger cars

The majority of respondents (62%) agreed that the EU should continue regulating interoperability between electronic tolls applied to passenger cars. Three times the amount were in favour of this compared to those who believed this matter should be left to Member States. The question received a relatively mixed response when categorised into representing interests. Responses representing 'other' interests showed the strongest agreement with the need for EU regulation (100%), whilst other significant interest groups (several of which represent road users, e.g. the road freight transport and private road user categories) were approximately 50-80% in favour, illustrating the desire of road users in particular to have strong rules in place to enforce European interoperability of electronic tolling for cars. Toll chargers/service providers were most strongly in favour of leaving the matter to Member States (43%),

60% of respondents were in agreement that the EETS scope should be extended to automatic number plate recognition (ANPR) systems, which are widely used for the enforcement of free flow tolling systems for passenger cars such as electronic vignettes (e.g. Hungary) or urban congestion charging (e.g. London, Stockholm).

When disaggregated into representing interest, differences were most apparent between road users (road freight transport operators, users, etc.) and toll chargers/service providers, with c. 60-80% of respondents agreeing that the scope of EETS should be extended to include ANPR technologies, compared to just 16-48% respectively.

Cross border enforcement

A large majority (77%) of respondents were in favour of the EU establishing a mandatory mechanism for the exchange of data on toll offenders to facilitate recovery of unpaid tolls (and only 12% were against). When categorised into representing interest, strong consensus was also observed, with only road freight transport respondents exhibiting any significant desire to remain with the status quo (27%).

Enhancing market conditions of EETS providers

51% of respondents felt that the European Union should leave the EETS providers to decide which toll domains they want to cover by their services, while 24% only believed the EU should maintain the obligation for EETS providers to cover all toll domains in the EU. A broader set of views was observed when representing interests are taken into account. Unsurprisingly, given the significant complexity, costs and risk of covering all EU domains within 24 months of launch, a very large proportion (c.80%) of respondents representing toll chargers or service providers were in favour of allowing EETS providers to decide which domains they should cover. However, only c. 30-35% of respondents from the other interest groups agreed that the regulation should be relaxed;

between 50-67% of public authority and ‘other’ representing respondents suggested an ‘other solution’ as described above, while between c. 45-55% of respondents representing private use and many/other transport modes suggest that the current obligation should be maintained.

Over three quarters of stakeholders thought the Commission should harmonise accrediting procedures of EETS providers to different toll domains, with only 21% being against it. When disaggregated by representing interest, opinions were more mixed. Almost all road user respondents (i.e. between 87-100%) agreed with harmonisation of accreditation activities, whereas toll infrastructure operators / stakeholders had more mixed views, in particular public authorities, with 67% of respondents not in favour of harmonisation.

Ensuring fairness and non-discrimination

There was also strong support for making sure that EETS providers are offered fair conditions when entering national markets. More specifically, 63% felt that EU legislation should provide for the separation of accounts between toll charger and toll service provider activities (to avoid negative consequences of vertical integration), with only 15% opposing the measure. When disaggregated by representing interest, no major variations were apparent between interest group.

62% of the respondents were even in favour of giving the Commission the right to scrutinise national tender plans before they are published, to prevent the creation of legally protected monopolies. The opinion between different groups of representing interests was mixed. Respondents representing road users (i.e. transport, private car/motorbike use and many/other transport mode(s)) were in strong favour of the Commission being able to be involved in new electronic tolling systems (between 73-80%), whereas respondents representing toll infrastructure operators/service providers (i.e. public authorities and infrastructure operators and solution providers) were strongly against this being adopted (between 40-83%).

50% of respondents also supported the creation of strong and independent national entities to supervise the correct functioning of the tolling markets (market regulators). A wider range of views is apparent when considering the interests that the respondents represent. For example, 73% of respondents representing road freight transport agreed that powers of conciliation bodies should be increased to enable enforcement of mediated outcomes, in comparison to 55% of infrastructure operators/solution providers and 30-35% of public authorities and private users.

2) Spontaneous written contributions

Given that the spontaneous contributions did not follow any specific structure, the subsections included below relate to the most important discussion points raised.

The need for EETS is centred on the benefits of interoperability. It was argued that those benefits could be larger for heavy goods vehicles in regions with highest concentration of cross-border traffic, rather than for light vehicles and in peripheral regions. In any case, while Member States are capable of creating cross-border agreements, an EU-wide agreement is too complex for Member States without an EU-level legislative framework.

Regarding LDVs, a motorway operator suggested however that the EU should introduce legislation to achieve interoperability for passenger cars. An employers’ association

argued that it was essential to establish a common and harmonised EETS system which should also be expanded to cars. These views were however not given by any other respondents.

The positive impacts presented in the contributions received centre on interoperability, and the resulting shift to free flow tolling solutions which have social, economic and environmental advantages.

The contributions raised a number of existing challenges that must be overcome before EETS can be realised. Most of these focused on the barriers facing EETS providers in entering the market and meeting the requirements set in the Directive, and called for more legislation to open market and correction of the current regulatory obstacles including the excessive requirements for EETS providers. The importance of stable regulations across multiple markets for the success of EETS was underlined by many respondents (in particular (potential) EETS providers), just like the fact that expansion of EETS is currently blocked by too high costs and uncertainty on the market, both linked to the heterogeneous and complex processes of accreditation EETS providers to individual toll domains.

Regarding technologies, there was overwhelming opposition to extending too hastily the list of technologies allowed, as this could hamper the objective of interoperability. Yet, the importance of keeping an eye on the potential of other technologies, and possibly extending some provisions of the directive to technologies currently permitted by the EETS Directive, but not covered by its provisions, was also underlined by several respondents.

3) Restricted consultation of professional stakeholders on issues related to the ex-post evaluation

Due to the very different questions targeted at each stakeholder group and the free-text nature of the responses, the analysis below is split by stakeholder group.

a) Member States and Toll Chargers

According to the responses received, the overall message is that EETS has the potential to provide many benefits including reduced costs for all stakeholders involved (financial, time and administrative). However, barriers to implementation remain, making widespread deployment of EETS unrealistic in the short-medium term. Reasons for this are varied and include:

- Ensuring interoperability with all existing toll schemes requires significant investment and effort to manage the technical and commercial requirements for pan-EU interoperability.
- Increased technical complexity and costs to interface with multiple parties and back-office systems.
- Difficulties in establishing robust toll collection and recovery processes to avoid toll evasion.

Most stakeholder responses received agreed that many benefits arise from outsourcing relations with the clients to specialised companies; however the motorway operators also discussed some disadvantages. A summary of the main discussion is presented below.

According to national administrations and motorway operators EETS providers maintain relations with the road user, and toll chargers do not have to deal with

customers relations, which can save costs and hassle for them. The administrative burden and costs for collecting tolls are lowered. They can economise on manpower (including reducing headcount, staff training and other related overheads) and investments in dedicated back office equipment without jeopardising high quality standards. They can concentrate on their core business e.g. building/maintenance of infrastructure and traffic management, whilst the management of individual customers is kept at arm's length. For open road tolling systems, EETS can drive up compliance and collection levels, particularly for foreign traffic. Road users can also benefit as they are able to choose their contractual partner and the relationship can be processed in the client's national language. They also only require one business relationship for any number of toll systems. Due to increased competition, service providers have the potential to extend the range of services they offer which may be favourable for the users, including the possibility of being charged a more reasonable price. However, this depends on whether the service provider is able to make the administration more effective, thus reducing administrative costs and leading to lower costs for the customers.

When introducing a new charging scheme, existing OBUs and customer base of the EETS providers can be used by toll chargers, thereby reducing the amount of initial investment. More generally, EETS could lead to systematically adopted electronic tolling infrastructure (which is cheaper to invest and operate than traditional tolling plazas).

Respondents offered a more diverse range of opinions with regards to enforcement, and some responses can be categorised into benefits and disadvantages. Benefits of EETS with respect to enforcement include reduced (cross border) enforcement effort, reduced risks of fraud/foreign defaulters and reduced need for enforcement and improved communication between Member States to identify offenders and recover fines. Disadvantages of EETS with respect to enforcement notably include more comprehensive and complicated enforcement, as competition between EETS providers and relatively open standards could lead to multiple system design.

Some **national administrations** suggested that costs and compatibility issues would arise from the use of different interfaces, and operating and monitoring with multiple EETS partners would lead to more technical, operational and legal burdens – and therefore higher costs.

Most **national administration** respondents focussed on the benefits of greater acceptance of tolling by road users due to EETS. They believed that EETS could lead to a shift in public awareness and perception, helping tolling to be correctly viewed as a mainstream payment for a service.

b) Toll service providers

The overall message was that while there is a market for interoperable tolling services for HDVs, it was difficult to assess its size, but that there was only limited demand for such services for LVs. Fees paid to fuel card issuers were generally considered to be very low, but it was noted that fuel cards should not be seen to be a distinct means of payment. Toll service providers perform many different services to their customers, and to toll chargers, but transport companies will not be willing to pay more for EETS. While a lack of harmonisation was considered to constitute an obstacle to providing interoperable services, it was argued that this should be addressed through the harmonisation of the application of existing standards, rather than through the development of new standards.

Regarding demand for services, toll chargers indicated there is a significant demand for interoperable toll collection service from heavy goods vehicles. There is no clear distinction between central and peripheral States, or between EU and neighbouring countries, as traffic flows (and therefore demand) do not always follow such artificial divisions. The overall message is that EETS coverage should be based on customer demand rather than by any imposed geographical boundaries.

