7 Seven Steps on the Way to Low-Noise Rail Freight Traffic

Allianz pro Schiene

Seven Steps on the Way to Low-Noise Rail Freight Traffic

"Noise is disruptive and a risk to health".

And:

"Climate protection and greater energy efficiency in transport are urgent tasks going forward".

Both are right. Rail freight transport is at once part of the problem and also part of the solution.

Shifting transport to rail is a key measure for meeting climate protection targets in Germany and Europe. This is because rail transport is considerably more environmentally friendly and has less impact on the climate than the competing modes of motorised transport. At the same time, noise abatement and acceptance by the general public are preconditions for the increase in train usage that climate policies want to achieve.

Therefore, in order to ensure that freight rail services can in future develop in the best possible way to protect the climate, increase people's quality of life and be an asset to the German economy, rail freight traffic must become noticeably quieter.

As a consequence, both the parties in the German coalition government have agreed to strengthen and expand rail transport ("We want to continue to strengthen and expand the rail transport mode") as well as to cut by half the level of noise emitted by the railways between 2008 and 2020 ("We want to cut rail noise by half by 2020").

What can politicians do to balance both of the goals set out in the coalition agreement? Which measures can the railway sector take of its own accord to achieve lower noise levels more quickly? What does the public expect from politicians and the railway industry? These are the questions that the Allianz pro Schiene (German Pro-Rail Alliance) has addressed as part of its 'Platform for Low-Noise Railways' project, which was part-funded by the German Federal Environment Agency.

The advisory and supervisory group was permanently involved in the discussions between May 2014 and January 2016:

- rail sector organisations: Verband der Bahnindustrie in Deutschland (VDB) (German Railway Industry Association); Verband Deutscher Verkehrsunternehmen (VDV) (Association of German Transport Companies); Verband der Güterwagenhalter in Deutschland (VPI) (Association of German Freight Wagon Operators)
- the companies: Deutsche Bahn AG and Schrey & Veit GmbH
- representatives of civil society: Arbeitsring Lärm der DEGA, (German Acoustical Society); Bund für Umwelt und Naturschutz Deutschland e.V. (BUND) (Friends of the Earth Germany); Bundesvereinigung gegen Schienenlärm e.V. (noise pressure group: Association against rail noise); the EVG Eisenbahn- und Verkehrsgewerkschaft (Railway Union); Verkehrsclub Deutschland e.V. (VCD) (Transport Club Germany).

The following were invited as guests to enrich the debate:

- Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB) (Federal Ministry the Environment, Nature Conservation, Building and Nuclear Safety),
- Bundesministerium für Verkehr und digitale Infrastruktur (BMVI) (Federal Ministry of Transport and Digital Infrastructure),
- Eisenbahn-Bundesamt (EBA) (the Federal Railway Authority) and
- Umweltbundesamt (UBA) (the Federal Environment Agency).

