Rail Transport Masterplan
Rail Transport Masterplan
Dear friends of the railways,

During the COVID-19 pandemic, we have seen how important and reliable the railways are. At no time have we been without a stable range of basic passenger services and an uninterrupted supply of goods in the freight transport sector. The contribution made by the rail freight sector, in particular, during the crisis situation clearly illustrates that its capabilities are indispensable for the secure supply of goods to the population. Never in the history of the Federal Republic of Germany has rail transport been as important as it is today. It is, in the best sense of the phrase, “systemically relevant”.

We will do our utmost to ensure that the rail sector comes through the pandemic unscathed and heads into the future in a strengthened condition. The Federal Government’s economic stimulus package currently earmarks more than 7.6 billion euros for rail transport alone, of which 5 billion euros is designed to shore up the state-owned DB AG.

It is obvious that the Federal Government, as the owner, cannot leave its undertaking in the lurch. However, it also obvious that we will take care to ensure that this increase in equity is not allowed to result in a distortion of competition on the railways. Moreover, we will join forces with the federal states to establish a bailout for local public transport and provide a further 2.5 billion euros for this purpose. In addition, we will bring forward investment in the fields of stations and digital transformation in order to achieve future-proof infrastructure even more quickly.

Given the challenges and newly emerging opportunities for the rail sector, it is enormously valuable that, with the present Rail Transport Masterplan, we have for the first time a strategy for the future of the railways in Germany that is backed by the entire industry and the Federal Ministry of Transport and Digital Infrastructure and contains specific measures. In this way, we will significantly progress the innovative capacity, attractiveness and competitiveness of the railways.

I would like to outline the genesis of this Masterplan. In October 2018, we created the Alliance for the Future of Rail, which has since met regularly in six working groups. Its members, who come from all fields of the transport sector, have pursued six objectives.

- First: we want to improve punctuality on the railways – with the Deutschlandtakt (nationwide integrated regular interval timetable). Here, it is obvious that we want not only to optimize connections for passenger services but also to include rail freight on an equal footing in all our deliberations; above all, the growing need for train paths when the volume of goods carried starts to grow again.

- Second: we will enhance capacity in order to make the railways more reliable. The funds invested have recently been steadily rising and we must sustain them at a high level on a permanent basis.
Third: we will make the railways more competitive in order to make them more flexible. This is the only way to shift more traffic to the railways.

Fourth: we will reduce noise and climate change emissions in order to make the railways more sustainable. In doing so we will simultaneously enhance acceptance among lineside residents.

Fifth: we will promote the digital transformation and research in order to make the railways more innovative.

And finally sixth: we will support the search for skilled workers in order to future-proof the railways.

The six working groups have regularly presented their outcomes to the Steering Committee – a body comprising 28 representatives from the transport sector, DB AG and the Federal Ministry of Transport and chaired by my Parliamentary State Secretary Enak Ferlemann in his capacity as Federal Government Commissioner for Rail Transport. A group of this nature, comprising all rail sector stakeholders, is unique in Europe. At this point I would like to say a big word of thanks to the members of the working groups and the Steering Committee for the valuable work you have done over the past two years or more.

Our key compass for all measures on the rail network is the Deutschlandtakt – i.e. the objective that, in the future, all trains meet in a station at fixed times. Under the motto “more frequent – faster – everywhere”, changing trains will become significantly easier, services will be more reliable and journey times will often be much shorter. Just how important shorter journey times are can be seen on the line from Berlin to Munich. Since the new line opened and the journey time was reduced to only four hours, the number of passengers has been hitting one record after the next. That’s what I call a “wow” effect on the railways. I hope that there is a similar effect when the journey time between Bonn and Berlin is reduced to just under four hours in the future. That is what is envisaged by the Deutschlandtakt target timetable.

The most important thing is that travellers should be able to enjoy the benefits of the Deutschlandtakt as soon as possible. And so we will not wait until 2030 and implement the target timetable in one fell swoop. Rather, the current timetable should be adapted in stages as quickly as possible after every single upgrade step. Better still: we would like the Deutschlandtakt to start as early as 2021 in the first regions. Then, rail customers will see immediately what tangible improvement the upgrading schemes have for them – namely more trains, better connections and shorter journey times.

As you can see, we have a clear plan for the railways and rail transport in Germany.

On this note, I hope you enjoy reading the Rail Transport Masterplan.