Toll system providers agree that the lack of harmonisation can constitute an important obstacle. However, technical harmonisation is not just a case of developing and applying standards; it is also about the way in which the standards are applied, interpreted and managed in detail. Rather than developing new standards, it would be better to harmonise the way in which they are used, with a particular focus on satellite technology.

From the perspective of toll service providers, allowing additional technologies in the short-term would create additional obstacles, but should not necessarily be ruled out in the longer-term. Currently, with the three technologies allowed today, this is still no viable technical solution that can be used on all networks and that is EETS-compliant. Allowing more technologies would require additional rules, bringing more constraints on IT interfaces and requiring new OBUs, and so would not speed up the implementation of EETS.

However, all of the technologies allowed by the Directive could now be considered to be mature technologies. If a new technology provides added value compared to the currently allowed technologies in terms of costs and technical performance, its introduction should be allowed after a transition period.

c) Road users

The association IRU representing hauliers pointed to the fact that foreign hauliers would represent up to 36% of the total road user charge revenues in the EU, exceed 50% in France, and increase from 25% to 40% in Germany. This indicates that the potential market size for interoperable HDV tolling services is set to increase, and they consider between a third and a half of the EU road haulage market to be potential EETS users. With almost all EU trucks being equipped with at least three or four on-board units (OBUs) and some with more than a dozen, considerable administrative burdens and costs exist for operators.

For EETS to be successful, EETS providers should continue to be required to provide one single financial guarantee covering the whole EU, however toll chargers must open up existing contracts and not limit contracts to national markets, and technical harmonisation of national e-tolling systems must be guaranteed. Provided that EU interoperability can be achieved, IRU expects it would be welcomed as a minimum by EFTA countries where the EU has agreements covering the road freight transport market and with all neighbouring countries operating e-toll systems.

Another hauliers' association UETR states that theoretically there is a business case for EETS, but this has not been clearly developed in the Directive or Decision. They propose that a national charging system could be based on a single EU-wide OBU that is installed to all trucks during manufacturing, and the Galileo satellite system could be used for this, registering tolled kilometres in each Member State. Data processing could then be left to the single service providers. They feel that policy makers need to take into consideration cost and user friendliness of the chosen system when determining the technology chosen for tolls, and therefore one single device to register and pay tolls in different Member

States is the way forward - economies of scale can be realised and hardware costs reduced.

The key message from the light vehicle users (only one respondent – ADAC) was that there is no need for EETS for light duty vehicle users. As long as the tolling systems in place are in accordance with EU law and do not discriminate any Member States, different systems between toll domains aren't seen as a barrier. The “hassle and costs of compliance with the requirement to pay road tolls” cited in the European Commission's ‘evaluation and fitness check roadmap’ are considered overstated, and the view that “users would be more ready to accept to pay for using roads if the payment means are interoperable at EU level” cannot be supported.

4) Restricted consultation of professional stakeholders on issues related to the upcoming proposal on the revision of the EETS legislative framework.

Out of all respondents asked, a strong majority (77%) felt that the requirement for EETS providers to **cover all domains within 24 months** is a problem, while 12% stated it didn't particularly affect them and 11% didn't answer. Unsurprisingly, the only respondents that felt the problem of full EU coverage within 24 months did not affect them represented toll infrastructure operators/chargers and industry associations. Almost half (45%) agreed with the solution to completely remove the requirement to cover all EETS domains within 24 months. 21% felt that replacing the requirement with one to cover certain regional EETS domains whilst allowing the coverage to be completed through partnerships with other EETS providers would be the best, whereas the least preferred solution was to replace the requirement to provide the service in the country of registration and all neighbouring countries, where only 5% of respondents agreed.

Regarding the issue of **unfair contract conditions** for EETS providers, the following examples were provided:

- In Italy, where the national service provider gained an unfair advantage due to the technical standards used, as the norm used was too vague to be the sole source of knowledge. It took a long time to gain access to the full documentation.
- In Austria, the remuneration for service providers is almost similar to those for card issuers, whose ‘only’ role is to commercialise the OBU of the national service provider. The costs of interoperability (including adaptation of OBU and interfaces) are therefore not taken into account.
- In Belgium, the remuneration as a service provider is only slightly higher than the one given by the national service provider to card issuers who are commercialising their OBU. Once again, the benefits of having various service providers is undervalued.
- In Poland on the A4, an OBU is offered by a toll service provider, whereas the acceptance of additional OBUs has been refused, as the system was not yet ready to accept other OBUs.
- Is it not yet defined if and what kind of remuneration will be paid in Germany and Belgium.

The most preferred solution (26% of total responses) for solving the problem of unfair EETS markets was to have a strict separation of accounts between the toll charger and toll service provider. This was followed by the option defining in the legislation the services for which EETS providers should be remunerated by the toll charger (16% of total responses). The solution that was least supported was strict separation between the shareholders of toll chargers and service providers.

A number of examples were provided that increased the set up and/or operational cost of schemes, including:

- That the level of remuneration for GNSS-based e-tolling systems is not higher than that for DSRC technology, so it does not reflect the higher level of responsibilities and risks that are placed on service providers by GNSS-based e-tolling systems.
- The substantial bank guarantees that have to be issued by the service provider to each concessionaire, e.g. in France.
- OBU certification and back-office platform development are costly.
- The 'agent model' limits the opportunity for the EETS provider to offer their own services in conjunction with EETS, e.g. fuel and drivers' expenses made by credit card, VAT services, etc. This model also sometimes requires the toll service providers to obtain a financial institution licence in order to operate.
- Accreditation procedures that are specific to toll domains and are often unpredictable, can increase costs.
- The complexity of VAT rules in some countries.
- Lack of adherence to standards, e.g. on roadside equipment.
- In Italy, which uses UNI1 DSRC technology, its many small concessionaries are not ready for processing the certification of OBUs from various service providers.

The most preferred solutions (% of total response) for solving the problem of high costs related to electronic tolling and EETS were both extending the standardisation effort by developing more profiled standards and thus harmonising tolling schemes to a greater degree and harmonising the procedure of 'accreditation' of the EETS provider to a toll domain. The least supported solution was putting upon toll chargers additional obligations in their relations with EETS providers, such as the obligation to provide electronic maps in GNSS -based schemes, or to support the handling of EETS providers through a harmonised application profile.

There was strong agreement with regards to negative costs arising due to a lack of interoperability, in and particular emphasis was put on the fact that the absence of interoperability has, from the point of view of transport companies, increased costs in terms of multiplication of OBUs, invoices, service fees and fines.

Regarding the problem of cross-border enforcement of tolls, the following statistics and information were provided:

- In Poland, 38% of identified infringements in relation to toll collection concerned foreign-registered vehicles.
- In Portugal, in 2015 25% of toll evasion was by foreign-registered vehicles, with 78% of these coming from Spain and 62% of these being heavy duty vehicles.
- In Italy, it was considered that in general toll avoidance was intentional, but no data on the level of avoidance was provided.
- In France, the proportion of toll evasion by non-domestic vehicles is 40%, which increases to 60% for some toll domains that are particularly vulnerable to cross-border traffic. The proportion of foreign-registered vehicles has increased recently, as a result of legislation that has reduced the number of toll evasion cases by domestic vehicles by nearly 80%.

- In Sweden, it is considered that the vast majority of foreign-registered vehicles pay the tolls.
- In Austria in 2015, there were 108,000 tolling offences by foreign-registered vehicles under the HDV toll, which was 89% of the total number of tolling offences that year. For the light-duty vignette, 117,000 cases – 63% of the total – were attributed to foreign vehicles.
- In Slovenia, it has been observed for the vignette tolling that there are more violations amongst foreign-registered vehicles than amongst locally-registered vehicles, whereas there is no noticeable difference in toll evasion between foreign-registered and local HDVs. It is considered that the main reason for not paying is an attempt to avoid payment, as a result of expectations of an inability to enforce toll recovery across borders.

Respondents generally agreed that the exchange of information between Member States on the identity of toll offenders should be mandated by EU law irrespective of the type of toll or vehicle, rather than being left to bilateral agreements. It was also suggested that the EU should also negotiate suitable arrangements with neighbouring countries. Various respondents agreed that the approach taken by the cross border data exchange relating to road safety offences was a good model, or at least a good starting point, for developing a system for the enforcement of toll evasion.

46% (11 respondents) felt that differing national laws relating to the protection of personal data impedes the cross-border enforcements of toll payments. 16% of respondents did not think this was the case, 17% could not answer due to lack of knowledge, and 21% did not directly answer. 28% (five respondents) agreed that current differing national data protection regimes give rise to difficulties in EETS providers' system designs, whereas 28% also believed this not to be the case. An additional 22% (four respondents) could not answer and another 22% did not directly answer but provided additional comments.

Regarding new technologies, ANPR systems were mentioned by a number of respondents as having the potential to be used as a toll collection technology or as an additional technology to enforce toll collection. Some argued that EU legislation was not necessary at this stage as such systems did not raise interoperability issues in the way that electronic toll collection does, while others argued that EU legislation should cover ANPR in the longer-term. RFID was also seen as a potentially promising technology that EU legislation could cover in the longer-term. One respondent said that RFID sticker tag technology would be appropriate for tolling light duty vehicles, while embedded electronic technology, such as DSRC, linked to an account that can be managed through a smart phone, might also be considered for such vehicles. The same respondent believed that “high-end technology”, such as GNSS based OBUs, have the potential to provide multiple benefits for heavy duty vehicle. It was also suggested that fleet management systems could be used for tolling, while video technology capabilities were also improving fast. Additionally, a number of respondents stated that the question of a dedicated bandwidth for DSRC toll systems needed to be clarified.