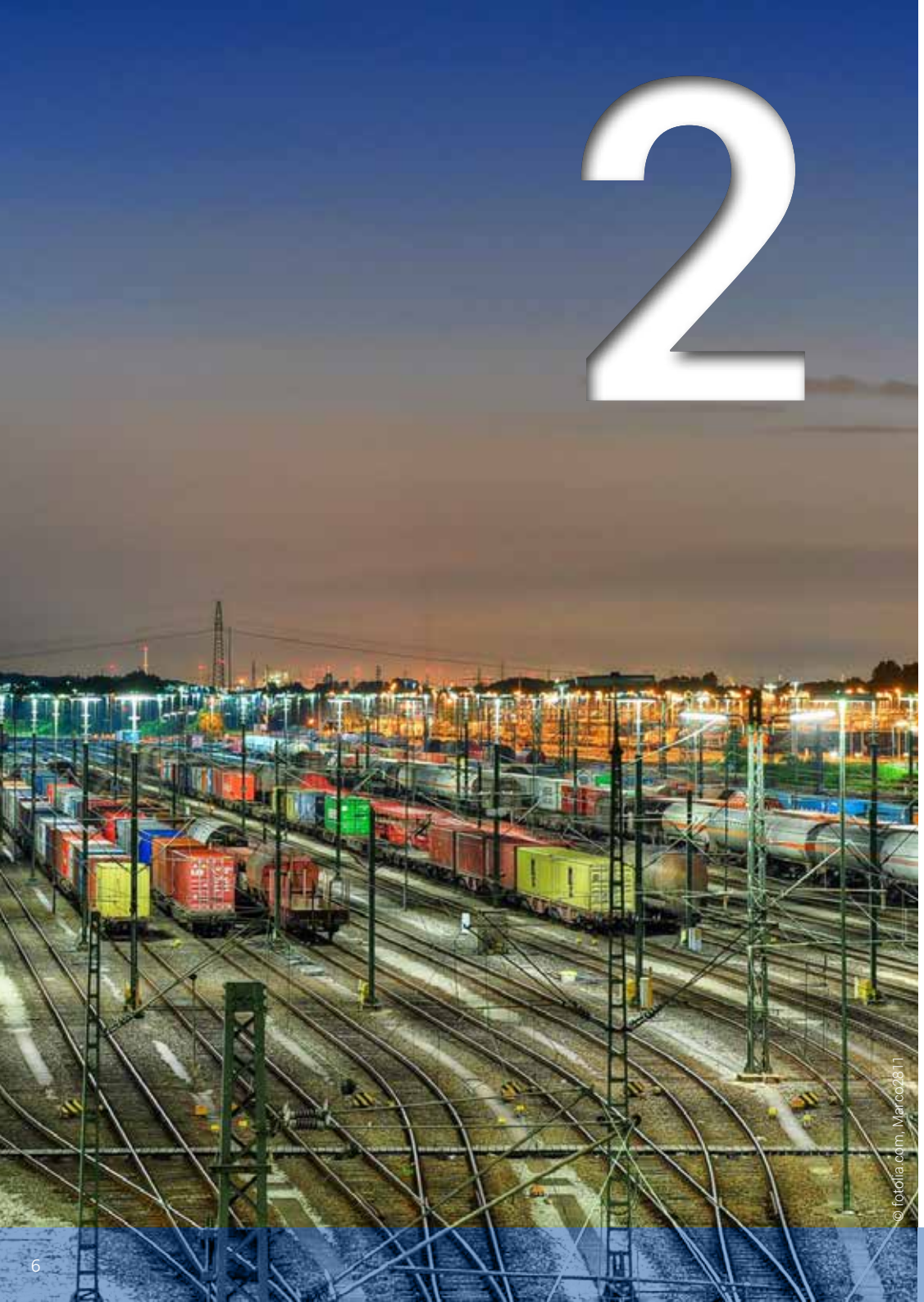
Based on this discussion process, the Pro-Rail Alliance has identified seven steps for reducing railway noise and made them available to politicians, the railway sector and the public.

Improve the level of noise protection

Lower trigger values for noise abatement and identify other potential measures

Since 1999, the federal government has funded noise abatement measures on the existing national rail network. In residential areas, trigger values of 67/57 dB(A) day/night now apply, which are the same as for noise abatement measures on federal roads. However, the Federal Environment Agency and the WHO, for example, believe that lower values are necessary for protecting people's health.

- The federal government should pass new targets on noise reduction for 2030 as soon as possible and subsequently introduce concrete steps for meeting these noise reductions targets. At the same time, the trigger values for noise abatement measures on national highways and the national rail network should be further reduced to 65/55 dB(A).
- Communities that allocate land for new residential areas near existing rail tracks should set higher noise protection levels. For residential areas that were created after 1974 (old West German states) or 1990 (new East German states), the communities should review noise protection levels and make noise precaution improvements accordingly.
- If it has not already been implemented, communities or the responsible authorities defined by state law should move quickly to conclude the second stage of the noise action plan for main railway lines and metropolitan areas.
- Communities that have particular requirements for stationary noise abatement measures with regards to urban development or landscaping should agree to fund the associated extra costs.



Ban noisy freight wagons from operations when the new timetable for 2020/2021 is introduced

Pass legislation as quickly as possible

The people plagued by noise, and also the railway sector, now need to be sure that it will become quieter and that the investments and the additional cost of low-noise rail wagons will not, in the end, be undermined by freight train operators in the transport business who continue to use noisy wagons. The federal government has therefore already considered legislative measures to ban noisy freight wagons from operating in Germany when the 2020/2021 timetable takes effect. Operators of freight wagons in Germany also support this goal and say they want to have planning reliability as soon as possible.

- The European Commission should support the German federal government's plans to ban noisy freight wagons from Germany's rail network when the 2020/2021 timetable takes effect, and to make its own efforts to effect a Europe-wide ban on noisy freight wagons from the same time.