Andreas Scheuer, Member of the German Bundestag
Federal Minister of Transport and Digital Infrastructure
Ladies and gentlemen,

It is now over 25 years since the German Bundestag adopted the reform of the railways. The objective was to transform a railway system organized along public sector lines into a profitable and customer-focused mode of transport. This transformation has been a resounding success. In the local passenger transport sector, a flourishing market has emerged in which the regional public transport authorities have been able to enhance the quality and number of transport services while simultaneously reducing costs. In the rail freight sector, many private sector operators have been able to successfully establish themselves and secure over one half of freight moved. This has been a major factor in enabling the railways to preserve their share of the transport market despite rising volumes of traffic and fierce competition, especially from heavy goods vehicles. It has been possible to stop the downward spiral emerging in the early 1990s, with declining traffic figures and rising costs.

However, it is also obvious that there is still a lot to be done. The railways have to be made more competitive in comparison with their road and air transport rivals. This intermodal competitiveness is especially important if we wish to meet our climate change targets. Compared with the other modes of transport, the railways have several structural advantages. The technologies for zero-emission operation have been available for over 100 years and have been trialed in everyday practice. Large numbers of passengers and volumes of freight can be carried with a maximum level of efficiency and safety. As is the case with the use of renewable energy, high investment costs are offset by low operating costs. This means that once the infrastructure has been funded and is in place, additional volumes of traffic cause only low additional costs. For this reason, it also makes economic sense to shift as much traffic as possible to the railways so as to be able to exploit the resultant economies of scale.

In their March 2018 Coalition Agreement, which is the most rail-friendly of recent decades, the parties forming the current Federal Government decided to give a significant boost to rail transport. The governing parties set themselves ambitious targets to be met by 2030 – doubling the number of passengers and significantly increasing the market share of rail freight. The only way to achieve these objectives was for the entire rail freight sector to join forces with the Federal Government and undertake a concerted effort, which is why the stakeholders concluded a rail pact.

The Rail Pact is based on the outcomes of the six working groups of the Alliance for the Future of Rail. From these outcomes, we developed the present Rail Transport Masterplan, which was adopted by the Steering Committee of the Alliance on 12 May 2020. It also comprises the final report of the six working groups of the Alliance for the Future of Rail and the Rail Freight Masterplan.
The Rail Transport Masterplan clearly documents that the rail sector in Germany is much more than the state-owned Deutsche Bahn AG. Of course, a soundly funded DB AG is an important anchor of stability for the sector. If the objectives of the Masterplan are to be achieved, it is thus of crucial importance that this intramodal competition remains successful after the consequences of the COVID-19 pandemic have been overcome. The Federal Government will devote particular attention to these aspects in DB AG’s forthcoming capital investment projects and the recast of the Railway Regulation Act.

In the ongoing pandemic situation, in particular, the great benefit of a joint platform for the rail sector is apparent in the Alliance for the Future of Rail.

We have achieved a lot in the past two years. The blueprint for the Deutschlandtakt as a planning basis for an attractive range of transport services and future-proof infrastructure has been completed. The Rail Transport Masterplan has defined the measures essential for a successful rail sector. It is now imperative that all these measures be speedily implemented. The Steering Committee of the Alliance for the Future of Rail will keep an eye on this process and regularly evaluate it. For this purpose, it will stage an annual conference on the future of the railways or Rail Summit. There we will see, just like in the Masterplan, that the railways are the means of transport of the 21st century.

I would like to sincerely thank all those involved in the Alliance for the Future of Rail for their intensive and constructive work. I hope that the Rail Transport Masterplan enjoys wide dissemination and, above all, rapid implementation.

Enak Ferlemann, Member of the German Bundestag
Parliamentary State Secretary at the Federal Ministry of Transport and Digital Infrastructure
Federal Government Commissioner for Rail Transport
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A. Preamble

In the March 2018 Coalition Agreement, the coalition parties state that they want to meet the climate change targets set out in the Paris Agreement, taking into account social aspects, securing the competitiveness of industry and ensuring affordable mobility.

The Coalition Agreement considers the upgrading of rail transport as being key to the achievement of the global policy objectives.

“Punctuality, good service and high quality must be the hallmark of the railways in Germany. By means of a rail pact involving government and industry, we want to attract twice as many rail customers by 2030 and, inter alia, shift more freight traffic to the environmentally friendly railways. We want to implement the measures set out in the Rail Freight Masterplan on a permanent basis. In return, the railways must invest in more service, more reliability and more innovations.”

Against this background, and with regard to the growth in traffic forecast for the years ahead, it is necessary to rapidly and extensively shift passengers and freight to the environmentally friendly railways. Within the scope of the National Platform on the Future of Mobility, the project of shifting freight to the railways was allocated a dimension, namely the objective of achieving a market share of at least 25% for rail freight by 2030.