Regarding the differences between heavy duty and light duty vehicles, a strong majority (64%) felt that instead of removing light vehicles from the EETS scope altogether, having a number of specific rules for different vehicle types was the better option to solve the issues between different vehicles and requirements. The different treatments

proposed for LDVs included there being no requirements for a GNSS OBU for these vehicles, and instead allowing ANPR-based systems and RFID. The rules, processes and even timelines that would apply to light duty vehicles could also be different to those applying to HDVs.

Use of consultation results

The results of the restricted consultation of professional stakeholders on issues related to the ex-post evaluation were heavily used as a source of information and statistics for drafting the ex post evaluation of the EETS legislation. They were widely referred to in the evaluation staff working document.

In a similar manner, the results of the restricted consultation of professional stakeholders on issues related to the upcoming proposal on the revision of the EETS legislative framework was used to feed the impact assessment. Many of the policy measures included for analysis as part of policy options in the impact assessment directly reflect the suggestions made by stakeholders in this consultation activity and in the position papers sent spontaneously to the Commission. Actually, the policy options were drafted only once the results of the restricted stakeholder consultation were available. The contributions to the stakeholder consultation (both open public consultation and the two restricted consultations) as well as the spontaneous positions of the stakeholders were shared with the consultants who worked on the IA support study.

Finally, the results of the open public consultation overwhelmingly confirmed the Commission's initial views and approach to the ex post analysis and to the Impact Assessment.

9.3. Annex 3: Who is affected by the initiative and how

Type of stakeholder	Practical implications
<p>Toll chargers</p>	<p><u>Investment</u></p> <p>The impact of the preferred policy option on toll chargers will be relatively soft, in the sense that very few changes to the current systems, requiring additional investments, will be asked for. The main investments will be:</p> <ul style="list-style-type: none"> • The setup of a test environment for new OBUs (anyway, many toll chargers already have it in place) • Opening of interfaces to EETS providers light vehicles by systems which are currently outside the scope of the EETS legislation (it is not expected to represent a high cost, and will anyway be balanced by the benefits stemming from a more efficient management of customer relations and payments services). <p><u>Administrative re-organisation</u></p> <p>Toll chargers which currently apply the "agency model" will need to re-organise their invoicing policy in order to comply with the requirement to apply the "reseller model".</p> <p><u>Transparency</u></p> <p>Toll chargers will need to become more transparent in their procedures, in particular in the accreditation process and in the rebates policy.</p> <p><u>Co-operation</u></p> <p>In order to achieve the required level of harmonisation, toll chargers will need to enhance the level of exchange of experience and best practices with their partners and competitors.</p>
<p>Member States' administrations</p>	<p>Member States often play the role of toll chargers, in which case the impacts listed in the previous row also apply. A couple of other implications apply to the Member States independently of their role as toll chargers, namely:</p> <p><u>Impose and enforce the separation of accounts</u> between toll charger and toll service provider activities: this will be the most challenging implication of the preferred policy option for Member States' administrations.</p> <p><u>Investment</u></p> <p>Member States will need to finance the adaptation of EUCARIS to the exchange of data for enforcing tolls; the cost is however not</p>

	<p>expected to be significant (a couple of thousand euro at most).</p> <p><u>Co-ordination</u></p> <p>The administrations will have to ensure or foster the co-ordination of the accreditation procedures to all toll domains on their territory. However, in several markets the stakeholders already organise this co-ordination themselves.</p> <p><u>Reporting and consultation</u></p> <p>Member States' administrations will need to report on the outcome of tests with new technologies; they will also have to consult the Commission and EETS providers on the criteria for differentiating tolls in new tolling systems (an obligation to consult the Commission on new HGV tolling schemes already exists, so the impact of this new provision will not be excessively heavy for the administrations).</p>
EETS providers	The main implication for EETS providers will be the need to increase the transparency as to their activities by publishing and updating their service expansion strategies.
Road users	No specific implications in terms of new obligations or costs.
Notified Bodies	Notified Bodies will need to increase their level of activity in the NB Co-ordination Group to manage the transition period when an existing standard is revised.

9.4. Annex 4: Analytical models used in preparing the Impact Assessment

9.4.1. Introduction

A model was developed by Ricardo and its subcontractors TRT and 4icom in the framework of the IA accompanying study. The purpose of the model was to quantify the cost and time losses for road users of the lack of interoperability of electronic tolls, and the evolution of this cost in time. The model was used to establish the baseline scenario and the impacts of the analysed policy option. **The main model is Excel-based and was developed *ad hoc* for the contract, but it is fed with input from TRT's TRUST model.** Figure 3 contains a short description of the TRUST model.

Figure 3: Short description of the TRUST model

TRUST (TRansport eUropean Simulation Tool) is a European scale transport network model developed by TRT and simulating road, rail and maritime transport. It covers the whole Europe and its neighbouring countries and it allows for the assignment of origin-destination matrices at the NUTS3 level of detail (about 1600 zones) for passenger and freight demand, based on Eurostat data, national statistics and ETIS database. TRUST is calibrated to reproduce tonnes-km and passengers-km by country consistent to the statistics reported in the Eurostat Transport in Figures pocketbook. Further information on TRUST is available on <http://www.trt.it/en/tools/trust/>.

Modelling results have been provided in monetary terms, separately for EU hauliers and foreign hauliers (for the latter, less detailed assessment is provided), with disaggregation by a number of cost categories, including direct costs (rental / deposit costs, service fees, installation costs and driver training costs), indirect costs (administration costs, fines as a result of lack of interoperability) and time losses (during installation / removal and registration time / time spent at vending machines).

Inputs to the Excel-based model have been provided for each of the cost categories mentioned above and with respect to two types of OBUs: OBUs of EETS-provider (i.e., EETS OBU henceforth), and OBUs directly available from toll chargers (i.e., national OBU henceforth). The unit cost for each type of OBU has been estimated as a single average EU-wide figure using weighted averages based on the expected numbers of EETS OBUs, and national OBUs.

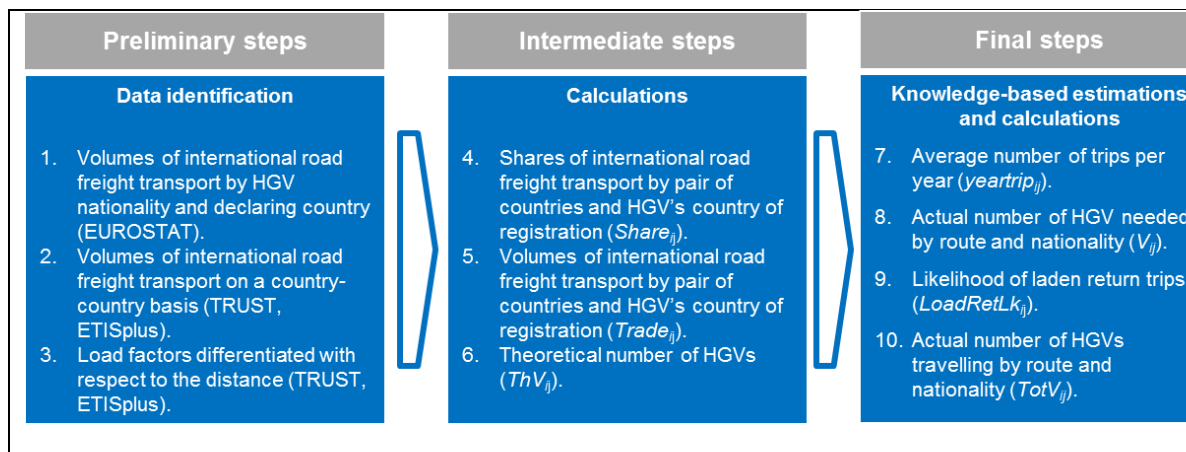
9.4.2. Modelling – assessment for HGVs

The volume of HGVs traffic between pairs of countries is based on the outputs from TRT's TRUST transport model, in combination with official figures derived from the Eurostat database. Data obtained were assembled in the form of a matrix covering the EU Member States and close neighbours (i.e., EEA, Switzerland, Western Balkans, Belarus, Russia and Turkey). The matrix represents the volumes of international road freight transport (i.e. tonnes) exchanged on a country-country basis⁶⁹.

⁶⁹ The matrix is a 40 by 40 table reflecting all possible Origin-Destination combinations amongst pairs of countries.

A ten step methodology (see Figure 4) has been developed to establish the actual number of HGVs travelling by route and nationality on the basis of crude data on volumes on international road freight transport by HGV nationality and declaring country.

Figure 4: Overall process for defining the number of HGVs travelling by route and nationality – and thereby the number of OBUs needed for the trip.



Once the number of HGVs travelling by route and nationality is available, it is multiplied by the number of OBUs needed on each path and by the average cost of the type of technology needed, taking into account the assumptions on the share of EETS- and national OBUs, to obtain the total cost of OBUs in each policy option. The number of OBUs needed on each route is established on the basis of publicly available information from toll chargers, information on available interoperable OBUs, assumptions on alternative routes possible to link two points and a number of other assumption presented in detail in the IA accompanying study.⁷⁰

The methodology is further described in the IA accompanying study.⁷¹

9.4.3. Modelling – assessment for buses

As in the case of the HGVs, the starting point for buses is the output of the TRUST transport model, which provides the volumes of international passengers on a country-country basis. It should be noted that the data available refers only to regular bus services⁷² and that non-scheduled international services (e.g. tourist services) have not been included in this analysis.

