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REPORT N. ERA-REP-155 OF THE EUROPEAN UNION AGENCY FOR RAILWAYS

on

Application of NOI TSI to existing wagons

17th January 2018

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1. Introduction

1.1. Background to the assignment

The European Union Agency for Railways (ERA) set up a task force to deal with the application of NOI TSI to existing wagons.

Interoperability Directive 2008/57/EC mandated the application of TSIs to new, upgraded or renewed subsystems. This situation has changed on 15th June 2016 with the entry into force of the recast Interoperability Directive (Directive (EU) 2016/797). The recast Interoperability Directive allows the application of TSIs to existing equipment (in accordance with its Article 4 'Content of TSIs', points 3(f) *'In particular, it is necessary to specify the stages to be completed, taking into account the estimated costs and benefits and the expected repercussions for the stakeholders affected in order to make a gradual transition from the existing situation to the final situation in which compliance with the TSI shall be the norm'* and 3(h) *'indicate the provisions applicable to the existing subsystems and vehicles [...]'*).

The objective of this task force was to prepare the work of the working party for the revision of NOI TSI set up in accordance with the Delegated Act referred to in Article 5(1) of the recast Interoperability Directive (Commission Delegated Decision (EU) 2017/1474 of 8 June 2017) and the corresponding request from the European Commission to ERA in accordance with Article 5(2) of the recast Interoperability Directive. The working party will take this report as a basis for its work. Further information on the legal basis is available in section 4.7.

The setting up of the task force followed the Advice ERA/ADV/2015-8 of the European Railway Agency for European Commission regarding Revision of NOI TSI issued on 3rd February 2016 as well as the Commission Staff Working Document SWD(2015) 300 final issued on 22nd December 2015.

1.2. Contents of this report

This report is the deliverable of the task force as well as of the subsequent 2 workshops on quieter routes. It will be used by a working party as a basis for its work on the revision of NOI TSI. As far as the content of the report is concerned, it details the composition of the task force and the subsequent 2 workshops on quieter routes and focuses on the topics dealt with during the meetings. It also lists the conclusions reached when discussing these topics and the positions on the most important ones.

2. Workgroups

2.1. Composition of the task force

The invitation to participate to the Task Force for the application of NOI TSI to existing wagons was sent to the 12 representative bodies and to the 26 national safety authorities. From other organisations, OTIF, FEMFM and T & E were also invited to participate given their area of expertise and interest. Based on this invitation, ERA received nominations of the interested stakeholders.




Five task force meetings were organised, to which participants came from 4 representative bodies, 12 national safety authorities, OTIF Secretariat and FEMFM.

The European Commission participated to all meetings of the task force.

2.2. Task Force meetings participation

The table 1 below summarises the attendance of all representative bodies, NSAs and organisations which replied to the ERA's invitation and appointed their representatives to the task force.

Table 1 : Task force meetings participants

Organisation	Kick-off meeting 03/05/2016	Meeting N°2 07/06/2016	Meeting N°3 06/10/2016	Meeting N°4 15/11/2016	Meeting N°5 08/03/2017 09/03/2017
CER	Y	Y	Y	Y	Y
EIM 	Y	Y	Y		Y
ERFA 	Y	Y	Y	Y	Y
FEMFM 	Y	Y	Y	Y	Y
NB-Rail AISBL					
NSA AT			Y	Y	
NSA CH	Y	Y	Y	Y	Y
NSA CZ					Y
NSA DE	Y	Y	Y	Y	Y
NSA DK	Y	Y			
NSA EE					
NSA FI	Y	Y	Y	Y	Y
NSA FR	Y	Y	Y	Y	Y
NSA NL	Y	Y		Y	Y
NSA PL			Y	Y	Y
NSA RO	Y				
NSA SE	Y	Y	Y	Y	Y
NSA UK	Y	Y	Y	Y	

<i>Organisation</i>	<i>Kick-off meeting 03/05/2016</i>	<i>Meeting N°2 07/06/2016</i>	<i>Meeting N°3 06/10/2016</i>	<i>Meeting N°4 15/11/2016</i>	<i>Meeting N°5 08/03/2017 09/03/2017</i>
OTIF Secretariat	Y		Y	Y	Y
T & E					
UIP	Y	Y	Y	Y	Y

2.3. Workshop on quieter routes

As a follow-up activity of the task force, ERA organised a workshop dedicated to the ‘quieter routes’ implementation strategy defined in point 4.2.2.

Two workshop sessions were organised, to which participants came from 3 representative bodies, 9 national safety authorities and OTIF Secretariat. The European Commission participated to both sessions of the workshop.

The table 2 below summarises the attendance to this workshop.

Table 2 : ‘Quieter routes’ workshop participants

<i>Organisation</i>	<i>‘Quieter routes’ workshop – session 1 20/06/2017</i>	<i>‘Quieter routes’ workshop – session 2 19/09/2017</i>
CER	Y	Y
EIM	Y	Y
ERFA	Y	
FEMFM		
NB-Rail AISBL		
NSA AT	Y	Y
NSA CH	Y	Y
NSA CZ	Y	Y
NSA DE	Y	Y
NSA DK		
NSA EE		
NSA FI	Y	Y
NSA FR	Y	Y
NSA NL		Y
NSA PL	Y	Y
NSA RO		

<i>Organisation</i>	<i>'Quieter routes' workshop – session 1 20/06/2017</i>	<i>'Quieter routes' workshop – session 2 19/09/2017</i>
NSA SE	Y	Y
NSA UK		
OTIF Secretariat		Y
T & E		
UIP		

3. Working methods

Extranet workspace of the project was established at:

<https://extranet.era.europa.eu/TFNOI/SitePages/Home.aspx>.

This workspace gathers all documents of the project and is accessible to task force members and their deputies as well as to all experts involved in other working parties organised by ERA.

4. Main aspects covered

In accordance with its terms of reference, the purpose of the Task Force is to produce a report informing about:

- › Ad-hoc, cost-efficient retrofitting procedures
- › Roles and responsibilities of the players in the retrofitting process
- › Proposed way forward in order to apply NOI TSI to existing wagons

Moreover, the Task Force contributes to the preparation of the draft impact assessment justifying the recommended option(s).

The main points that needed to be discussed in order to accomplish the above mentioned deliverables are detailed in the following paragraphs.

4.1. Concept of compliance with NOI TSI

NOI TSIs applicable to wagons are:

- › Commission Decision 2006/66/EC concerning the technical specification for interoperability relating to the subsystem 'rolling stock — noise' of the trans-European conventional rail system
- › Commission Decision 2011/229/EU concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – noise' of the trans-European conventional rail system
- › Commission Regulation (EU) No 1304/2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' amending Decision 2008/232/EC and repealing Decision 2011/229/EU

For the purposes of this report 'compliance with NOI TSI' means compliance with the 'pass-by' noise requirements of any of the NOI TSIs, as this parameter has the greatest influence on the noise of freight train operations.

Therefore, only technical solutions reducing the pass-by noise are considered in this report. E.g. retrofitting with composite brake blocks does not apply for wagons where cast-iron brake blocks are used for parking brake only.

4.2. Implementation strategy

Existing freight wagons operated on EU railway network are targeted for retrofit, except:

- › Wagons covered by an EC declaration of verification against any of the NOI TSIs.
- › Wagons not verified for conformity against any of the NOI TSIs but already equipped with one of the technical solutions considered in section 4.4 or falling into one of the cases defined in point 4.2.3.
- › Wagons covered by a derogation against any of the NOI TSIs.