To deliver these ambitious goals for rail transport, the Federal Minister of Transport and Digital Infrastructure, Andreas Scheuer, created the Alliance for the Future of Rail (ZBS) on 9 October 2018, with representatives from government, industry and trade associations. Such a platform comprising all rail sector stakeholders is a new approach in German railway policy and is probably unique in Europe.

The members of the Alliance are united by their common intention to upgrade and strengthen rail transport. The Alliance’s Steering Committee identified six areas as being especially relevant to the accomplishment of this task and had them studied in greater detail in working groups.

1. Introduce the Deutschlandtakt (nationwide integrated regular interval timetable) – more punctual railways
2. Enhance capacity – more reliable railways
3. Boost the competitiveness of the railways – more flexible and competitive railways
4. Progress noise and climate change mitigation – quieter and more climate-friendly railways
5. Promote innovations – more innovative railways
6. Recruit skilled labour – more attractive railways

The Steering Committee and the working groups of the Alliance for the Future of Rail met regularly between October 2018 and June 2020 and engaged in intensive discussions. In May 2019, the Steering Group published an interim report, and in October 2019 it adopted a list of measures for immediate action. On this basis, the Bundestag and the Federal Government have already adopted a range of measures:

- In the 2020 Federal Budget, a budget line was created for the electrification of regional railway lines. In addition, the requirement plan funds in the period of medium-term fiscal planning have been increased to 2 billion euros per annum.

- Funding for capital investment projects in the local public transport sector under the Local Authority Transport Infrastructure Financing Act (GVFG) will be increased to 1 billion euros per annum starting in 2021 and to 2 million euros per annum starting in 2025, which represents a six-fold increase, and the funding rates will be raised. Section 11(2) of the GVFG has created a tool kit with which rail projects that are of particular importance and involve more than one public transport authority can be delivered more quickly (for instance rail hubs with mixed traffic comprising rapid transit and other types of traffic).

- The third Service Level and Funding Agreement (SLFA III), which was concluded at the beginning of January 2020 and has a lifetime of ten years, provides a record
level of funds of 5.1 billion euros per annum, or 86 billion years in total, for the structural maintenance of the federal railway infrastructure. It also ringfences funds for capacity-efficient building.

- Within the scope of the 2030 Climate Action Plan and the trilateral declaration of intent with the railway infrastructure companies, the Federal Government is creating a strengthening funding basis for the modernization and expansion of the railway infrastructure totalling 11 billion euros over the period to 2030, of which 1.4 billion euros is earmarked for the implementation of minor and medium-sized infrastructure projects.

- To offset the economic consequences of the phasing out of coal-fired power generation, the Federal Government has committed to provide structural aid in the regions affected within the scope of a structural change act. The bill sets out a portfolio of measures with a total of 39 railway infrastructure projects.

- Lawmakers have passed a series of acts to speed up the planning process. These include the Preparation Act for Acts to Adopt Measures, which entered into force at the beginning of April 2020, and the adoption of the Federal Compensation Regulations as a uniform nationwide standard for nature conservation compensation measures.

- Value added tax on long-distance rail tickets has been lowered to 7 %, thereby bringing it into line with the rate applicable to local transport tickets.

- State funding for local and regional passenger rail services has been significantly increased (by a total of more than 5 billion euros over the period to 2031) and frozen until 2031 to enable the federal states to order more local transport services.

- The launch of the Digital Railways in Germany starter package has been ensured through the provision of public funds.

The final reports published by the six working groups of the Alliance for the Future of Rail and the Rail Freight Masterplan informed the present Masterplan and its components. For its part, the Masterplan, which is the joint activity of the industry and the BMVI, forms the basis for the Rail Pact in which the members of the Alliance for the Future of Rail reach agreement on the implementation of the measures identified. The Rail Pact is designed to ensure attractive and climate-friendly mobility. However, as a result of the wealth created by the rolling stock and system manufacturers, rail transport itself is a major economic factor. The competitiveness of the industry is to be ensured by means of fair conditions of employment and production plus sustainable tendering and contract award criteria in order to safeguard the industrial value-added chains in Germany and Europe. The industry policy objective of the Alliance for the Future of Rail is to develop Germany into the world’s lead market in research and application in rail transport and for sustainable mobility solutions and to strengthen it as the foremost lead provider of innovative and sustainable mobility solutions in global competition.
B. Objectives of the Masterplan

We are in agreement regarding our objective of attracting twice as many customers to passenger rail services by 2030 as well as shifting more freight traffic to the environmentally friendly railways and increasing their share of the modal split to at least 25 percent by 2030. This modal shift is a key element in meeting the climate change targets in the transport sector. Furthermore, it will help to reduce externalities in transport caused by, among other things, emissions of air pollutants, land take and the consequential costs of accidents. Attractive railways make a major contribution to the mobility and quality of life of the general public and are an important factor influencing companies’ location choices, from which the German and European economies benefit.