⁷⁰ Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

⁷¹ Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, **not yet published**.

⁷² The output of the TRUST transport model relies on the extrapolation of the ETISplus project (see ETISplus D6 Database Manual, Passenger database construction, Annex Report D6). The ETISplus project produced a European matrix of national and international buses transport activity. Limitations were highlighted regarding data collection as there is no obligation for provision of official statistics and there is no common definition of long distance services between countries. The matrix built covers regular bus services only. Other dedicated services (e.g., event-related and limited seasonal services) are excluded from data collection. The geographical coverage of the matrix obtained coincides with that used for HGVs.

To obtain the theoretical number of buses (i.e. ThV_{ij}), the number of passengers was divided by an average load factor assumed equal to 25 *pax/vehicle*. Furthermore, the parameters $yeartrips_{ij}$ were estimated in order to calculate the actual number of buses travelling between pairs of countries (i.e. V_{ij}).

$$V_{ij} = ThV_{ij} / yeartrips_{ij}$$

The estimation of the yearly number of trips relied on the matrix of the average travel time on a country-country basis, as produced by the TRUST transport model. Specifically, two extreme situations have been assumed. On the one hand, if the average travel time is less than one day, the estimated yearly number of journeys is assumed equal to 140 considering the approximate number of operating working days; on the other hand, if the travel is longer than three days, the estimated yearly number of journeys is equal to 60. Values in between have been assumed through interpolation.

Unlike for HGVs, there is no need to adjust with respect to the parameter $LoadRetLk_{ij}$ due to the symmetric nature of the matrix of the volume of international passengers, i.e. the fact that outbound and return trips have similar load factors.

The number of OBUs required for travelling between each pair of countries has been estimated following the same method carried out for HGVs.

Finally, as in the case of the HGVs, the quantification of the impact of the lack of interoperability of electronic tolls for road users is calculated by multiplying the estimated number of actual buses travelling between a pair of countries, by the number of OBUs needed on that path and by the average cost of the type of technology needed.

9.4.4. Modelling – assessment for cars

As in the case of the HDVs, the starting point for cars is the output of the TRUST transport model, which provides the number of trips per day on a country-country basis. The data available is split between two categories of users, namely commuters and non-commuters.

To obtain the number of vehicles, the number of users was divided by the corresponding load factors. To this end, the average load factor for commuters was assumed (based on assumptions used in the TRUST model) to be equal to 1.5 passengers per vehicle and the average load factor for non-commuters was assumed to be equal to 1.9 passengers per vehicle. Based on this, a matrix of theoretical vehicle numbers between country pairs was obtained on a country-country basis.

The two categories of users assumed reflect two possible situations worth considering for the impact assessment. On the one hand, the commuter category represents users travelling more frequently over a short distance, e.g. for business or work purposes and between two places close to a border; on the other hand, non-commuters may represent the occasional users travelling for leisure or tourism and over a long distance. Based on the above, the number of theoretical vehicles was re-estimated to reflect the real need to equip a car with an interoperable OBU.

In the case of commuters, it is more likely that the users will travel on a frequent or daily basis and as such they are assumed to travel at approximately this frequency, i.e. 350 times per year. For non-commuters, three assumptions were made to refine the frequency

of journeys. Namely, non-commuters have been categorised as being either: (i) non-commuters travelling between bordering countries once a week, due to the short distance amongst the countries; (ii) non-commuters travelling between non-bordering countries within a distance of less than 1,500 km and assumed to be travelling once per month; and (iii) non-commuters travelling between other countries and assumed to travel once per year.

As a result, the actual number of cars was calculated by dividing the theoretical number of cars per origin-destination pair, by the parameter $yeartrips_{ij}$; according to the assumptions described above, the annual numbers of trips for each of the respective categories described above are 350 for commuters and i) 52; ii) 12; and iii) 1 for non-commuters, respectively.

The number of cars obtained above is the potential of actual vehicles travelling cross-border for both commuters and non-commuters. The number of vehicles that need to be equipped with an OBU has been obtained by estimating the incidence of vehicles that would adopt an OBU compatible with an interoperable electronic toll collection system, for both the commuter and non-commuter categories. Specifically, a penetration rate of OBUs amongst international travelers lower than 100% (i.e., the best case scenario) was assumed: a rate of 80% of penetration of OBUs for commuters and 44% for non-commuters was assumed, as a smaller fraction of them are likely to use an interoperable OBUs for their infrequent journeys. The penetration rates assumed refer only to cars travelling on international journeys.

Finally, the analysis of passenger car road users has been extended in two ways: firstly to estimate the cost of lack of integration of EETS systems with urban congestion charging systems, which are not open to EETS providers; secondly, to assess the lack of integration of EETS systems with toll domains where vignette charging systems are in place. In both cases, car road users have to independently manage both the registration procedures and the payment procedures. Time losses have been estimated to assess the lack of interoperability amongst the systems for international car journeys through domains where congestion charging or vignette charging are in place in 2016. Note that this analysis is not designed to be extended to future years in the baseline and purely provides a reference figure for the cost of lack of interoperability today.

9.4.5. Key assumptions used for the modelling of the baseline and of the impacts of the different policy options

9.4.5.1. Assumptions on the cost of HDV OBUs

The assumptions are based on detailed input provided by road users in the framework of interviews and in written contributions sent to the Commission and to the consultants. All cost elements (direct costs, time losses, administrative costs) were converted in money equivalents and averaged (across toll domains and across the info provided by different road users) to obtain single values for EETS- and national OBUs. Due to the lack of reliable assumptions on future evolution of the prices, these unitary costs are assumed to remain stable throughout the analysed period (till 2025).

Further assumptions were made on the costs of OBUs (lifecycle of the devices, average daily pay of a truck driver, average monthly tolls paid, etc.) based on available statistics

and studies. These assumptions are presented in more details in the IA accompanying study.⁷³

9.4.5.2. Assumptions on the costs of LDV OBUs

Information on costs available from toll chargers' websites has been averaged to obtain a single value across the EU.

9.4.5.3. Assumptions on the evolution of interoperability and rate of penetration of EETS OBUs in the baseline and in the policy options

In the baseline, it was assumed that markets which have so far blocked the entrance of EETS providers will remain closed in the future, and there is a steady, though relatively slow progress in the rate of penetration of EETS OBUs on these markets. The reason for this slow progress in the use of EETS OBUs is that with several crucial markets (including Germany) remaining closed to EETS, the attractiveness of EETS OBUs is lowered.

In PO1, it is assumed that interoperability progresses in the toll domains covered by the EETS Facilitation Platform (EFP, ex-REETS), reflecting the impact of self-regulation. The curves on the uptake of EETS OBUs are flattened for those Member States where strong incumbent, vertically integrated operators are dominating the market today (Poland, Germany, Slovakia, Belgium, Italy). The flattening is stronger for Poland, Germany and Slovakia, where, in addition to the presence of vertically integrated operators, problems with accreditation of EETS providers are observed today. This flattening reflects the limits in the effectiveness of self-regulation. A small level of penetration of the EETS OBUs is also assumed for Switzerland, reflecting the strong involvement of the country in the works of the EFP and repeated commitment to allow foreign registered vehicles (but not Swiss ones) to use EETS OBUs.

In PO2, steady progress in market opening and penetration of EETS OBUs is assumed on all markets, excluding Switzerland (reflecting the fact that Switzerland refuses to transpose the EETS legislation, so the impact of the legislative review will be null on the situation in the country). The level of penetration of EETS OBUs varies depending on the level of attractiveness of each market for EETS providers (which reflects the intensity of their marketing activities) and the intensity of international transport in overall transport activity).

In PO3, the level of penetration of the OBUs is assumed to be similar to that of PO2, but the distinction between EETS- and national OBUs disappears at the 2025 horizon (because all interoperability constituents, including OBUs, are entirely standardised by that date).

A more detailed description of all the assumptions made is presented in the IA accompanying study.⁷⁴

⁷³ Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, not yet published.

⁷⁴ Ricardo *et al.*, *Support study for the Impact Assessment for the Revision of EETS Legislation (Directive 2004/52/EC & Decision 2009/750/EC)*, not yet published.

9.4.6. Reliability and appropriateness of the model

Interoperability of electronic tolls is a relatively narrow area of transport policy. For this reason, general transport models would be of little use and inappropriate to analyse the impacts of changes to this policy. A simple model such as the one developed for this IA has the advantage of remaining "close to reality", with clear links from assumptions to the results.

Of course, a number of assumptions have been made to feed the Excel model, each of which can be source of errors in the final evaluation; the assumptions are however based on broad consultation of economic actors, complemented with solid expertise in the field of tolling present in the study team⁷⁵ and individually reviewed by the Commission – all of these should guarantee a significant level of reliability.

One of the most crucial assumptions for the model is the number of vehicles travelling on each route between different Member States. The crude data behind this assumption come from a well-known and high-considered network transport model – TRUST – and solid statistical sources, including Eurostat. The results of the calculations in TRUST have been checked against available statistics, and a good level of match with the reality was observed: for instance, the number of trucks involved in cross-border transport - 924,297 – is consistent with the generally accepted estimation of one million trucks, but also with the data on the number of OBUs issued to foreign drivers provided e.g. by Austria and Belgium (see results of the public consultation <http://ec.europa.eu/transport/sites/transport/files/eets-revision-2016-summary.pdf>).

Overall, due to the simplicity of the model, the outputs must be seen as approximate. But thanks to this simplicity, it can be said with a high level of certainty that these approximate results correctly show the trends in the baseline and in the policy options. They can therefore be used as reliable evidence to compare the baseline and options between themselves.