© Fraunhofer-Gesellschaft Heinrich-Hertz-Institut

Monitor the progress of noise reduction measures and inform the public about the results

Standardise monitoring and publish results continuously

Since 2010, the federal states of Hesse and the Rhineland Palatinate, and since 2014, Deutsche Bahn have been operating their own measuring stations and publishing data on noise emissions. However, the variations in the measuring methods mean that there is a difference in how results are presented, which makes them less transparent for the general public. Progress on noise abatement, in particular upgrades to rolling stock, must be continuously documented in a way that is comprehensible for the general public.

- The federal government should develop a standardised concept for measuring noise levels and subsequently set up the necessary measuring stations as well as publishing the data online.

Reduce noise emissions from infrastructure

Fully exploit the potential for reducing noise levels at the infrastructure level

The effectiveness of the different innovative noise reductions technologies at the infrastructure level, for example rail web dampers, 'low height' noise barriers, high-speed grinding, has already been proven. The specifications in the current funding guidelines (of the federal government's noise abatement programme) only allow the use of these technologies in very special cases. In addition, innovative technologies require intensive maintenance, which increases costs for the network operator and leads indirectly to higher track charges.

- The infrastructure manager DB Netz AG should specifically investigate the possibilities for making greater use of innovative noise reduction technologies. In addition, DB Netz AG should always consider improving noise protection when carrying out structural measures.
- The federal government should further develop its funding conditions for noise abatement measures by including additional criteria (e.g. effect on the urban or rural landscape) in its cost-benefit analysis.
- DB Netz AG should further intensify its track maintenance with regards to acoustic track quality because the noise-reducing potential of low-noise freight wagons can only be fully exploited if they are operating on smooth rails.

© Deutsche Bahn AG / Oliver Lang

Reduce noise emissions from rolling stock

Prioritise abatement at the source of the noise

A central instrument for meeting the target of 'halving the noise from rail freight traffic' is to upgrade rolling stock and changeover to low-noise freight wagons. Locomotives also offer potential for reducing noise. Railway noise that does not arise in the first place will not have to be painstakingly reduced later on.

- The German freight wagon operators are committed to a complete noise reduction overhaul of their rolling stock (retrofitting and purchase of new wagons) by the time the 2020/2021 timetable takes effect. Operators must be consistent in honouring their voluntary agreement and to keep the public regularly updated on the progress of these measures.
- In order to accelerate rolling stock upgrades, the federal government should pay graduated subsidies on a diminishing scale for particularly quiet wagons (at least 3 dB(A) lower than the limits set in TSI Noise 2014), limited until the 2020/2021 timetable takes effect and on condition that for each subsidised new wagon an older, noisier wagon is taken out of service.
- The federal government should lobby the EU for an amendment to TSI Noise with the aim of lowering the limits for new locomotives and new freight wagons when the 2020/2021 timetable takes effect.
- The European Commission should legally clarify the position on whether the EU subsidies for upgrading rolling stock from the CEF programme can be paid on top of national investment subsidies for replacing brakes.
- The European Commission should set up a support programme that will make it possible to partially compensate those freight wagon operators for higher operating costs if the cost of operating the freight wagons increases after they have retrofitted composite brake blocks.

Optimise operations

Optimise operating processes when using low-noise wagons and trains

An increasing number of low-noise trains are being used in Germany. Today, this is the case when a train is comprised of at least 90% low-noise wagons. Once the 2020/2021 timetable takes effect, only low-noise freight wagons will be operating in Germany. Until then, train composition will have an influence on the number of low-noise trains in operation.

- When composing freight trains in marshalling yards, terminals and railway sidings, the focus should be on maximising the number of low-noise trains. On frequently used lines (e.g. Middle Rhine Valley), this could provide relief to the people living nearby more quickly. Train operating companies and freight wagon owners in Germany and Europe are called upon to make it possible for data to be exchanged.
- When developing and introducing operational innovations (e.g. driver assistance systems), rail freight operators should always check whether, and how, positive effects on noise reduction can be achieved.

Support innovation and research on noise reduction

Exploit the potential of research and innovation for reducing noise.

The competitiveness and growth of rail freight transport have to be strengthened in the long-term in order to reach climate protection targets. Additional potential for reducing emissions of noise and pollutants, as well as any potential innovations for reducing noise levels, must be fully exploited, for example infrastructure measures and optimising the construction of wheels, motors and bogies. The development of innovative technical solutions should lead to practical applications, including the support of railway specific testing and licensing procedures. Basic research into future low-noise rolling stock and infrastructure must be boosted.