Major prerequisites for growth and a shift to rail are: first, the enhancement of infrastructure, rolling stock and manpower capacities; second, the deployment of innovative technologies and products; and third, the enhancement of the attractiveness and competitiveness of the railways from a user perspective.
1. **Deutschlandtakt** – our guiding principle and a compass for the future of the railways

Objectives of the **Deutschlandtakt**

The **Deutschlandtakt** is a crucial building block for the growth of the railways and modal shift. At the core of the scheme is an upgrade of the federal railway infrastructure for a range of services that are interlinked nationwide, are rapid and reliable, operate frequently, offer optimum connections in passenger services and have capacity that meets current and future needs for expanded rail freight services with shorter transit times. In this way, the **Deutschlandtakt** will become a compass and a seamless planning basis for the evolution of the infrastructure of the German rail network. To this end, the Federal Government, with the participation of the Alliance for the Future of Rail (ZBS), had a target timetable prepared, and a list of the necessary infrastructure upgrades was derived from it.

The **Deutschlandtakt** is based on an integrated regular interval timetable for passenger services with optimum connections for the entire range, from high-speed services to regional trains, on the longest rail network in Europe. The target timetable is supply-led and will thus create the basis for the projected doubling of passenger numbers. At the same time, the **Deutschlandtakt** will take into account, on an equal footing, the necessary line capacity for growing freight services.

The **Deutschlandtakt** target timetable has as its motto: “more frequently, faster, everywhere”.

- By “more frequently” we mean that there are to be at least half-hourly services on all major long-distance arteries.
- By “faster” we mean the maximization of services and the reduction of journey and transit times by means of optimized connections and individual, tailor-made infrastructure upgrades.
- Finally, “everywhere” means that the **Deutschlandtakt** is to apply on all railway lines in urban and rural areas, thereby ensuring links to and from cities, towns and regions. The **Deutschlandtakt** will thus extend the journey time advantages of the new and upgraded lines into the regions by means of optimum connectivity.

In the passenger sector, our objectives are nationwide attractive intervals with well coordinated and fast connections plus shorter journey times. In the rail freight sector, they are a shorter average transit time, lower energy demand plus journey times that are easier to plan and growth options that are tailored to the market and sufficient to meet all freight transport needs.

The **Deutschlandtakt** with its target timetable, its objectives and its capacity and journey requirements forms the basis for the construction of new and upgrading of existing railway infrastructure, its planning and optimum use. The Federal Government and the rail industry stakeholders have thus joined forces to ensure that the **Deutschlandtakt** is now delivered as a new and transparent principle for the upgrading of the rail network based on the timetable and capacity and for capacity management.

Opportunities for and challenges faced by the **Deutschlandtakt**

The **Deutschlandtakt** provides the opportunity for an evolution of the rail system in Germany that will begin in the near future, have a progressive impact, is coordinated on a long-term basis and reliably between all the parties involved and from which all types of traffic will derive sustained benefit. A coordinated approach makes it possible to more thoroughly integrate the connected rail system, thereby enhancing its transport capacity. This joint task requires close cooperation between all the stakeholders.

Connections that work, an optimum quality of operations and capacity that always meets the needs of the market presuppose reliable infrastructure. For this reason, great significance attaches not only to proactive renewal of the infrastructure that can be planned on a long-term basis (especially with regard to the regular interval lines that will see a high level of traffic in the future) but also, and in particular, to railway hubs within the context of the requirement plan for the railways and the removal of bottlenecks on the network. This applies to both the track as well as the stations and energy supply. The way in which the quality of the services is perceived, both in the passenger and freight transport market and in public discussion, is the crucial key to a high level of acceptance.
The optimization or expansion of one type of rail traffic must not be permanently and unilaterally at the expense of the other types of traffic, even on individual lines. The phased approach must ensure that this does not happen. On mixed-traffic lines, the needs of the types of traffic must be considered on an equal footing.

There are perceptible capacity constraints at many points on today’s rail network. Additional train paths to increase the railways’ share of passenger services must not be at the expense of capacity in the growing rail freight sector. With the help of the additional capacity on which the target timetable is based, it will be possible for freight services to grow further within the context of the Deutschlandtakt, which is in line with the objective of an increasing modal shift from road to rail.