The initial proposal of the European Commission was to gradually extend NOI TSI to all wagons authorised to be operated on the EU's railway. Shorter deadlines are to be applied to international wagons (first phase). Following this option, the task force analysed the possibility of defining an international/national wagon either based on its authorisation background or on its actual use. Therefore, different implementation

strategies are considered in points 4.2.1 and 4.2.2. The corresponding deadlines are analysed in section 4.5 for each implementation strategy.

Some NSAs (FI, SE) objected that it must be up to each Member State to set out a deadline on when national wagons should be retrofitted, considering regional differences in for example population, climate and traffic. CER, OTIF Secretariat and UIP objected that the concept of international wagon does not correspond to the way in which wagons are operated. These stakeholders proposed not to classify the wagons that way. As an alternative approach, each Member State could declare 'quieter routes' based on harmonised criteria. Only wagons complying with NOI TSI will be allowed to be operated after a deadline on these quieter routes.

The chosen implementation strategy should be practical and easy to understand. EIM remarked that the chosen implementation strategy must have no effect on the capacity allocation process.

4.2.1. First international wagons, then national

This implementation strategy requires to define 'international wagon'. A first deadline would be applied to international wagons, and subsequently, a second deadline to the national ones.

The target is to apply NOI TSI to all the existing fleet, except those wagons considered in point 4.2.3.

An international wagon can be defined taking into account either its authorisation background or its operation profile:

Definition based on authorisation

An international wagon is a wagon fulfilling any of the points below:

1. It has an EC certificate of verification in accordance with the relevant TSIs, and:
 - › It is covered by an additional authorisation for placing in service, or
(Applies to wagons authorised in one Member State + at least one other Member State)
 - › It has been authorised using the mutual recognition of the first authorisation for placing in service according to point 7.1.2 of WAG TSI, or
(Applies to wagons authorised in one Member State + all other Member States)
 - › It is covered by a specific authorisation permitting international operation
(Applies to wagons operated under bilateral, multilateral or international agreements)
2. It has not an EC certificate of verification; the wagon is operated in accordance with international/bilateral agreements permitting international operation (e.g. RIV).

This definition has the advantage of providing an immediate classification of the wagons; in accordance with point 4.1.11 of the annex of Decision 2007/756/EC, national vehicle registers should contain information on the Member States in which the wagons are authorised. RIV wagons should be registered as such but in practice, not all Member States follow this practice.

CER, UIP, ERFA and OTIF Secretariat objected that most of the wagons (at least 90%) are international in accordance with this definition, although they may be operated in just one Member State, so two deadlines would make little sense, as it would dilute the initial idea in terms of gradual extension.

This definition is supported by NSA DE, which proposed that for international wagons operated on the network of one Member State only, the Member State may decide to categorize this wagon as national, and the keeper should provide evidence that the wagon is operated accordingly. Further work should be carried

out in order to define how the keeper can prove this to the Member State, and the possibility to classify the wagons in accordance to the operation (instead of authorisation background) is opened.

OTIF Secretariat identified legal concerns with this definition, which are further explained in point 4.7.2.

Definition based on actual use of the wagon

An international wagon is any wagon operated on the rail networks of at least two Member States.

The keeper should directly self-declare a wagon as national of a given Member State or international. The keeper may request information on the operation profile of the wagon from the railway undertaking if it deems it necessary. This operation profile may change over time. However, a wagon which was initially declared as national and would then be declared international, needs to comply with NOI TSI requirements for existing international wagons.

In 2014, 47% of the traffic volume (in ton-kms) was national; taking into account that a significant amount of wagons operated at national level may eventually be used for international traffic, and that wagons which are operated only at international level have higher productivity (higher ton-kms) than national wagons, **ERA assumes that 50% of wagons registered in the EU are currently operated in more than one Member State.**

Therefore, this definition and the two deadline approach would better fit to the gradual extension concept as proposed by the European Commission.

The legal concerns identified above by OTIF Secretariat and explained in point 4.7.2 also apply to this definition.

In the framework of 'First international wagons, then national' implementation strategy, this definition is supported by CER, EIM, ERFA, NSA CH, NSA PL, NSA SE and UIP.

Support to this implementation strategy

EIM, NSA CH, NSA DE and NSA NL supported the 'First international wagons, then national' implementation strategy. CER has no common position yet for or against this approach.

4.2.2. NOI TSI compliant wagons on quieter routes

4.2.2.1. Introduction

A 'quieter route' is a part of the network where only wagons complying with NOI TSI can be operated. The target is to apply NOI TSI to all the existing wagon fleet circulating on quieter routes, except those wagons considered in point 4.2.3.

This implementation strategy should link the pass-by noise set out in NOI TSI with the noise immission aspects. It might take into account aspects such as the traffic on the lines, existence of other noise mitigation measures and population density of people living along the railway lines.

In a first approximation, it was proposed to define the quieter routes as those routes above a certain threshold of freight train passages per night. In a second step, it was proposed to exempt some sections of these routes based on noise immission aspects.

The legal services of the European Commission validated the 'quieter routes' implementation strategy as far as the following principles are respected:

- › No staged implementation or transposition period at the level of Member States should be allowed.

- › Exemptions such as low population density or existence of noise barriers should be part of the definition of 'quieter route' and applied equally by all Member States
- › Specific cases are possible only on very strict conditions:
 - › They must be objectively justified
 - › Interoperability must not be undermined (i.e. they must be confined to national situations)
 - › The environmental objective served by the NOI TSI must be reached in a best possible way, so they must be limited in time

Taking into account the position of the European Commission's legal services, the staged approach was no longer possible. Furthermore, the Task force found out that there is not an easy way of measuring the population living along the railway lines. It was agreed that the exemptions based on immission level had to be of an administrative nature.

A possibility is to define a higher level of train passages for quieter routes in NUTS 3 regions with low population density, based on the assumption that in average people in such regions live at a higher distance from the track. The clauses below propose a definition of quieter routes base on this assumption and further explains the methodology to define a quieter route.

4.2.2.2. *Proposed definition of a quieter route*

A 'quieter route' is a route on which the average daily operated freight trains between 22:00 and 6:00 in 2016 were:

- › Equal to or higher than 38, for routes in NUTS 3 regions with a population density in 2016 equal to or lower than 20 persons/km², and
- › Equal to or higher than 12, for all other routes.

The underlined figures are indicative; they should be agreed in the working party for the revision of the TSI Noise.

4.2.2.3. *Methodology to determine a quieter route*

The identification of quieter routes consists of a one-off calculation which requires considerable simplifications. It is assumed that all freight trains are equal to a conventional train, in which all wagons are fitted with cast-iron brake blocks. This conventional train is defined by fixed levels of pass-by noise, speed and length. It is also assumed that the impacted population lives at a conventional (fixed) distance from the railway lines.

An initial proposal to define the conventional train and distance of the people from the railway lines is given below. This proposal must be agreed upon.