⁷⁵ 4icom, one of the main subcontractors of Ricardo in this project, has hands on experience with counselling toll chargers, system operators and service providers in a number of European ETC markets.

9.5. Annex 5: Glossary

AETIS: Association of electronic toll and interoperable service (association of (prospective) EETS providers)

ANPR: Automatic number plate recognition; ANPR-based systems use infrared cameras to read the number plates of passing vehicles.

ASECAP: European Association of tolled motorways, bridges and tunnels concessionaires

ASFA: Association of French Motorway Companies

CEN: Comité Européen de Normalisation (European Standardisation Committee):

CESARE: Common Electronic Fee Collection System for an ASECAP Road Tolling European Service - project set up by ASECAP with the intention of specifying, designing, developing, promoting and implementing a common interoperable Electronic Fee Collection System (EFC) on European toll roads.

DSRC: Dedicated short range communication - two-way short- to- medium-range wireless communications capability that permits very high data transmission critical in communications-based active safety applications. DSRC is used in electronic tolling for remote communication between the on-board units (OBU) and the roadside equipment and/or mobile enforcement devices (e.g. readers installed inside enforcement vehicles)

EasyGo: interoperability agreement between Norway, Sweden and Denmark.

EasyGo+: interoperability agreement between Norway, Sweden, Denmark and Austria.

EETS: European Electronic Toll Service – the possibility for road users to pay all electronic road tolls in the EU with one single OBU, one contract and one invoice. The EETS is mandated by Directive 2004/52/EC and defined in Decision 2009/750/EC.

EETS provider: legal entity which grants access to the EETS to road users. The EETS provider equips road users with an OBU interoperable with ETC systems across the EU and collects tolls from users in the name of the toll chargers.

ETC scheme: Electronic Toll Collection scheme – a system for collecting tolls by electronic means, either involving the installation of on-board devices inside the vehicles (OBU) or not. In the latter case, the system typically involves the automatic reading of the number plates of the passing vehicles (ANPR)

E-call: EU initiative to bring rapid assistance to motorists involved in a collision anywhere in the European Union. In case of a crash, an e-Call-equipped car automatically calls the nearest emergency centre. E-call is mandatory equipment in all HGV and will become mandatory in cars as of April 2018.

ETSI: European Telecommunications Standards Institute

Fuel card/Fuel card issuer: A **fuel card** or **fleet card** is used as a payment card most commonly for gasoline, diesel, and other fuels at gas stations. Fleet cards can also be used to pay for vehicle maintenance and expenses at the discretion of the fleet owner or manager; for instance, fuel cards are commonly used to pay tolls. The functioning of the

fuel card is similar to that of a credit card, the difference being that fuel cards can only be used to purchase a pre-determined list of articles/services in a predetermined network of sales points.

GNSS: Global Navigation Satellite System: satellite system that is used to pinpoint the geographic location of a user's receiver anywhere in the world.

GPRS: General packet radio service: packet oriented mobile data service on the 2G and 3G cellular communication system's global system for mobile communications (GSM). By extension, the term GPRS will be used – unless specified otherwise – to design its successors under 3G, 4G and 5G.

GSM (Global System for Mobile Communications): standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones. By extension, the terms GSM will be used – unless specified otherwise – to design its successors (3G, 4G and 5G)

HDV: Heavy Duty Vehicles; the term covers two categories of vehicles: heavy goods vehicles (HGV), i.e. freight vehicles with a total permissible laden weight exceeding 3.5t, and buses/coaches, i.e. vehicles designed and used for the transport of more than nine passengers including the driver.

HGV: Heavy Goods Vehicle, i.e. freight vehicles with a total permissible laden weight exceeding 3.5t.

Interoperability: the capacity of different equipment and systems to work together.

Interoperability constituents: physical (e.g. OBU, roadside equipment) and non-physical (e.g. back office) elements which have an importance for achieving interoperability in the field of electronic toll collection.

IRU: International Road Union

KPI: Key Performance Indicator

LDV: Light duty vehicle, i.e. passenger cars, vans and other light motorised vehicles (e.g. motorcycles).

OBU: on-board unit – a device installed on-board the vehicle, communicating with roadside infrastructure or with a back office to communicate data necessary to calculate the toll due.

RFID: Radio Frequency Identification – wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. **Passive RFID tags** collect energy from the interrogating radio waves and act as a passive transponder.

REETS: Regional European Electronic Toll Service – project co-financed by the European Commission aiming at deploying EETS compliant services in a cross-border regional project. The Project shall cover the electronically toll network of 7 Member States (Austria, Denmark, France, Germany, Italy, Poland and Spain) and Switzerland.

Single service provider: the national provider of toll services in the absence of EETS providers, designated by the toll charger. The single service provider is often integrated with the provider of technical solutions for the operation of the tolling system contracted by the toll charger.

Tachograph: device fitted to a vehicle that automatically records its speed and distance, together with the driver's activity selected from a choice of modes. With certain exceptions, all lorries >3.5t and buses carrying >9 people in the EU must be equipped with a tachograph.

Thick OBU: A 'thick' GNSS OBU is an on-board unit which establishes the position of the vehicle, compares it with digital maps stored in its memory, on this basis calculates the toll due and sends only this information to the back office.

Thin OBU: A 'thin' OBU is an on-board unit which establishes the position of the vehicle and send the information to the back office. The calculation of the toll due takes place there.

Toll charger/operator: the one who imposes the toll upon the road users. Typically the owner or operator of the road; two main categories of toll chargers exist: the State (or a State agency) on publically managed roads, and the concessionaire on conceded roads/motorways.

Toll domain/EETS domain: an electronic toll collection (ETC) scheme covering a specified road network.

Toll service provider: Provider of electronic toll service who is not registered as an EETS provider. Typically the services of such a toll service provider are limited geographically (sometimes even covering one country only).

9.6. Annex 6: List of provisions relative to the obligations of EETS providers active on the market for light vehicles vs. those active on the market for heavy vehicles

EETS Directive, Article 2.2:

*The European electronic toll service shall be brought into service pursuant to Article 3(1). Operators shall make available to interested users on-board equipment **which is suitable for use with all electronic toll systems in service in the Member States using the technologies referred to in paragraph 1** and which is suitable for use in all types of vehicle, in accordance with the timetable set out in Article 3(4). This equipment shall **at least be interoperable and capable of communicating with all the systems operating in the Member States using one or more of the technologies listed in paragraph 1**. The detailed arrangements in this respect shall be determined by the Committee referred to in Article 5(1), including arrangements for the availability of on-board equipment to meet the demand of interested users.*

EETS Decision, Recital 2:

*A single contract with one EETS Provider should allow EETS Users to pay their tolls in all EETS domains of the European road network, in accordance with Article 3(1) of Directive 2004/52/EC by means, among others, **of a single on-board equipment (OBE), which can be used on all EETS domains.***

EETS Decision, Article 13.2:

*In addition to tolling, **the EETS on-board equipment should enable implementation of future other location-based services.** The use of EETS on-board equipment for the purpose of other services shall not interfere with toll operations on any toll domain.*

EETS Decision, Annex II point 3:

As a minimum, standardised roadside interfaces between OBE and Toll Chargers' fixed or mobile equipment shall enable:

- (a) DSRC (Dedicated Short-Range Communication) charging transactions;*
- (b) Real-time compliance checking transactions;*
- (c) Localisation augmentation (where applicable).*

***EETS Providers must implement all these three interfaces in their OBE.** Toll Chargers may implement any or all of these interfaces in their fixed or mobile roadside equipment according to their requirements.*

9.7. Annex 7: Flow of costs (€ million/year) to users for using road toll infrastructure

9.7.1. HGVs

Table 24: Policy option 1: Flow of costs (€ million/year) to HGV users for using road toll infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	196.0	183.3	179.4	1,866.7
Policy option 1 total	196.0	178.3	151.4	1,747.0
Net cashflow	-	8.0	28.0	120.0
EU	-	6.9	25.8	108.3
Non-EU	-	1.1	2.2	11.4
<i>EEA</i>	-	<i>0.5</i>	<i>0.8</i>	<i>4.5</i>
<i>Western Balkans</i>	-	<i>0.1</i>	<i>0.3</i>	<i>1.2</i>
<i>Other countries</i>	-	<i>0.5</i>	<i>1.0</i>	<i>5.6</i>
of which EETS OBUs	-	-2.8	-0.4	-13.8
of which National OBUs	-	10.7	28.4	133.5
Discounted cashflow	-	6.8	19.7	92.5

Table 25: Policy option 2: Flow of costs (€ million/year) to HGV users for using road toll infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	196.0	186.3	179.4	1,866.7
Policy option 2 total	196.0	145.4	114.0	1,486.7
Net cashflow	-	40.9	65.3	380.0
EU	-	38.1	61.4	355.5
Non-EU	-	2.8	4.0	24.5
<i>EEA</i>	-	<i>1.0</i>	<i>1.5</i>	<i>8.9</i>
<i>Western Balkans</i>	-	<i>0.3</i>	<i>0.4</i>	<i>2.7</i>
<i>Other countries</i>	-	<i>1.5</i>	<i>2.1</i>	<i>12.9</i>
of which EETS OBUs	-	-12.3	-16.4	-104.4
of which National OBUs	-	53.2	81.7	484.4
Discounted cashflow	-	35.0	45.9	300.9