The Federal Government will gear the planning and future upgrading of the federal railway infrastructure on the guiding principle of the Deutschlandtakt as an increasingly important prioritization criterion. With the progressive implementation of the Deutschlandtakt, we want to achieve clear prioritization of the infrastructure projects and long-term planning certainty. This is the key prerequisite for ensuring that the industry can establish the necessary planning, rolling stock and construction capacity and maintain them at a permanently high level.

The Deutschlandtakt needs to be implemented progressively, so that passengers and rail freight customers can perceive the improvement in services as early as possible. In this context, it must be ensured that the implementation of the phases is not to the detriment of the quality of the timetable and operations. This places high demands on the planning and coordination processes. Unavoidable restrictions during the constraints must not jeopardize a positive image of the Deutschlandtakt among the general public.

A final answer has not yet been found to the question of how a target timetable drawn up in advance can be implemented in a legally secure and reliable manner. The possible options affect the interests of numerous players, which places high demands on an objective discussion. For this reason, there is a need for a transparent procedure in order to conduct a dialogue without a predetermined outcome. The consequence of this is that the evolution of German railway law cannot be delivered ad hoc but will be the outcome of an intensive process of discussion with a decision that is ultimately political.

On the road towards the Deutschlandtakt, setbacks must be prevented in the range of services of all types of traffic, especially the tried-and-tested clockface timetable systems in local, regional and long-distance rail transport. There is currently an urgent need for action as a result of the lapse of the framework agreements, which it has hitherto been possible to use to safeguard capacity for many years for the clockface timetable systems and transport schemes in all types of traffic. In this connection, it is not only clockface timetable systems that require planning certainty over several timetable periods but also commercially operated rail services, for whose companies the safeguarding of their investment plays a key role.
**Action areas and next steps for delivery of the Deutschlandtakt**

**Action area 1.1:** Institutionally enshrine the Deutschlandtakt as a joint project

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<th>Parties involved</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td>1</td>
<td>Integration of all types of traffic on an equal footing</td>
<td>Federal Government</td>
<td>Ongoing/permanent task</td>
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<td></td>
<td>Passenger rail services and rail freight will be on an equal footing within the Deutschlandtakt. In the future coordination processes, therefore, the Federal Government will ensure that all types of traffic (local and regional passenger services, long-distance passenger rail services, rail freight) continue to be integrated in accordance with their needs.</td>
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<td>2</td>
<td>Coordinated implementation</td>
<td>Federal Government/federal states/sector</td>
<td>Ongoing/permanent task</td>
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<td></td>
<td>The Federal Government will coordinate the process for the evolution and implementation of the Deutschlandtakt. On the basis of the current structure of the Alliance for the Future of Rail, the Federal Ministry of Transport and Digital Infrastructure will continue the Deutschlandtakt working group and its subgroups that already exist. The stakeholders of the Alliance for the Future of Rail can and will continue to participate.</td>
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<td>3</td>
<td>Transparent development of the phased approach</td>
<td>Federal Government/federal states/sector</td>
<td>Ongoing/permanent task</td>
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<td></td>
<td>The Federal Government will develop a transparent procedure, incorporating all railway industry stakeholders and the authorities responsible for local and regional passenger rail services, to progress the phased delivery of the Deutschlandtakt.</td>
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<td>4</td>
<td>Participation of the sector</td>
<td>Federal states/sector</td>
<td>Ongoing/permanent task</td>
</tr>
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<td></td>
<td>All members of the Alliance for the Future of Rail will respect the various interests of the different players. They will undertake to continue cooperating, with the objective of implementing the Deutschlandtakt, and to make their own contribution.</td>
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**Action area 1.2:** Reliably gear infrastructure planning and funding to the Deutschlandtakt