- › The pass-by noise of the wagons of the conventional train is proposed to be 91 dB(A). This value is representative of a wagon fitted with cast-iron brake blocks.
- › Conventional train speed: 100 km/h
- › Conventional train length: 300 m
- › The conventional distance of people from a railway line:
 - 75 m for NUTS 3 regions of a population density lower than a figure to be agreed of persons/km²
 - 25 m for the rest of the regions

The noise emission criteria relating to this 'conventional environmental noise situation' should reflect the disturbance during the night, as this is the most dimensioning period from the environmental noise impact

point of view. Moreover, freight traffic is often carried out during night. This calculation will be done under the assumption that there are no noise mitigation measures between the track and the people living nearby (not even house walls or windows).

The result of this one-off calculation is the number of passages of conventional freight trains per night exceeding the noise emission criteria.

This number of passages will be different for routes in NUTS 3 regions of a population density lower than a figure to be agreed of persons/km² and the rest. Both values will be incorporated as reference parameters of the definition of the quieter routes in NOI TSI.

The freight traffic of each route is then compared to the reference values above. If the freight traffic on a route is higher, the route should be quieter. Otherwise, the route should not be made quieter.

The freight traffic on a route is defined as the average operated freight train passages per night in 2016, whereas the night is proposed as 22:00-06:00.

CER has no common position on this approach. EIM considers that the Member States should choose the start of the night while respecting the length of 8 hours as set out in the Environmental Noise Directive .

4.2.2.4. *Follow-up*

The quieter routes defined above should be notified by the Member States to the European Commission, to be included in NOI TSI and, as a second step, in the Register of Infrastructure (RINF).

The quieter routes should be updated with a frequency to be agreed upon in order to take into account changes in freight traffic of the routes as defined in point 4.2.2.2.

It was proposed to update the quieter routes once per year. Several task force members consider that this period is too short. Alternative periods are proposed: once every fifth year (CER, EIM, NSA FR, NSA PL, NSA SE) or at least once every second year (UIP). The main reasons for this are that the infrastructure does not change so often from one year to another, the need to inform the railway undertakings before they apply for allocation of capacity so they can plan their operations, ensure retrofitting of additional wagons, if necessary, and consistency with the update of the Environmental Noise Directive noise maps. No conclusion has been reached yet on the update cycle.

ERA requested from the Task Force members maps of the part of their national railway network on which freight trains are operated showing the average freight train passages per night. Most Task Force members were able to comply with this request.

All Task Force members except EIM, NSA CH, NSA DE, NSA FI, NSA NL and NSA SE expressed their initial support for the 'quieter routes' implementation strategy although many stated that the proposal needs to be further developed and the consequences as lack of interoperability and administrative costs must be further analysed. CER clarifies that it has no common position yet for or against one of the discussed approaches and supports a pragmatic and cost efficient solution.

4.2.3. *Exceptions*

The following possible exceptions from the mandatory compliance of existing wagons with pass-by noise limits of NOI TSI have been identified:

- › Exceptions applicable at EU level:
 - › Wagons for which Article 21(16) of recast Interoperability Directive applies
 - › Wagons manufactured in the European Union being transported and foreseen for operation outside the European Union

- › Wagons, which are either outside the scope of recast Interoperability Directive, WAG TSI or for which the application of WAG TSI is not mandatory (e.g. ‘Schnabel’ wagons, on-track machines, wagons operated on the 1 520 mm track gauge system, wagons for historical use)

As the Legal Services of the European Commission consider that technical or technical-economic exceptions should be limited to Member State level, the exceptions above should be either retained if they are already considered in the current legal framework or made country-specific.

- › Exceptions applicable at Member State level. A Member State may decide to exempt the wagons below in its territory:
 - › Wagons for which there is no industrially available technical solution for retrofitting with LL composite brake blocks (e.g. wagons with small wheels, wagons with 1Bg or 1Bgu cast-iron brake blocks configuration)
 - › Wagons for which there is suitable technical solution for retrofitting with LL composite brake blocks but which is more complex than the 1:1 replacement of cast iron brake blocks (e.g. wagons fitted with tyred wheels, wagons that need to be equipped with wheels complying with EN 13979-1 and a kink valve, S wagons with ‘SS-brake’)
 - › Wagons that will not be operated anymore 1 year after the deadline with a mileage per year equal to or lower to 10,000 km/year (the exact values need to be further discussed). This exception should not apply if the ‘quieter routes’ implementation strategy is retained (these wagons could easily be kept outside the quieter routes)
 - › Wagons which are used for transport of ballast and other construction or maintenance material to and from a site of work as part of the infrastructure construction and maintenance.

The exceptions retained will depend on the technical feasibility (see section 4.4), size of the impacted fleet and the results of the impact assessment. The exceptions should be voluntary: a keeper should always be able to retrofit its wagons, even if they belong to one of the exceptions above.

The list of the relevant wagons for each exception should be provided by the keepers (see section 4.3).

UIP provided the results of a survey carried out among its members. 55 companies responsible for 136 886 wagons replied (21% of wagons in the European Union). 42 of these companies considered that it was not possible to substitute cast iron block with LL composite brake blocks in 3 630 wagons. By 31st December 2022, this number is expected to drop to 2 965.

4.3. Roles and responsibilities of the actors

The actors potentially having a role in this task are:

- › Keepers
- › Owners
- › Railway undertakings
- › Infrastructure managers
- › Notified bodies
- › National safety authorities
- › Member States
- › ERA

Their roles and responsibilities depend on the implementation strategy selected. All possibilities are covered in points 4.3.1 and 4.3.2 below. Additional information regarding the legal basis for the national safety authorities to perform their role is available in point 4.7.3.

4.3.1. First international wagons, then national

The **keeper** should be the **responsible for organising retrofitting** of the wagon. If the keeper is not the owner of the wagon, the keeper may retrofit the wagon in agreement with the owner. The keeper should ensure that all railway undertakings operating the wagon are informed about the wagon compliance with NOI TSI, including the type of brake (LL or K composite brake blocks, disc brakes etc.) and the date of retrofitting.

*Note: CER and NSA FR consider that the **owner** is the ultimate responsible for the retrofitting while UIP deems the **keeper** is the ultimate responsible.*

The **railway undertaking** should ensure **operation with NOI TSI compliant wagons** after the agreed deadline(s) relying on the information provided by the keepers without prejudice to the exceptions defined in point 4.2.3.

The adopted technical solution **should not require the intervention** of a **notified body**. The current NOI TSI already allows this approach in its section 7.2.: *'If, during renewal or upgrading of a wagon, a wagon is being equipped with composite brake blocks and no noise sources are added to the wagon under assessment, then it shall be assumed that the requirements of point 4.2.3 are met without further testing.'* This allowance will be modified in order to take into account the findings of the task force regarding the acoustical effectiveness of the technical solutions (see section 4.4).

Retrofitting considered in this section of NOI TSI do not require to apply for a new authorisation for placing on the market.

The Member States should **follow up** through their national safety authorities or any other relevant Agency/Government department **the progress of retrofitting** of the wagons authorised in their respective Member States.

As an option left to the discretion of each Member State, the operation with NOI TSI compliant wagons after the deadline could be monitored. Monitoring activities are to be defined by each Member State and could range from a performance indication of the freight noise reduction to a continuous surveillance of the rail freight noise in e.g. main stations. Where possible, the Member State may be assisted in this optional role (completely or partly) by the infrastructure manager, provided that the infrastructure manager has the adequate means to ensure the monitoring activity as defined by the Member State. If a Member State decides to perform this role, a common procedure should be agreed in case of detection of irregularities (e.g. wagons not retrofitted after the deadline). In any case, monitoring should not prevent by any means the unrestricted traffic of retrofitted wagons and wagons already compliant with NOI TSI.