Table 26: Policy option 3: Flow of costs (€ million/year) to HGV users for using road toll infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	196.0	186.4	179.4	1,866.7
Policy option 3 total	196.0	145.4	93.2	1,424.2
Net cashflow	-	40.9	86.2	442.5
EU	-	38.1	81.7	416.5
Non-EU	-	2.8	4.5	26.0
<i>EEA</i>	-	<i>1.0</i>	<i>1.6</i>	<i>9.3</i>
<i>Western Balkans</i>	-	<i>0.3</i>	<i>0.5</i>	<i>2.9</i>
<i>Other countries</i>	-	<i>1.5</i>	<i>2.4</i>	<i>13.8</i>
of which EETS OBUs	-	-12.3	-8.6	-81.2
of which National OBUs	-	53.2	94.8	523.7
Discounted cashflow	-	35.0	60.5	347.3

9.7.2. Buses

Table 27: Policy option 1: Flow of costs (€ million/year) to buses for using road tolling infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	2.1	2.0	1.9	20.1
Policy option 1 total	2.1	1.8	1.5	18.3
Net cashflow	-	0.2	0.4	1.8
EU	-	0.1	0.3	1.2
Non-EU	-	0.1	0.1	0.6
<i>EEA</i>	-	<i>0.0</i>	<i>0.0</i>	<i>0.2</i>
<i>Western Balkans</i>	-	<i>0.0</i>	<i>0.1</i>	<i>0.3</i>
<i>Other countries</i>	-	<i>0.0</i>	<i>0.0</i>	<i>0.1</i>
of which EETS OBUs	-	-0.0	0.0	-0.0
of which National OBUs	-	0.2	0.4	1.8
Discounted cashflow	-	0.1	0.3	1.4

Table 28: Policy option 2: Flow of costs (€ million/year) to buses for using road tolling infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	2.1	2.0	1.9	20.1
Policy option 2 total	2.1	1.5	1.1	15.4
Net cashflow	-	0.5	0.8	4.7
EU	-	0.4	0.6	3.4
Non-EU	-	0.1	0.2	1.3
<i>EEA</i>	-	<i>0.0</i>	<i>0.1</i>	<i>0.4</i>
<i>Western Balkans</i>	-	<i>0.1</i>	<i>0.1</i>	<i>0.7</i>
<i>Other countries</i>	-	<i>0.0</i>	<i>0.0</i>	<i>0.2</i>
of which EETS OBUs	-	-0.1	-0.2	-1.0
of which National OBUs	-	0.6	0.9	5.7
Discounted cashflow	-	0.4	0.6	3.7

Table 29: Policy option 3: Flow of costs (€ million/year) to buses for using road tolling infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	2.1	2.0	1.9	20.1
Policy option 3 total	2.1	1.5	0.9	14.8
Net cashflow	-	0.5	1.0	5.3
EU	-	0.4	0.8	3.9
Non-EU	-	0.1	0.2	1.4
<i>EEA</i>	-	<i>0.0</i>	<i>0.1</i>	<i>0.5</i>
<i>Western Balkans</i>	-	<i>0.1</i>	<i>0.1</i>	<i>0.7</i>
<i>Other countries</i>	-	<i>0.0</i>	<i>0.0</i>	<i>0.2</i>
of which EETS OBUs	-	-0.1	-0.1	-0.8
of which National OBUs	-	0.6	1.0	6.1
Discounted cashflow	-	0.4	0.7	4.2

9.7.3. Light duty vehicles

Table 30: Policy option 1: Flow of costs (€ million/year) for LDV for using road tolling infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	75.0	70.0	68.7	707.7
Policy option 1 total	75.0	66.8	63.2	677.9
Net cashflow	-	2.9	5.6	29.8
Total commuters	-	0.2	0.3	1.7
<i>EU</i>	-	0.1	0.2	1.2
<i>Non-EU</i>	-	0.1	0.1	0.5
Total Non-commuters	-	2.7	5.3	28.1
<i>EU</i>	-	1.9	3.7	19.8
<i>Non-EU</i>	-	0.8	1.6	8.4
Discounted cashflow	-	2.5	3.9	23.5

Table 31: Policy option 2: Flow of costs (€ million/year) for LDV for using road tolling infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	75.0	69.8	68.7	707.7
Policy option 2 total	75.0	61.5	53.3	624.2
Net cashflow	-	8.3	15.4	83.5
Total commuters	-	0.4	0.7	4.0
<i>EU</i>	-	0.3	0.6	3.1
<i>Non-EU</i>	-	0.1	0.2	0.9
Total Non-commuters	-	7.9	14.7	79.5
<i>EU</i>	-	6.0	11.7	62.3
<i>Non-EU</i>	-	1.8	3.0	17.2
Discounted cashflow	-	7.1	10.8	65.8

Table 32: Policy option 3: Flow of costs (€ million/year) for LDV for using road tolling infrastructure

Costs by category	2016	2020	2025	Total 2016-2025
Baseline total	75.0	69.8	68.7	707.7
Policy option 3 total	75.0	61.5	57.7	637.1

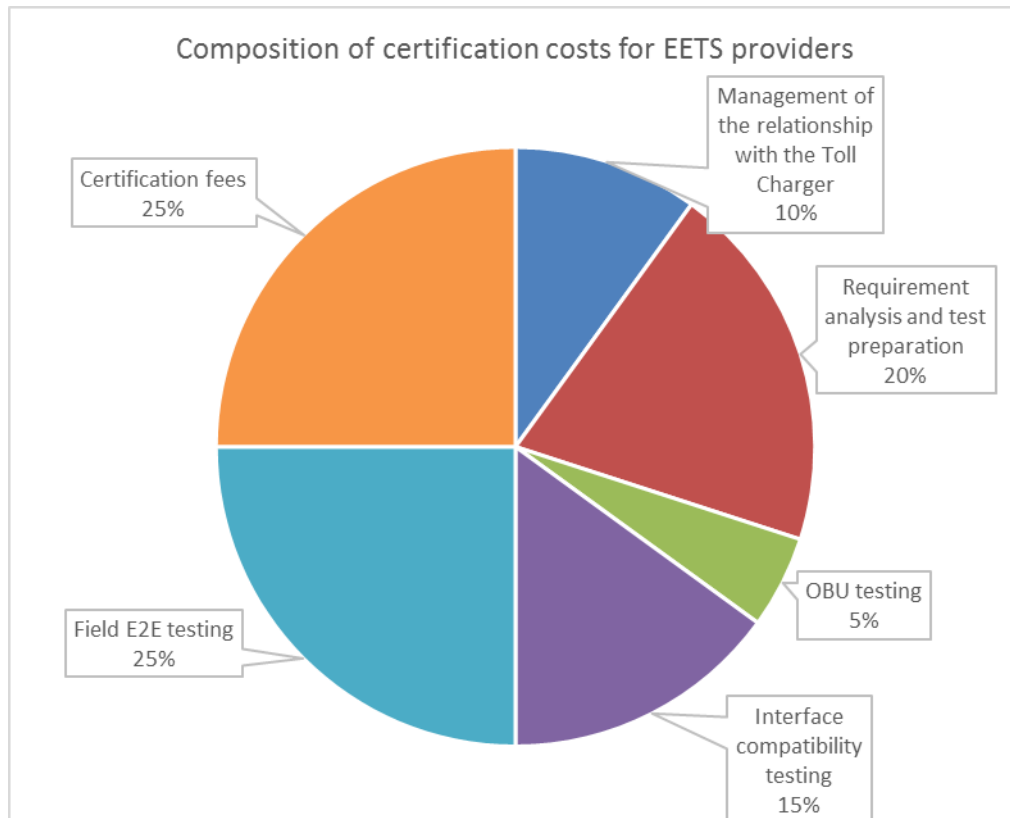
Net cashflow	-	8.3	11.1	70.6
Total commuters	-	0.4	-0.6	-0.1
<i>EU</i>	-	<i>0.3</i>	<i>-0.8</i>	<i>-1.1</i>
<i>Non-EU</i>	-	<i>0.1</i>	<i>0.2</i>	<i>1.0</i>
Total Non-commuters	-	7.9	11.7	70.6
<i>EU</i>	-	<i>6.0</i>	<i>8.4</i>	<i>52.4</i>
<i>Non-EU</i>	-	<i>1.8</i>	<i>3.3</i>	<i>18.3</i>
Discounted cashflow	-	7.1	7.8	56.2

9.8. Annex 8: Evaluation of investment costs for toll chargers in Policy option 3

Cost Element	Qty.	Unit Cost (EUR)	Total Cost (EUR)
ETC Lanes	25,000	30,000	750,000,000
Free-Flow Tolling Stations	1,100	100,000	110,000,000
Austria	400	100,000	40,050,000
Czech Republic	300	100,000	30,000,000
Poland	300	100,000	30,000,000
Slovenia	100	100,000	10,000,000
Free-Flow Enforcement Stations	460	300,000	138,000,000
Germany	300	300,000	90,000,000
Belgium	40	300,000	12,000,000
Slovak Republic	70	300,000	21,000,000
Hungary	50	300,000	15,000,000
Back-Office Systems	40	2,500,000	100,000,000
TOTAL			1,098,000,000

9.9. Annex 9: Composition of certification costs for EETS providers

Figure 5: Composition of certification costs for EETS providers



9.10. Annex 10: The road initiatives – the 'big picture'

9.10.1. Introduction

The Road Initiatives, which are all REFIT Initiatives, are fully inscribed in the overall priorities of the Juncker Commission notably under the 'A deeper and fairer Internal Market' and the 'Climate and Energy Union'.

The Communications from the Commission on 'Upgrading the Single Market: more opportunities for people and business' and on 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy' explicitly refer to the Road Initiatives.