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<tbody>
<tr>
<td>1</td>
<td>Establishment of timetable-based infrastructure development</td>
<td>Federal Government</td>
<td>Ongoing/permanent task</td>
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<tr>
<td></td>
<td>The Deutschlandtakt will form the basis for infrastructure planning. Its implementation will be coordinated by the Federal Government. The basis will be the Deutschlandtakt target timetable presented by the Federal Government’s consultants and coordinated with the sector.</td>
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<td>2</td>
<td><strong>Safeguarding funding</strong>&lt;br&gt;The infrastructure projects derived from the <em>Deutschlandtakt</em> will require adequate funding. The German Bundestag will be called upon to provide adequate funds for the necessary infrastructure projects on a permanent basis and to create the planning certainty required by the industry by means of reliable long-term funding of the railway infrastructure, for instance in the form of a fund solution based on the Swiss model. This also includes minor and medium-sized projects needed for the phasing unless the federal states or infrastructure managers are responsible for funding. In addition, the Alliance for the Future of Rail will consider an increase in the requirement plan funds to be imperative in the interests of speedy delivery.</td>
<td>Federal Government/&lt;br&gt;federal states</td>
<td>Permanent task</td>
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<td>3</td>
<td><strong>Contributions by the federal states</strong>&lt;br&gt;In section 11(2) of the recast Local Authority Transport Infrastructure Financing Act (GVFG), lawmakers have created an increase in funds, higher funding rates and a simplification of the funding procedures for local transport infrastructure projects, as a result of which a major contribution can be made to implementation of the <em>Deutschlandtakt</em>. The federal states will be called upon to avail themselves of these options in the interests of speedy delivery of the <em>Deutschlandtakt</em> and to provide the complementary funding required (e.g. for co-funding).</td>
<td>Federal states</td>
<td>Ongoing/permanent task</td>
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<td>4</td>
<td><strong>Budget for minor and medium-sized projects</strong>&lt;br&gt;Within the scope of the 2030 Climate Action Plan and the trilateral declaration of intent with the railway infrastructure companies, the Federal Government will create a strengthening funding basis for minor and medium-sized infrastructure projects that are necessary for implementation of the <em>Deutschlandtakt</em>.</td>
<td>Federal Government</td>
<td>Ongoing/permanent task</td>
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<td>5</td>
<td><strong>Expanding planning and construction capacity</strong>&lt;br&gt;The undertakings and associations united in the Alliance for the Future of Rail will seek to ensure that the enhanced planning and construction capacity required for upgrading the infrastructure is created rapidly. The German Bundestag will be called upon to provide significantly more funding for the construction of new and the upgrading of existing railway infrastructure (from 2 billion per annum to 3 billion per annum in the medium and to 4 billion per annum by the end of the decade).</td>
<td>Sector</td>
<td>Permanent task</td>
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### Action area 1.3: Progress the Deutschlandtakt in phases

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| 1  | Development of the phased approach  
For the progressive implementation of the Deutschlandtakt, we will jointly develop – with the Federal Government having lead responsibility – a phased approach, with a probable launch of the Deutschlandtakt with the start of the 2022 annual timetable and a first major phase until the mid-2020s. | Federal Government/federal states/sector | 2020/21 |
| 2  | Implementation of infrastructure upgrades on the basis of the phased approach  
To ensure that rail customers enjoy tangible improvements in services at an early stage, there also has to be closer coordination among all the parties involved. Phased implementation of the Deutschlandtakt will not succeed unless the infrastructure projects are also prioritized and implemented in accordance with the phased approach. | Federal Government/federal states/sector | Permanent task |
| 3  | Synchronization of the infrastructure upgrade on the basis of the phased approach  
On the basis of the phased approach, all the parties involved will develop as soon as possible a joint approach for an appropriate synchronization of the planning activities for the upgrade of the infrastructure. | Federal Government/federal states/sector | Permanent task |
| 4  | Freight transport in the phased approach  
At the same time, rail freight customers are also to enjoy tangible benefits. We will pay due regard to the requirements of rail freight in the implementation phases of the Deutschlandtakt. One of the major factors here is transport impact with regard to the European rail freight corridors. Ultimately, however, origin-destination pairs within Germany – both nationwide and regional – must be able to benefit from the measures of the Deutschlandtakt. | Federal Government/federal states/sector | Permanent task |
| 5  | Including neighbouring countries in the phased approach  
The Federal Government will also ensure that the infrastructure and service plans of neighbouring countries inform the phased approach. | Federal Government | Permanent task |
| 6  | Continuation of the phased approach  
The Federal Government will regularly update the phased approach on the basis of the status of implementation of infrastructure projects and service concepts. | Federal Government/federal states/sector | Permanent task |
Action area 1.4:
Adapt the priorities of infrastructure planning to the Deutschlandtakt