An adequate and harmonised **IT tool should be provided** for the Member States and the sector for:

- › **Following up of the retrofitting progress** and
- › **Exchange of information** between the **keeper** and the **railway undertaking**

These two tasks require different characteristics of the IT tool. Following up of the retrofitting progress is an administrative process which does not require a high-performance IT tool. Exchange of information between the keeper and the railway undertaking does require a much higher availability and reliability of the chosen IT tool.

The task force considered the following IT tools:

- › Rolling Stock Reference Databases (RSRD). These databases are mandatory for all wagon keepers (in accordance with basic parameter 4.2.10.2 of TAF TSI), **are managed by keepers** and can be consulted by keepers, railway undertakings, infrastructure managers and national safety authorities. However, **RSRD are not controlled by a national authority**. As explained in

section 2.1 of TAF TSI, these databases are intended for ‘applications for freight services, including information systems (real-time monitoring of freight and trains) [...]’, thus they have a clear operational purpose.

Noise-related data can already be registered as an option (type of brake blocks, date of retrofitting, pass-by noise limit values).

However, there is no single RSRD, as each keeper can have its own RSRD. On the other hand, some keepers may share one RSRD (e.g. RSRD², which manages 140 000 wagons) and an ongoing UIC project called ‘Message Broker’ aims at providing a single interface for all RSRDs. ERFA, NSA FR and UIP support this IT tool. CER supports this tool as far as a single interface is available so there is no need to consult different RSRDs for a rake of wagons.

- › **European Centralised Virtual Vehicle Register (ECVVR)**, which gathers data from National Vehicle Registers (NVR) maintained by the national safety authorities ‘[...] accessible for consultation by authorised representatives from competent authorities and stakeholders’ (Commission Decision 2007/756/EC).

If this IT tool is chosen, the national vehicle registers should be extended in order to add the noise-related data of the wagon.

ECVVR already contains all wagons registered in the European Union. On the other hand, it is currently not intended for operational purposes.

This IT tool is supported by NSA DE and NSA SE.

- › **Ad-hoc IT tool** available on ERA’s website for national safety authorities, railway undertakings and keepers. This solution was not discussed in detail as existing IT tools already cover most of the needs.

The task force agreed that the **keeper should** be the one who **declares** a retrofitting and **provides** the information about it in a database (no document proof that the retrofitting has been performed, no third party checks etc.). The keeper should also provide information on the wagons under its responsibility belonging to the list of agreed exceptions.

In Member States where NDTAC schemes are implemented or funds are provided for retrofitting, further checks may be required by the corresponding NDTAC Regulation or funding programme on top of the declaration required in the paragraph above. These Member States could also set up additional, ad-hoc IT tools to manage the wagons benefitting from funds for retrofitting. In Switzerland, Germany and the Netherlands, a central but open IT tool ‘Silent Wagon Database (SWDB)’ has been built up by the Federal Office of Transport of Switzerland, DB Netz (Germany) and ProRail (The Netherlands) to gather information on wagons benefitting from NDTAC, free of charge.

4.3.2. NOI TSI compliant wagons on quieter routes

The **keeper** remains the **responsible for organising retrofitting** of the wagon. If the keeper is not the owner of the wagon, the keeper may retrofit the wagon in agreement with the owner. The keeper should ensure that all railway undertakings operating the wagon are informed about the wagon compliance with NOI TSI, including the type of brake (LL or K composite brake blocks, disc brakes etc.) and the date of retrofitting.

*Note: CER and NSA FR consider that the **owner** is the ultimate responsible for the retrofitting while UIP deems the **keeper** is the ultimate responsible.*

The **railway undertaking performs the compatibility check** of the train with the route using the maps provided in the revised TSI NOI at a first stage, and via RINF in a second stage. Quieter routes should be available in RINF and NOI TSI and the **railway undertaking should operate with NOI TSI compliant wagons on these routes** after the agreed deadline without prejudice to the exceptions defined in point 4.2.3.

The **quieter routes should be determined** by each **Member State** following the methodologies set out in points 4.2.2.3 and 4.2.2.4. **Member States should notify** these routes to the European Commission for their inclusion in NOI TSI before the agreed application date of the quieter routes.

The **infrastructure manager should make available in RINF the quieter routes** notified by the Member States.

As an option left to the discretion of each Member State, the Member States could monitor the operation with NOI TSI compliant wagons on quieter routes after the deadline. Monitoring activities are to be defined by each Member State and could range from a performance indication of the freight noise reduction to a continuous surveillance of the rail freight noise in e.g. main stations of the quieter routes. Where possible, the Member State may be assisted in this optional role (completely or partly) by the infrastructure manager, provided that the infrastructure manager has the adequate means to ensure the monitoring activity as defined by the Member State. If a Member State decides to perform this role, a common procedure should be agreed in case of detection of irregularities (e.g. wagons not retrofitted after the deadline circulating on a quieter route). In any case, monitoring should not prevent by any means the unrestricted traffic of retrofitted wagons and wagons already compliant with NOI TSI.

As in point 4.3.1, the **keeper should** be the one who **declares** a retrofitting and **provides** the information about it in a database (no document proof that the retrofitting has been performed, no third party checks etc.).

The adopted technical solution **should not require any intervention** from the **notified bodies** as explained in point 4.3.1.

An adequate and harmonised **IT tool should be provided for the following-up of the retrofitting progress and information exchange** between the **keeper** and the **railway undertaking** as in point 4.3.1; ERA shall contribute by facilitating the **creation in RINF of a suitable parameter** to classify the quieter routes by introducing it in the recommendation amending the RINF Decision currently under preparation (e.g. quieter route - yes/no).

4.4. Technical solutions

The following technical solutions have been considered:

- › Composite brake blocks
- › Disc brakes
- › Bogies specifically designed for noise reduction

Technical solutions adopted should be available at an industrial scale such as to allow the retrofitting within the agreed deadlines.

4.4.1. Composite brake blocks

4.4.1.1. Conformity assessment of composite brake blocks' acoustic properties

4.4.1.1.1 LL composite brake blocks

The task force members agree that retrofitting the wagons with LL composite brake blocks was identified as the most cost-effective solution in the existing impact assessment. However, not all LL composite brake blocks are acoustically proven: The two LL composite brake blocks listed in Appendix G of WAG TSI are deemed to comply with NOI TSI and provide a cost effective solution. These LL composite brake blocks were acoustically proven during the EuropeTrain project¹.

¹ <http://europetrain.uic.org/>

4.4.1.1.2 Composite brake blocks assessed in accordance with WAG TSI

Composite brake blocks approved in accordance with the current conformity assessment procedure set out in Regulation (EU) 2015/924 amending WAG TSI should be allowed but additional testing, regarding acoustic levels, shall be defined for these blocks. In this case a validation process should be harmonised in the European Union and included in NOI TSI.

This validation process may consist of an indirect acoustic assessment. Rather than measuring the noise itself, as produced by the combined wheel/rail acoustic roughness, the principle is to measure the acoustic roughness that is produced by a block under test, then combining it with known rail acoustic roughness. This combined roughness is known to be proportional to the noise emitted by the rail/wheel system.