- Railway sector companies and associations should jointly define the key aspects for their research activities. As part of this, noise abatement should be an important impetus in the development of new rolling stock and infrastructure.
- The federal government should greatly consolidate responsibility for railway related research within the government.
- The federal government should continue to fund research as well provide continuing support for field-testing new solutions.

The path towards lower-noise rail (freight) transport – the story so far:

These seven steps continue the rail noise reduction strategy in Germany.

From 1999 until the end of 2015, noise barriers were installed along approx. 610 km of railway track and 55,300 housing units were given grants for passive noise-reduction measures (e.g. sound proof windows and noise reduced ventilation systems). Of the approx. 3,700 km identified as being in need of noise abatement, measures on nearly 1,500 km passing through 1,115 towns and residential areas were implemented.

Additional funding of around 72 million euros from the economic stimulus plan KP II from 2009 – 2011, and around 27 million euros from the fast-track infrastructure programme IBP II from 2013 – 2014 was spent on innovative noise abatement measures as well as on noise protection hotspots. A programme for future investments running from 2016 to 2018 is currently being set up. Since 1999, a total of over 1.1 billion euros of federal funding has been invested in stationary noise abatement measures for the railways. In the 2016 federal budget, a total of 150 million euros was allocated for noise abatement on the railways.

Since 2005, the EU's TSI Noise has defined upper noise limits for freight wagons. Between 2007 and 2010, the project LZarG ('Low-noise Trains on actual Tracks') was set up to reduce noise emissions from existing freight wagons. The intention was to develop economically viable solutions that could be easily integrated into the railway system. In 2008, the pilot scheme and innovation programme 'Leiser Güterverkehr' (Low-noise Freight Traffic) was initiated. Within this framework, the 'Leiser Rhein' (Low-noise Rhine) project made funding available for the retrofitting of 5,000 existing freight wagons with K or LL brake blocks. In addition, the joint research project LäGiV (Lower-noise Freight Traffic from Innovative Composite Brake Blocks) supported the development of brake blocks with optimised technical and economical characteristics.

The Federal Transport Ministry introduced Noise Differentiated Track Access Charge System (laTPS), effective from the 2012/13 timetable. The support programme will make up to 152 million euros of federal funding available for retrofitting noisy freight wagons and runs until the 2020/2021 timetable takes effect. It follows the allocation-by-cause principle: noisy freight wagons incur an additional charge and pay more for using the tracks than quieter wagons.

LL brake blocks have been allowed since mid 2013, allowing the cost-effective retrofitting of existing freight wagons.

By January 2016, 163,000 freight wagons were registered for retrofitting by 2020. They are owned by 29 companies from Germany, Belgium, France, Austria, Poland, Sweden, Spain and Switzerland. This figure makes up around 50% of the European rolling stock that can be retrofitted economically.

Framework conditions for rail transport

The rail freight companies must make a significant contribution towards noise abatement of their own accord.

However, the necessary noise reduction measures mean higher costs for rail freight transport operators. This is a challenge for freight train companies because they are in a persistently difficult economic situation and are, at the same time, facing tougher competition from road freight and inland waterways. In terms of climate policy it would be counter productive if higher costs were to force customers to switch from the railways to the roads.

Against this background, rail transport must leverage cost saving potential, increase efficiency and develop customer-oriented services. But politicians are also called upon to create a transport policy framework that considerably strengthens the railways' competitive position in intermodal transport.

The project ‘Platform for Low-Noise Railways’ was co-funded by:

Bundesministerium
für Umwelt, Naturschutz,
Bau und Reaktorsicherheit

Umwelt Bundesamt

The responsibility for the content of this publication lies with the authors.

Imprint

Publisher: Allianz pro Schiene e.V. | Reinhardtstr. 31 | 10117 Berlin
T +49.30. 24 62 599-0 | F +49.30. 24 62 599-29
M info@allianz-pro-schiene.de | W allianz-pro-schiene.de

Compilation: Jolanta Skalska, Allianz pro Schiene e.V.

Design: Norbert Lücken, Lücken-Design
Cover page: fotolia.com, Kaljikovic; istockphoto.com, 46440092;
Image editing: Lücken-Design

Date: 1. Edition, March 2016

Responsible within the meaning of the German “Pressegesetz” (press law):
Dirk Flege, Managing Director, Allianz pro Schiene e.V.

Printed on 100% recycled paper