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<tr>
<td>1</td>
<td><strong>Prioritization of infrastructure upgrades based on the Deutschlandtakt</strong>&lt;br&gt;Prioritization in infrastructure planning must be based on the phased implementation of the Deutschlandtakt so that investment can be made in a targeted manner.</td>
<td>Federal Government/federal states/sector</td>
<td>Permanent task</td>
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<td>2</td>
<td><strong>Phasing on the basis of the major priority projects</strong>&lt;br&gt;Phasing will be based on the twelve major priority projects so that existing bottlenecks can be removed quickly – but based on the long-term target timetable – and capacity enhanced. Within the scope of the phasing, these major priority projects will be augmented by appropriate infrastructure packages, which are necessary for implementation of the Deutschlandtakt.</td>
<td>Federal Government/federal states/sector</td>
<td>Permanent task</td>
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<td>3</td>
<td><strong>Provision of transparent information on prioritization</strong>&lt;br&gt;The Federal Government will provide information on prioritization as part of its reporting on the investment activities.</td>
<td>Federal Government</td>
<td>Permanent task</td>
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<td>4</td>
<td><strong>Supporting the prioritization approach</strong>&lt;br&gt;We will commit to this prioritization and will also be willing to champion it, even against opposition.</td>
<td>Federal Government/federal states/sector</td>
<td>Permanent task</td>
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Action area 1.5:
Jointly implement the Deutschlandtakt in everyday operations and establish a sound legal basis for it

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<tr>
<td>1</td>
<td><strong>Punctuality and reliability of services as a prerequisite</strong>&lt;br&gt;We will join forces, each in our own remit, and lobby to ensure that the punctuality and reliability of rail services is improved. Because without this, the Deutschlandtakt will not work.</td>
<td>Federal Government/federal states/sector</td>
<td>Permanent task</td>
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<td>2</td>
<td><strong>Review and evolution of the regulatory framework for the Deutschlandtakt</strong>&lt;br&gt;We will join forces to look for solutions as to how we can establish a sound legal basis for the Deutschlandtakt. We will choose a two-phase procedure for this:&lt;br&gt;• In the first phase, we will explore what requirements and objectives of the Deutschlandtakt can be implemented with the existing legal situation.&lt;br&gt;• In a second phase, we will identify the need to amend the regulatory framework and explore possible solutions with their respective advantages and disadvantages.</td>
<td>Federal Government/federal states/sector</td>
<td>2020/21</td>
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<td>3</td>
<td><strong>Safeguarding paths from one year to the next</strong>&lt;br&gt;We will promptly look for solutions as to how the existing services can be safeguarded even after the framework agreements have lapsed. Possible instruments must take account of the interests of all types of traffic on an equal footing. Here, solutions must be found at short notice that pave the way to the Deutschlandtakt as far as possible.</td>
<td>Federal Government/federal states/sector</td>
<td>2021/permanent task</td>
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<td>4</td>
<td><strong>Safeguarding the Deutschlandtakt without abandoning open network access</strong>&lt;br&gt;We are aware that some of the interests here conflict with one another, and so we commit to speedily progressing this process of legislation to achieve the common objective of creating a legal safeguard of the Deutschlandtakt without ruling out open access to the rail network or jeopardizing competition.</td>
<td>Federal Government/federal states/sector</td>
<td>2021/permanent task</td>
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<td>5</td>
<td><strong>Development of integrated nationwide ticketing (Deutschlandtarif)</strong>&lt;br&gt;Acting on its own responsibility, the sector will seek to evolve the existing fare and ticketing structure into a “Deutschlandtarif” so that a nationwide regular interval system of passenger rail services is possible irrespective of the operator and taking entrepreneurial interests into account.</td>
<td>Sector</td>
<td>2021/permanent task</td>
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Action area 1.6: Join forces to publicly champion the *Deutschlandtakt*

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| 1  | **Common communication on the Deutschlandtakt**  
   We jointly advocate the basic principle of a railway infrastructure upgrade that is timetable and capacity-based, we will jointly support the idea and implementation of the *Deutschlandtakt* and communicate the benefits of this planning approach in public. The undertakings and institutions represented in the Alliance for the Future of Rail will, wherever possible, act in concert when it comes to communicating about the *Deutschlandtakt*. | Federal Government/ federal states/sector | 2020/permanent task |
| 2  | **Federal Government to coordinate communication**  
   Communication will be coordinated by the Federal Government with the inclusion of all stakeholders. | Federal Government | 2020/permanent task |
| 3  | **Provision of resources by the sector**  
   We will support the continuing planning and implementation of communication by providing contents and organizational resources and our own channels and networks. | Sector | Ongoing/permanent task |
| 4  | **Cooperation on the Deutschlandtakt communication platform**  
   We will work together on a communication platform. It will act as a generator of ideas and multiplier in the evolution and fleshing-out of all topics relating to communication and all measures associated with the *Deutschlandtakt*. It will also serve as a permanent exchange platform between us as partners. The sender of our joint communication will be the Alliance for the Future of Rail. | Federal Government/ federal states/sector | 2021/permanent task |
| 5  | **Communication budget to be provided by the Federal Government**  
   As the communication coordinator, the Federal Government will seek to establish a permanent communication budget. | Federal Government | 2020/permanent task |
2. Enhancing network capacity

Objectives of capacity enhancement

Expanding the capacity of the network is the main prerequisite for future-proofing the rail mode and delivering the Deutschlandtakt. Unless there is a significant expansion of capacity, it will not be possible to enhance the attractiveness and thus the competitiveness of the railways with the objective of a significant modal shift.