This roughness assessment can be performed either by line or bench tests, in order to provide wheel acoustic roughness data that can be compared to a limit, under which the noise emitted by the wagon would stay under the TSI noise limit. This option would not be limited to a wagon type, thus allowing the testing at brake block level.

Moreover, the acoustic bench test methodology, if achievable, would be more cost effective. Both approaches need to be validated in order to check their efficiency in terms of reliability and reproducibility.

At last, whatever line or bench tests are used as an input to the method, the pass-fail criteria need to be harmonised.

4.4.1.1.3 Historic composite brake blocks

Some composite brake blocks were developed before the TSI/UIC methodology and are used at national level. National safety authorities should make publicly available the list of 'historic' composite brake blocks for national use only.

Wagons equipped with these 'historic' composite brake blocks for national use only shall not be subject to a noise level verification.

4.4.1.2. Composite brake blocks: Safety aspects

Although the safety of composite brake blocks has been proven (since more than 10 years in case of K blocks), there is still some lack of experience regarding their intensive use in some areas of use and under some environmental conditions. Recently, NSA FI and NSA SE reported safety concerns due to lack of brake performance especially in the first brake application at speed between 20 km/h and 50 km/h in lines where there is no frequent braking (e.g. lines with no or smooth slopes) at sub-zero temperature and a safety alert was sent to ERA by NSA FI and NSA SE. NSA FR foresees potential compatibility and systemic issues with track detection systems if the composite brake blocks start to be used at a massive scale.

The national safety authorities should report any safety occurrence from wagons with composite brake blocks to ERA. ERA will collect this information in order to improve the conformity assessment procedure of the composite brake blocks. A specific questionnaire was already sent on 16th December 2016 for this purpose. Results will be reflected in a separate report.

Any additional safety issue detected during the operation of the wagons retrofitted with composite brake blocks requiring an EU action can be reported to ERA via safety alerts (as already done by NSA FI and NSA SE). An additional procedure (Joint Network Secretariat, JNS) can be initiated, if needed. This procedure implies the creation of a task force which can organise the exchange of opinions and, if needed, propose solutions and appropriate actions.

4.4.1.3. Composite brake blocks: Recycling

Recycling composite brake blocks is possible, although they cannot be melted to make new blocks, as it is currently done with the cast-iron brake blocks. Composite brake blocks need to get their metallic particles

removed and the composite material can be used as an additive in asphalt or as an insulation material (e.g. in house construction).

4.4.2. *Disc brakes and new bogie designs*

Fitting a wagon with disc brakes will ensure that the wheel roughness is even lower than with LL composite brake blocks. Therefore, this technology does not need to prove that requirements of NOI TSI are fulfilled and the text of this TSI could be modified in order to accommodate this technical solution. However, it is not possible to make such a retrofit without a conformity assessment procedure against the WAG TSI due to the extent of the modification.

New bogie designs will also need to be assessed against the WAG TSI. Moreover, in some cases they may also be assessed against NOI TSI (e.g. for new bogie designs fitted with cast iron blocks).

4.5. **Setting-up of a deadline for the mandatory retrofitting of existing wagons**

4.5.1. *General considerations*

The capability of the friction elements industry to supply the required composite brake blocks in number and time and the capacity of workshops to perform the works are two constraints which may have an impact on retrofitting costs and the capacity of the sector to comply with deadlines.

In this sense, CER and UIP remark that one major issue observed during LL composite brake block approval was the **effects on equivalent conicity of wheels**. This is a calculated value which is used to assess how vehicles are running on the track. However, as it calls for complex measurements and calculations, experts from the EuropeTrain project advised:

- › If new or reprofiled wheels are used when retrofitting with LL composite brake blocks, the first inspection must be carried out after 100 000 km and thereafter every 50 000 km. This rule also applies when wheel treads have been reprofiled.
- › If LL composite brake blocks are retrofitted on wheels that have not been reprofiled, the first inspection must take place during the retrofitting. The equivalent conicity value or, as an alternative, the flange height must then meet the requirements described above. The next inspection must be carried out after 50 000 km and repeated every 50 000 km.

The figures above could be reconsidered taking into account the experience gained by the use of LL composite brake blocks since the EuropeTrain project. Different sets of deadlines should be considered for each implementation strategy. These are further analysed below.

4.5.2. *Deadlines for 'First international wagons, then national' implementation strategy*

Deadlines should be the same whether the international wagons are defined in accordance to their authorisation or operational background.

The European Commission suggests to set out different deadlines for the mandatory NOI TSI compliance of existing international wagons (first phase - 1st January 2022) and all existing wagons (second phase - 1st January 2026), with a possible extension of the first phase in case of wagons subject to bilateral agreements between neighbouring Member States. If the international/national wagons strategy is chosen, determination of exact dates should be further discussed.

Bilateral agreements can be signed between two bordering Member States in order to allow the circulation of non-NOI TSI compliant wagons between their territories without passing through the territory of any other

Member State. Additional costs may be derived from the necessity for the keeper and the railway undertaking to make a distinction in operation between NOI TSI compliant and non-NOI TSI compliant wagons and the fact that non-NOI TSI compliant wagons will have a significant restriction in their area of use as they will be confined to the Member States where these bilateral agreements apply.

On the other hand, bilateral agreements will help to more equally distribute costs among different years by postponing the deadline for retrofitting of a certain group of wagons operated between two Member States. This would help to concentrate the problem inside the Member States with the highest need for noise mitigation and follow more or less the scenario 3b of the impact assessment with the highest impact by less costs.

4.5.3. *Deadlines for 'NOI TSI compliant wagons on quieter routes' implementation strategy*

No general deadline would be applied to the retrofitting of the wagons. It is proposed that all Member States should notify to the European Commission the quieter routes of their networks 6 months after the entry into force of the revised NOI TSI. NOI TSI will be applicable to the existing wagons circulating on these routes 2 years after the entry into force of the revised TSI.

NSA PL suggested to link the date of application of quieter routes with the date of application of new annual train timetable to avoid starting the process mid-year, where trains are already running on certain routes and according to fixed whole-year timetables. The date of entry into force of the new NOI TSI should be coordinated with the entry into force of other amended legal acts linked with 'quieter routes' implementation strategy.

UIP suggested to complement the deadline above with a deadline for retrofitting all the remaining cast-iron brake blocks braked wagons. The suggested date for this deadline would be 1st January 2030. If this implementation strategy is adopted, bilateral agreements do not apply. EIM, NSA CH and NSA DE supported this complete ban; NSA AT, NSA FI, NSA FR, NSA NL, NSA PL and NSA SE are against this proposal. NSA CZ considers that it is probably not needed.