The table below presents the link between the Juncker priorities, the Impact Assessments prepared for the Road Initiatives and the related legislative acts.

Priorities	IAs	Legislation
A deeper and fairer Internal Market	Hired vehicles	Directive 2006/1
	Access to the haulage market and to the Profession	Regulation 1071/2009 & 1072/2009
	Social aspects: Driving/rest time, working time and enforcement measures (tachograph), Posting of workers and enforcement measures	Regulation 561/2006 and Regulation 165/2014
		Directive 96/71, Directive 2014/67, Directive 2002/15 and Directive 2006/22
Climate and Energy Union	Access to the market of buses and coaches	Regulation 1073/2009
	Eurovignette	Directive 1999/62
	European Electronic Toll Service (EETS)	Directive 2004/52
Commission decision 2009/750		

Moreover, the transport strategy of the Commission as laid down in the White Paper "Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system" adopted on 28 March 2011, included references to the road initiatives⁷⁶.

9.10.2. The EU road transport market

Road transport is the most prominent mode of transport. In 2014, almost three quarters (72%) of all inland freight transport activities in the EU were by road. On the passenger side, the relative importance of road as mode of transport is even greater: on land, road accounts for more than 90% of all passenger-kilometres: 83% for passenger cars and almost 9% for buses and coaches.

Almost half of the 10.6 million people employed in the transport and storage sector in the EU are active in carrying goods or passengers by road. Road freight transport services for hire and reward employs around 3 million people, while the road passenger transport

⁷⁶ More specifically in the Annex under points 6, 11 and 39

sector (buses, coaches and taxis) adds another 2 million employed persons (a third of which are taxi drivers). This corresponds to more than 2.2% of total employment in the economy and does not include own account transport which in road freight transport alone provides employment for 500,000 to 1 million additional people.

There are about 600,000 companies in the EU whose main business is the provision of road freight transport services for hire and reward. Every year, they generate a total turnover of roughly €300 billion, around a third of which is value added by the sector (the rest being spent on goods and services from other sectors of the economy). The provision of road freight transport services for hire and reward is hence an important economic sector in its own right, generating almost 1% of GDP.

In road passenger transport, there are about 50,000 (mostly) bus and coach operators (of which 12,000 provide urban and suburban services, (some including tram and underground)) and around 290,000 taxi companies in the EU. Together, they generate a turnover of €110 billion. Without taxis, total turnover of the sector is around €90 billion per year, of which some €50 billion is value added.

9.10.3. Why is there a need for action?

Road transport is for a large part international (around 34%⁷⁷) and this share is increasing, which explains the need for a common EU legal framework to ensure efficient, fair and sustainable road transport. The framework covers the following aspects:

- Internal market rules governing access for operators to the markets of freight and passengers
- Social rules on driving/rest time and working time to ensure road safety and respect of working conditions and fair competition
- Rules implementing the user and polluter pays principles in the context of road charging
- Digital technologies to enable interoperable tolling services in the EU and to enforcement EU rules (e.g. the tachograph)

It is clear that current rules are no longer fit for purpose. Member States are increasingly adopting own national rules to fight "social dumping" while acknowledging that their actions have adverse effects on the internal market. Moreover, public consultations have shown a strong support for EU action to solve current issues in road transport. For example:

- Severe competition in the road transport sector has led many operators to establish in low-wage countries without necessarily having any business activity in these countries. There is a lack a clear criteria and enforcement mechanisms to ensure that such establishment practises are genuine, and that there is a level playing for operators.

⁷⁷ Statistical Pocketbook 2016, EU Transport in figures

- Measures on Posting of Workers implemented in 4 Member States (DE, FR, AT and IT) are all different and obviously from other Member States which have not implemented any measure to implement the minimum wage to road transport on their territory. Stakeholders ask for a common set of (simplified) enforcement rules.
- CO2 emissions from road transport represent a large share of total emission and the share is set to rise in the absence of common action (at EU 28 level), which is needed to contribute substantially to the commitment under the Paris Agreement and to the 2030 goals.
- Due to the increasingly more and more hyper-mobile nature of the sector, there is a need for common and enforceable rules for workers. All workers should benefit from the same level of protection in all Member States to avoid social dumping and unfair competition between hauliers. This is currently not the case.

9.10.4. What are the main problems?

The Internal market for road transport is not complete. It is our assessment that the current situation does not allow to exploit the full potential of transport services

- e.g. current rules on bus/coach services or the rules on hired vehicles are still very restrictive. Some Member States have decided to unilaterally open their market, which has led to a fragmentation of the EU internal market.

Many rules are unclear, therefore leading to different level of implementation by Member States and problems of enforcement:

- e.g. on cabotage where all stakeholders agree that current rules are unenforceable

There are allegations of 'social dumping' and unfair competition in the road transport sector. This has led to a division between East and West in Europe. As a consequence, several Member States have decided to take national measures, which might jeopardize the unity of the EU market for road transport:

- E.g. minimum wage rules in DE, FR, IT and AT coupled with disproportionate administrative requirements ; prohibition of drivers taking the weekly rest in the cabin of vehicles in FR and BE

Environmentally, we have made good progress on reducing pollutants from Heavy Good Vehicles but our legal framework currently does not address the issue of climate change (CO2). At the same time, the infrastructure quality is degrading in the EU despite that fact that user charges and tolls are levied on most TEN-T and motorways.

Electronic tolling systems in the EU are, despite the primary objective of the EU legislation of "one contract/one on-board unit/one invoice" for the users, far being interoperable. More generally, the benefits of digitalisation are still under-exploited in road transport, in particular to improve control of EU legislation (e.g. many Member States do not currently the use of electronic waybills).

9.10.5. Options and main impacts

To achieve these objectives, all IAs will consider a range of different options, which ultimately should improve the efficiency, fairness and sustainability of road transport.

The IA on Hired Vehicles will assess options aiming at removing outdated restrictions on the use of hired goods vehicles and thus at opening up new possibilities for operators and leasing/hiring companies alike. More flexibility for the hiring of vehicles should lead to more efficient operations, higher productivity and less negative environmental impacts as fleet renewal will be promoted.

The IA on Access to the haulage market and to the Profession will study various options to ensure effective and consistent monitoring and enforcement of the existing rules in Member States and to ensure coherent interpretation and application of the rules. Three broad groups of potential measures will be assessed, namely measures liable to improve enforcement, measures ensuring simplification and clarification of current rules and measures reinforcing the cooperation between Member States.

The IA on Access to the market of buses and coaches will assess options aiming at improving the performance of coach and bus services vis-a-vis other transport modes, especially private car and further developing the internal market for coach and bus services. This should lead to a reduction of the adverse environmental and climate effects connected with mobility. Various policy options will be considered for creating more uniform business conditions and also a level playing field for access to terminals.

The IA on Social aspects of road transport will study options aiming at ensuring the effectiveness of the original system put in place and therefore contributing to the original policy objectives, i.e.: (1) to ensure a level playing field for drivers and operators, (2) to improve and harmonise working conditions and (3) to improve the road safety level. An additional objective, in the context of the implementation and enforcement of the provisions on posting of workers, is to ensure the right balance between the freedom to provide cross-border transport services and the protection of the rights of highly mobile road transport workers. In this perspective, three broad groups of measures will be analysed: 1. Simplification, update and clarification of existing rules, 2. More efficient enforcement and cooperation between Member States and 3. Improved working conditions of drivers and fair competition between operators.

The IA on the Eurovignette will assess options to promote financially and environmentally sustainable and socially equitable (road) transport through wider application of the 'user pays' and 'polluter pays' principles. A number of different measures and their variants aiming at correcting price signals in freight and passenger transport will be considered in order to address the issues identified. The policy options range from minimum adjustments to the Directive required for improving its coherence and addressing all policy objectives, through the promotion of low carbon (fuel efficient) vehicles and the phasing out of time-based charging schemes (vignettes) for trucks to the optimisation of tolls for all vehicles.

The IA on EETS (European Electronic Tolling Service) will study options aiming at reducing the cost and the burden linked to the collection of the electronic tolls in the EU – for the users and for the society at large. It will equally seek to improve the framework conditions for the faster and more widely provision of an interoperable European Electronic Toll Service. Different policy options will be considered, including a non-legislative approach (facilitating exchange of best practice, co-financing EETS-related projects) and a legislative review.

These policy options and their impacts will be presented and assessed in detail in the respective IAs.

9.10.6. Expected synergies of the package

The different initiatives constitute a coherent set of measures which will jointly contribute to an efficient, environmentally and socially sustainable road transport sector. It is expected that the impacts will be more than the addition of the impacts of each initiative, meaning that the initiatives are complementary. Some examples of such synergies are provided below.