4.6. Acts to be amended

The application of NOI TSI to the existing wagons will require the amendment of additional legal acts. A summary of the legal acts potentially impacted in each implementation strategy is given below:

Table 3 : Acts to be amended depending per implementation strategy

<i>Legal Act</i>	<i>International/National</i>	<i>Quieter Routes</i>
NOI TSI	Technical solutions for retrofitting (LL blocks) Definition of an international/national wagon Deadlines for the application of NOI TSI to existing wagons Wagons exempted Procedure to validate acoustically a brake block	Technical solutions for retrofitting (LL blocks) Definition of quieter routes and exemptions Deadlines for the Member States to notify the quieter routes and exemptions, a second deadline to make the operation of silent wagons on quieter routes mandatory Wagons exempted Procedure to validate acoustically a brake block

<i>Legal Act</i>	<i>International/National</i>	<i>Quieter Routes</i>
		Possibility to use historic composite brake blocks Maps showing the quieter routes
WAG TSI	Possibility to use historic composite brake blocks	
RINF Decision	Not applicable	New parameter identifying the quieter routes (in a second step, first step are the maps)
OPE TSI	Not applicable	Railway undertakings must operate silent wagons on quieter routes after the agreed deadline. Exceptions in case of degraded operational conditions (redirected traffic etc.) It may be possible to include these provisions in the TSI NOI by making a reference to the TSI OPE (e.g. reference to 4.2.3.6 in case of degraded operations)
ECVVR - NVR	New parameters in EVR/NVR in order to identify the silent wagons New parameters to identify the national/international wagons	New parameters in EVR/NVR in order to identify the silent wagons
TAF TSI - RSRD	Existing optional parameters in the RSRD identifying the type of brake block fitted in the wagon should be made mandatory New parameter to identify the national/international wagons	Existing optional parameters in the RSRD identifying the type of brake block fitted in the wagon should be made mandatory

This list covers the legal acts related to ERA's work. It may be, that other legal acts will need to be modified (e.g. legal acts under the 'umbrella' of Directive 2012/34/EC) in order to cover aspects not yet thoroughly discussed (e.g. what happens if a railway undertaking operates a noisy wagon after the deadline?).

4.7. Legal basis

This section clarifies the legal basis for the application of NOI TSI to existing wagons, the legal implications with international law (OTIF) and the legal justification for the role of the national safety authority in monitoring the progress of retrofitting.

Additional information is provided in this section regarding the relationship between the recast Interoperability Directive and the Environmental Noise Directive.

4.7.1. Applying a TSI to existing rolling stock

The legal basis for the application of a TSI to existing wagons is set out in Article 4(3)(f) of the recast Interoperability Directive *'In particular, it is necessary to specify the stages to be completed, taking into account the estimated costs and benefits and the expected repercussions for the stakeholders affected in order to make a gradual transition from the existing situation to the final situation in which compliance with the TSI shall be the norm'* and 4(3)(h) *'indicate the provisions applicable to the existing subsystems and vehicles [...]'*.

Furthermore, in the recital (22) it is stated: *'In order to ensure the progressive implementation of rail interoperability within the whole of the Union and to gradually reduce the diversity of legacy systems, the TSIs should specify the provisions to be applied in the event of renewal or upgrading of existing subsystems and may include proposals for the staged completion of the target system. However, in order to keep the railway sector competitive and to prevent undue costs, the entry into force of new or amended TSIs should not lead to an immediate adaptation of vehicles and infrastructure to the new specifications'*.

As it is not possible to set out requirements in a TSI leading to an 'immediate adaptation of the vehicles', and taking into account the 'grandfather rights' set out in Art. 54 of the recast Interoperability Directive, any mandatory requirement of a TSI to the existing vehicle fleet should be:

- › Agreed with the stakeholders in the same way as new requirements are integrated in the TSI, and
- › Not immediate, that is, mandatory after a certain reasonable deadline.

4.7.2. Relationship between TSI and COTIF legal framework

Based on the accession agreement between OTIF and the European Union and Article 3a § 3 ATMF, vehicles intended to be used only in Member States of the European Union are regulated by the applicable EU and national legislation. This means that the European Union can impose, for vehicles intended to be used only in the European Union, rules which do not necessarily have to be compatible with ATMF. Such rules should however not hinder vehicles in international traffic coming from non-EU Contracting States when running through the European Union, even when not complying with these EU rules. In other words, if EU rules would require retrofitting of wagons with composite brake blocks, these rules would not automatically apply to wagons coming from non-EU Contracting States.

In this context it is particularly relevant to assess the situation for RIV wagons as this concerns wagons that are generally used in international traffic and have not been assessed for compliance with TSIs or UTPs.

From 8th June 2007 WAG TSI applied, which complemented NOI TSI (Commission Decision 2006/66/EC). From that time, RIV stopped being a basis for vehicle 'homologation' in the European Union, with the possible exceptions of contracts already signed or under final phase of tendering procedure at entry into force of the TSI.

Until 1st January 2011, RIV could, in accordance with ATMF, be used outside the European Union as a basis for the use of wagons for international traffic. After that date all admissions should have followed the provisions of ATMF. In the absence of UTPs, this should have been done in accordance Article 6 § 4 ATMF by applying national technical requirements on a state-by-state basis. This principle would even apply if RIV provisions were used as national technical requirements.

For RIV wagons, the different cases are:

- › In accordance with Directive 2008/57/EC and Article 54(2) of the recast Interoperability Directive, RIV vehicles which were in service before 19th July 2008 have grandfather rights both in the European Union and non-EU OTIF Contracting States and therefore can be used in international traffic;

- › In accordance with ATMF, RIV vehicles which were admitted before 1st January 2011 have grandfather rights in OTIF, which permits the use of these vehicles in international traffic;
- › Vehicles admitted to operation from 1st January 2011 onwards and marked RIV need admission to operation in accordance with Article 6 § 4 ATMF, i.e. complementary admission in each Contracting State.

The analysis described above illustrates that a coordinated approach with OTIF Secretariat is required, which also makes it necessary to assess the consequences of such provisions for non-EU OTIF Contracting States in accordance with Article 7a APTU.

The analysis suggests that also other possibilities for reducing rail freight noise could be explored, in particular those which have an effect at places where the noise problem occurs. In this respect the implementation strategy of 'quieter routes' may be a possible way forward. COTIF Article 6 §2 ATMF would support such implementation strategy: an admission to operation allows the rail transport undertakings to operate a vehicle only on infrastructures compatible with the vehicle according to its specifications and other conditions of the admission; it is the responsibility of the rail transport undertaking to ensure this. In addition, Article 15a ATMF clarifies that the railway undertaking, the infrastructure manager and the keeper must exchange information that will enable the railway undertaking to ascertain that his trains are compatible with the requirements of the infrastructure.

Therefore, 'quieter routes' implementation strategy would be compatible with both EU and COTIF rules for wagons registered in non-EU Contracting States and circulating in the European Union. The amount of such wagons is yet to be determined, but it is deemed to be in the region of 10 000 wagons.

4.7.3. *Legal basis regarding roles and responsibilities of the national safety authorities*

The legal basis for the national safety authorities to ensure the safety of the retrofitted wagons is set out in Article 9(3) of the recast Safety Directive (Directive (EU) 2016/798): *'The safety management system shall contain the following basic elements:*

[...]

(c) procedures to meet existing, new and altered technical and operational standards or other prescriptive conditions as laid down in TSIs...'

Therefore, national safety authorities should supervise that the railway undertakings have and apply procedures in their safety management systems aiming to guarantee the level of safety of the retrofitted wagons, especially bearing in mind that the proposed technical solutions for retrofitting have an impact on safety-related systems such as the braking.

4.7.4. *Environmental Noise Directive*

Environmental Noise Directive (Directive 2002/49/EC) targets the noise to which the European citizens are exposed. It applies to major roads, airports and railway lines, and its objectives are:

- › Achieve a common European approach to avoid, prevent or reduce the effects of exposure to environmental noise harmful for health, which includes annoyance (Art. 1(1)), and
- › Provide a basis for developing Community measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery (Art. 1(2)).