- Current restrictions on cabotage are unclear and therefore lead to illegal cabotage. These illegal activities are closely linked with the fact that transport operators established in low-wage countries exert unfair competition via 'social dumping' and not respecting the rights of workers, who often are staying in their trucks abroad for longer periods. This illustrates the clear link connection between compliance of internal market rules and social/fair competition aspects of road transport, which are all addressed by the road initiatives and which cannot be dealt with separately.
- When assessing the laws applying a national minimum wage to road transport, Member States explained the Commission that one of the reasons for adopting these national measures is to fight the phenomenon of fake establishments and “letter box” companies in low-wage countries. Tackling the issue of posting of workers in road transport goes therefore hand in hand with the issue establishment of road hauliers transport operators, which again illustrates the link connection between internal market and social aspects of road transport.
- Promoting interoperability of electronic tolls systems will lead to lowering the implementation costs of such systems by Member States. We can expect that this will incentivise Member States to put in place distance-based tolls, which better reflect the user and polluter pays principles use of infrastructure. This shows the close link between the Eurovignette and EETS initiatives.
- Seeking to improve the performance of coach and bus services vis-a-vis other transport modes will inevitably lead discussion on a level playing between road and rail services. Current EU legislation provides that rail users shall pay for the use of infrastructure, while it is not currently the case for buses and coaches which are outside the scope of the Eurovignette directive. The inclusion of buses and coaches in the Eurovignette initiative to ensure that they pay a fair price for using the road infrastructure is therefore essential and will ensure endure overall coherence.
- The initiatives on hired vehicles is in particular related to the initiatives on the access to the market and to the profession, all having the aim of establishing clear and common rules for a well-functioning and efficient Internal Market for road haulage : some of them by ensuring a good functioning of the market of transport services, others by ensuring the best use of the fleet of vehicles.

9.11. Annex 11: Impacts on SMEs

This annex contains the results of the SME Test as defined in Toolbox 19 to the Better Regulation Guidelines.⁷⁸

9.11.1. Consultation that captures the SME angle

The main SME category affected by the initiative being road haulage companies, many consultation questions were designed to inquire in first place about the impact of EETS, and of the possible revision of the EETS legal framework, on the costs and burden of road hauliers.

In the framework of preparation of the IA support study, the consultants interviewed several hauliers. Organisations representing road transport companies at EU level (IRU, UETR) were involved in all public consultation activities and recommended to share the questionnaires with their interested members.

Given the relatively small size of the market, it was not judged appropriate or proportionate to organise any specific consultation actions targeting SMEs such as round table discussions, focus group meetings, SME Panels, etc. In addition, the highly technical character of the legislation would make it difficult for SMEs not directly involved in the electronic toll collection market to usefully comment on specific aspects of the problem and on the envisaged measures.

Given the fact that certain EETS providers and toll service providers can be considered as SMEs, the Commission accepted all requests for meetings from them. Individual meetings were held at their request with companies such as Axxès, WAG, Tolltickets.com, etc.

9.11.2. Identification of affected businesses

The EETS Decision specifies the main categories of actors participating in and affected by the EETS: Member States, toll chargers, road users and EETS providers. To this list should be added two additional categories, namely the operators of ETC systems ('hybrid operators', both managing the central system and collecting individual tolls) and non-EETS-registered toll service providers.

Member States are not enterprises, and should therefore not be considered in this analysis.

Apart from exceptional situations, **toll chargers** are either public administrations (and hence not enterprises) or large companies which cannot be considered as SMEs.

Operators of ETC systems are typically *ad hoc* joint ventures of big international companies (e.g. Satellic being a joint venture between T-Systems and STRABAG) or subsidiaries of large companies (e.g. Kapsch).

EETS providers and toll service providers are typically relatively small organisations, some of which could be considered as SMEs, despite having a huge turnover (due to their very specific role of collecting tolls on behalf of the toll charger). For this reason, the Commission paid particular attention to giving these smaller companies an opportunity to

⁷⁸ http://ec.europa.eu/smart-regulation/guidelines/tool_19_en.htm.

express their views and positions (see section 9.11.1). It must be said however that most of the EETS- and toll service providers are in fact subsidiaries of larger (sometimes very large) organisations. A few examples: Axxès is a subsidiary of the Vinci group, while Autostrade per l'Italia is the owner of Telepass. Shell and Total belong to oil companies. Only a few companies, such as the EETS provider Eurowag, can potentially pretend to the calling of SMEs.

Hence, apart from specific exceptions, the only real SMEs in the picture are **commercial road users – road hauliers as well as bus and coach operators**. Indeed, 97% of them are, according to Eurostat data, SMEs.

9.11.3. Measurement of the impact on SMEs

It appears from the impact assessment that, under all policy options, foreseen additional costs and regulatory burden are borne by the toll chargers (hence large companies), while all costs reductions and reduction of regulatory burden benefit road users (hence SMEs).

More specifically, **the net positive economic cumulative impacts on hauliers (to a predominant extent SMEs) amount to 92.5 € million in PO1, 300.9 € million in PO2 and 347.3 € million in PO3.**

The nature of the impacts is largely the same for small and big haulage companies. The smallest hauliers are however likely to benefit most from the standardisation of forms for registering road users to a toll domain, which is reported today as an important source of administrative burden. Hence, PO2 is likely to slightly increase the competitiveness of small and micro enterprises compared to larger companies.

9.11.4. Assessment of alternative options and mitigating measures

None of the policy options increases the costs and regulatory burden for SMEs. Hence, no alternative options or mitigating measures are necessary to be considered.

9.12. Annex 12: Electronic toll collection market in the EU

Figure 6 and Figure 7 present network-wide road charging systems currently in place in the EU. Only some of these systems are within the scope of the EETS legislation. Table 33 lists the currently operational network wide systems as well as some of the most important tolling schemes applying on a single piece of infrastructure (bridge or tunnel).

Table 33: Electronic toll collection systems in the EU+Norway, by type of scheme

Type of scheme	Country
Free-flow GNSS	Belgium, Germany, Hungary, Slovakia
Free-flow DSRC	Poland*, Portugal*, Czech Republic, Austria, UK (Dartford Crossing)
DSRC with barriers	France, Italy, Spain, Portugal*, Poland*, Croatia, Greece, Ireland, Norway, Denmark (Øresund and Storebælt)

*In Poland and in Portugal the collection of the toll is free flow on parts of the network, DSRC with barriers on other, and manual-only (Poland) still on others.

According to data from ASECAP⁷⁹ (which does not include figures for a large part of the Polish and Portuguese tolled network and Belgium; it includes figures for Russia and Morocco), a total of €28 billion are collected annually in tolls in the EU. The total number of ETC subscribers reaches 30.5 million.

There are currently 8 registered EETS providers in the EU. Seven are active and one – AGES – abandoned EETS activities. They are listed in Table 34 below.

Table 34: List of EETS providers by country of registration

Member State of registration	EETS provider
Czech Republic	Eurowag
Denmark	Brobizz
France	Axxès, Total, Eurotoll
Germany	AGES, T-Systems
Italy	Telepass

⁷⁹ <http://asecap.com/members-statistics.html>.

Figure 6: Map of road user charging schemes applicable to HGVs in the EU.

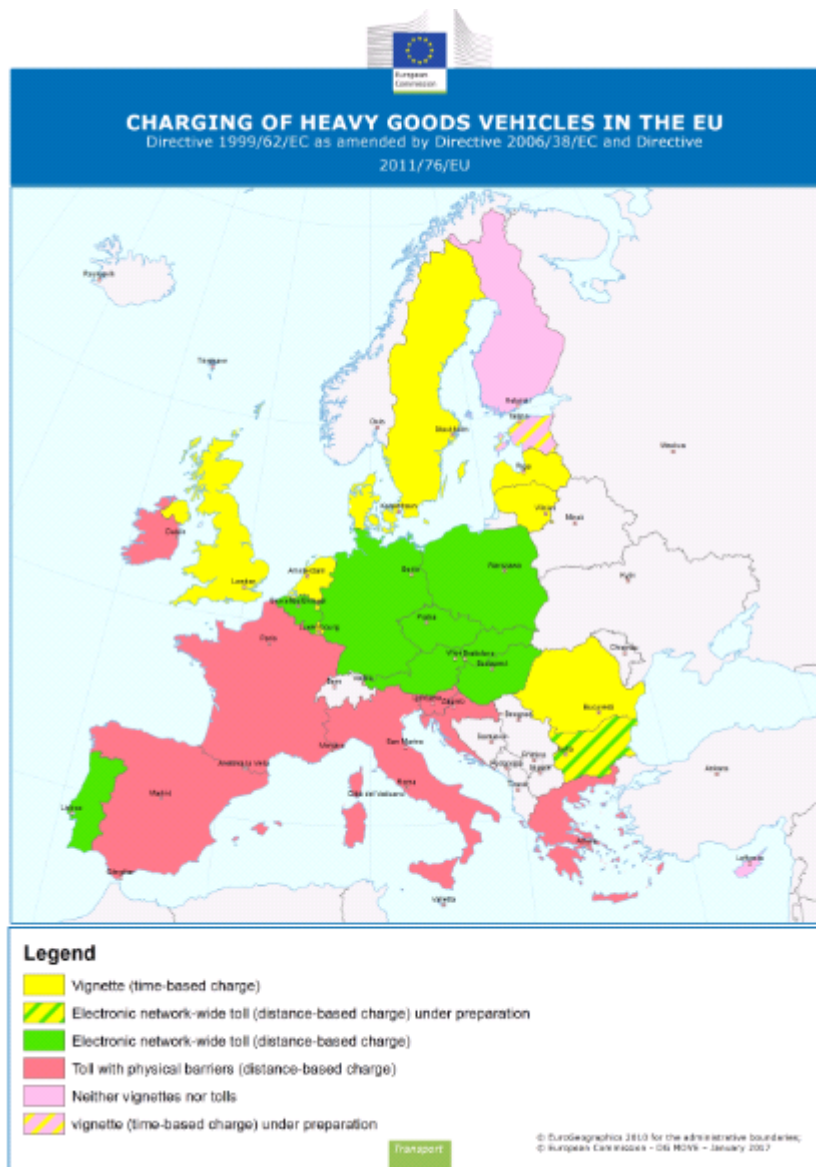


Figure 7: Map of road user charging schemes applicable to cars in the EU.