In accordance with the Environmental Noise Directive, noise maps and noise reduction action plans must be created for railway lines with a traffic higher than 30 000 trains/year and agglomerations with more than 100 000 inhabitants (Articles 7 and 8).

Environmental Noise Directive also allows the Member States to define limit values for the noise exposure. 21 Member States have defined so far noise limit values which are legally enforced, and whose transgression should in theory lead to measures to control noise and/or insulate exposed populations, and/or in some Member States, the imposition of penalties on those responsible for the source.

4.7.5. Relationship between NOI TSI, Interoperability Directive and Environmental Noise Directive

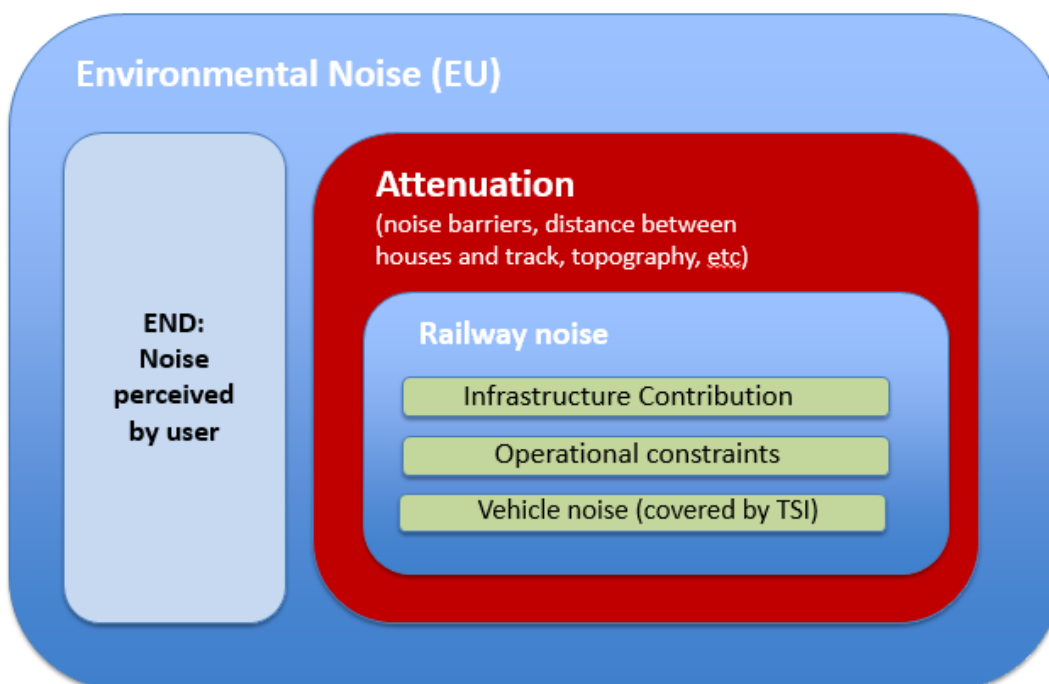
The Treaty on the functioning of the European Union establishes in its Article 191(2) '[...] Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.'

In order to rectify the environmental damage at source:

- › The current NOI TSI facilitates the retrofitting of wagons equipped with cast-iron blocks through composite brake blocks and
- › NOI TSI will apply to the existing wagon fleet.

Relationship between NOI TSI and the Environmental Noise Directive is further explained in Figure 1 below.

Figure 1 : Simplified overview of environmental noise abatement



5. Impact assessment

ERA is working an impact assessment based on the guidelines of the European Commission for impact assessments and considering the EU-28 wide impact. The impact assessment focuses on the most effective measure to tackle railway noise: the retrofitting of wagons' brake blocks. A number of past assessments determined that this is the most cost efficient measure to tackle railway noise. Any financial compensation schemes like NDTAC are not taken into account in the impact assessment, as they do not influence the impact assessment in general (e.g. NDTAC would increase costs at infrastructure manager side but reduce at the same time the costs at railway undertaking side. The resulting delta equals zero).

An alternative measure: construction of railway side noise barriers is analysed in respect of its benefits and costs, but not directly integrated into the B-C analysis, as it would consist of a different policy scenario.

Since the 1 520 mm railway network was exempted from the application of TSI and all options under this impact assessment are realized through amendments to NOI TSI, the 1 520 mm railway networks of Estonia, Latvia, Lithuania, Slovakia and Poland are out of scope of this impact assessment. At the same time, the railway networks of Norway and Switzerland are included, the former falling under the TSI application scope and the latter due to operational impacts on other countries.

The period of analysis is 2016-2035 (20 years), being a standard time frame for this type of impact assessment.

For setting up the baseline, two scenarios are proposed: A conservative one that only considers the extent of retrofitting as of end 2016 and a progressive one, where the progress of retrofitting experienced between 2010 and 2016 is extrapolated up to 2020 and assumed constant afterwards.

The figures on the fleet are estimates by ERA that rely on data based from ECVVR, EUROSTAT, UIC and national safety authorities.

Three options are evaluated, where either a one step or two steps approach to mandating NOI TSI compliance to wagons registered in the European Union is considered.

- › Option 1a: NOI TSI scope is extended to existing wagons and applicable as from 1/1/2022
- › Option 1b: NOI TSI scope is extended to existing wagons and applicable as from 1/1/2026
- › Option 1c: NOI TSI scope is extended to existing wagons and applicable as from 1/1/2030
- › Option 2a: NOI TSI scope is extended to existing wagons and applicable for international wagons as from 1/1/2022 and for all wagons as from 1/1/2026
- › Option 2b: NOI TSI scope is extended to existing wagons and applicable for international wagons as from 1/1/2022 and for all wagons as from 1/1/2028
- › Option 2c: NOI TSI scope is extended to existing wagons and applicable for international wagons as from 1/1/2022 and for all wagons as from 1/1/2030
- › Option 3a: NOI TSI scope is extended to wagons using quieter networks (= AT, DE, NL, CH) as from 1/1/2022
- › Option 3b: NOI TSI scope is extended to wagons using quieter networks (= AT, DE, NL, CH) as from 1/1/2022 and to all networks from 1/1/2030
- › Option 4a: NOI TSI scope is extended to wagons using quieter parts of the networks as from 1/1/2022
- › Option 4b: NOI TSI scope is extended to wagons using quieter parts of the networks as from 1/1/2022 and to all networks as from 1/1/2030

The following impacts are quantified:

- › The (financial) impacts for railway undertakings and wagon keepers resulting from retrofitting and increased maintenance/operating costs
- › The negative impacts for citizens due to modal shift (road has higher externalities than rail)

- › The administrative costs of the regulatory arrangements proposed
- › The positive impacts for citizens due to noise reduction (socio-economic benefits)
- › The positive impacts of reduced spending on acoustic walls
- › The positive impacts of prevented temporary line closures and other restrictions

The CBA was carried out for all options except option 4, which has not yet been sufficiently described. Costs of noise from railway traffic was valued with the WHO burden of disease method, using the latest available EEA noise exposure mapping data. The cost of retrofitting was calculated on the basis of one-off and additional life cycle cost estimates provided by the railway undertakings. The cost of modal shift was estimated while taking into account all types of transport externalities.

The preliminary results indicate that:

- › Relying on the wagon fleet renewal driven purely by market forces (as considered in the baseline) is likely to bring very limited benefits in the years towards 2020 and even more limited beyond. This is because with the renewal rate of 2.5% p.a., the entire fleet will become silent only towards 2050. This has largely negative consequences on the overall railway noise reduction, since the relationship between the share of noisy wagons and the noise reduction is not proportionate (linear).
- › One-off cost is comparable to yearly additional maintenance costs, thus public funding for brake blocks retrofitting could have limited stimulating effects.
- › Removal of 'noisy' wagons from operation would lead to societal health benefits, estimated as at least 4 billion EUR per year.
- › At the level of Union and from purely economic perspective, all regulatory options result in a B/C ratio higher than 1. Typically, the later the ban year, the higher is the B/C ratio. Options considering a phased application of NOI TSI requirements on existing wagons (international>national; quieter networks>all networks) have a relatively higher B/C ratio. Among the options analysed, the option 3b seems to be the most cost efficient.

Use of public funds for stimulating brake blocks retrofitting is much more efficient compared to their use for constructing noise barriers and similar constructions.

The financial impact of freight wagons retrofitting on railway sector is significant. This in particular in Member States with a high share of "noisy" wagons which necessitate additional modifications as part of retrofitting.

A Member State-specific cost benefit analysis (CBA) will be carried out together with Poland, Sweden and Finland in order to assess and understand the impacts at the national level more thoroughly.

The draft impact assessment will be further developed to notably assess efficiency of the 'quieter routes' implementation strategy.

6. Conclusions and next steps

The Task Force for the application of NOI TSI to existing wagons discussed the following elements:

- › Concept of compliance with NOI TSI
- › Wagons/infrastructure targeted and possible exceptions
- › Roles and responsibilities of the actors
- › Technical solutions
- › Deadlines
- › Acts to be amended
- › Legal basis
- › Impact assessment

The workshops on quieter routes discussed in detail the 'quieter routes' implementation strategy.

This report will be used by a working party, which will be convened by ERA to prepare the revision of NOI TSI with the view of its application to existing wagons. The working party will develop its work based also on the request from the European Commission to ERA in accordance with Article 5(2) of the recast Interoperability Directive in line with the delegated act on TSIs referred to in Article 5(1) of the recast Interoperability Directive (Commission Delegated Decision (EU) 2017/1474 of 8 June 2017). The working party will consider specific cases if required and justified by national safety authorities as well.

ERA foresees a maximum of 3 working party meetings in order to issue a recommendation to the European Commission by April 2018. A fourth meeting in the beginning of 2018 is reserved for drafting the Application Guide.

Taking into account that this recommendation will be submitted to consultation of social partners and rail freight customers and passengers (3 months) before sending it to the European Commission, the working party should produce a stable draft of the TSI by end of 2017.

Taking into account the tight deadlines, it is decided to focus on one implementation strategy only. The selected implementation strategy is 'quieter routes'.

Annex 1: Definitions and abbreviations**Definitions***Table 4 : Table of definitions*

<i>Definition</i>	<i>Description</i>
APTU	Uniform rules concerning the validation of technical standards and Adoption of uniform Technical Prescriptions applicable to railway material intended to be used in international traffic
ATMF	Uniform Rules concerning the Technical Admission of Railway Material used in International Traffic
NOI TSI	Technical specification for interoperability relating to the subsystem 'rolling stock — noise'
TAF TSI	Technical specification for interoperability relating to the telematics applications for freight subsystem
WAG TSI	Technical specification for interoperability relating to the 'rolling stock — freight wagons' subsystem of the rail system in the European Union

Abbreviations*Table 5 : Table of abbreviations*

<i>Abbreviation</i>	<i>Description</i>
ADV	Advice
AT	Austria
B / C	Benefit / Cost
CER	Community of European Railway and Infrastructure Companies
CH	Switzerland
CZ	Czechia
DE	Germany
EC	European Community
ECVVR	European Centralised Virtual Vehicle Register
EE	Estonia
EIM	European Rail Infrastructure Managers
ERA	European Railway Agency / European Union Agency for Railways
ERFA	European Rail Freight Association
EU	European Union

FEMFM	Federation of European Manufacturers of Friction Materials
FI	Finland
FR	France
IA	Impact Assessment
IT	Information technology
NB-Rail AISBL	Notified Bodies Association
NDTAC	Noise Differentiated Track Access Charges
NSA	National Safety Authority
NVR	National Vehicle Register
OTIF	Intergovernmental Organisation for International Carriage by Rail
PL	Poland
PPL	Project Plan
RINF	Register of Infrastructure
RIV	Regolamento Internazionale Veicoli
RO	Romania
RSRD	Rolling Stock Reference Database
SE	Sweden
SMS	Safety Management System
SWD	Commission Staff Working Document
T & E	Transport & Environment
TSI	Technical specification for interoperability
UIC	International Union of Railways
UIP	International Union of Wagon Keepers
UK	United Kingdom
UTP	Uniform Technical Prescription

Annex 3: Reference documents*Table 6 : Table of reference documents*

<i>N°</i>	<i>Title</i>	<i>Reference</i>	<i>Version</i>
[1]	Commission Staff Working Document on Rail freight noise reduction	SWD(2015) 300 final	
[2]	Commission Staff Working Document - Impact Assessment - Accompanying the document on Reduction on railway noise		
[3]	Advice of the European Railway Agency for European Commission regarding Revision of NOI TSI	ERA/ADV/2015-8	
[4]	Convention concerning International Carriage by Rail	COTIF	

Annex 4: Reference legislation*Table 7 : Table of reference legislation*

<i>N°</i>	<i>Title</i>	<i>Reference</i>	<i>Version</i>
[1]	Regulation (EU) 2016/796 of the European Parliament and of the Council on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004	2016/796	
[2]	Regulation (EC) No 881/2014 of the European Parliament and of the Council establishing a European railway agency	881/2004	
[3]	Directive (EU) 2016/797 of the European Parliament and of the Council on the interoperability of the rail system within the European Union	2016/797	
[4]	Directive 2008/57/EC of the European Parliament and of the Council on the interoperability of the rail system within the Community	2008/57/EC	
[5]	Directive (EU) 2016/798 on railway safety	2016/798	
[6]	Commission Regulation (EU) No 1304/2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' amending Decision 2008/232/EC and repealing Decision 2011/229/EU	1304/2014	
[7]	Commission Decision 2011/229/EU concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – noise' of the trans-European conventional rail system	2011/229/EU	
[8]	Commission Decision 2006/66/EC concerning the technical specification for interoperability relating to the subsystem 'rolling stock — noise' of the trans-European conventional rail system	2006/66/EC	
[9]	Commission Regulation (EU) No 321/2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union and repealing Decision 2006/861/EC	321/2013	
[10]	Commission Decision 2007/756/EC adopting a common specification of the national vehicle register provided for under Articles 14(4) and (5) of Directives 96/48/EC and 2001/16/EC	2007/756/EC	
[11]	Commission Implementing Decision 2014/880/EU on the common specifications of the register of	2014/880/EU	

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	railway infrastructure and repealing Implementing Decision 2011/633/EU		
[12]	Directive 2002/49/EC of the European Parliament and of the Council relating to the assessment of environmental noise	2002/49/EC	