In the past, the expansion of capacity has focused primarily on implementation of the upgrading and new construction projects enshrined in the requirement plans, the purpose of which is to unblock the existing bottlenecks on the network. In the future, delivery of these major projects will continue to be the fundamental prerequisite for increasing the volume of traffic on the railways and implementing the Deutschlandtakt. In addition, the minor and medium-sized projects that have so far not been in the spotlight and with which a short-term relief effect can be achieved and the period until completion of the major long-term projects be bridged are to be tackled. Moreover, the digital transformation of infrastructure and operations will make it possible for the rail system to take a technological quantum leap in order to meet the requirements and expectations surrounding a modern, reliable and efficient means of transport.

Opportunities for and challenges faced by the expansion of capacity

The Deutschlandtakt will play an increasingly important role for the targeted capacity planning and the timetable-based infrastructure development. The Deutschlandtakt’s phased approach will provide a tool for network-wide, capacity-based planning and synchronization of the upgrading and new construction projects delivered under the different funding regimes. It will thereby form the basis for a capacity development plan with a joint prioritization and scheduling of the projects (subject to any distinctive features of the projects that have to be taken into account).
Major priority projects of the Alliance for the Future of Rail

Figure 1: Map of the major priority projects (source: BMVI)
The expansion of capacity faces key challenges in the following three areas:

- Implementation of the most important major projects identified by the Alliance for the Future of Rail for unblocking bottlenecks (“major priority projects”, see Figure 1) has to be accelerated. Issues relating to acceptance and speeding up the planning process play a major role here.
- Minor and medium-sized projects to enhance network capacity, improve quality at individual points, support the unblocking of bottlenecks and implementation of the Deutschlandtakt in phases are to be identified and proposals for suitable instruments for their implementation are to be developed.
- The rollout of the “Digital Railways in Germany” strategy for a medium-term enhancement of capacity and operational stability is to be implemented rapidly.

The Alliance for the Future of Rail considers the following major priority projects (see also Figure 1) to be especially urgent for the delivery of the Deutschlandtakt and for the removal of bottlenecks with a network-wide impact:

- 740 metre network
- Construct a new Würzburg – Nuremberg high-speed line
- Hanau – Würzburg/Fulda – Erfurt – upgrade existing lines/construct new high-speed lines
- Middle Rhine corridor (incl. construction of a new Rhine/Main – Rhine/Neckar line, upgrading of the Hagen – Siegen – Hanau line, upgrading of the Molzau – Graben Neudorf – Karlsruhe line/construction of a new high-speed line)
- Optimized alpha-E with Bremen (upgrading of the Hamburg/Bremen – Hanover line/construction of a new line)
- Upgrade the Hanover – Bielefeld (– Hamm) line/construct a new line
- Upgrade the Hof – Marktredwitz – Regensburg – Obertraubling line (southern section of Eastern Corridor)
- Upgrade the Uelzen – Stendal – Magdeburg – Halle line (northern section of Eastern Corridor)
- Upgrade the Burgsinn – Gemünden – Würzburg – Nuremberg line
- Rhine-Ruhr Express (RRX)
- Upgrade the Karlsruhe – Basle line/construct a new high-speed line
- Frankfurt am Main/Hamburg/Hanover/Cologne/ Mannheim/Munich major rail hubs

These projects should therefore be completed and put into operation as quickly as possible. For this to happen, it is necessary, among other things, that adequate requirement plan funds be provided and that they be made into a reliable planning basis via a long-term prospect of funding.

Budget lawmakers are urged to make available the funds required over the period to 2030 for achievement of the transport objectives and the delivery of the Deutschlandtakt in line with planning progress. More specifically, the at least three billion euros per annum required for the construction and upgrading work of the aforementioned twelve major projects, of the projects still ongoing and of the projects yet to begin that have been identified as “first priority” projects (this category is shortly to be reviewed) have to be provided in the medium term with subsequent annual rates rising appreciably. The same applies to the funds required for the electrification of additional lines, for the additional projects identified within the context of the Deutschlandtakt scheme, including the necessary minor and medium-sized projects, and for the speedy renewal of the signalling technology under the “Digital Railways in Germany” strategy. The data in Figure 2 do not yet include the further projects of the requirement plan, including the projects necessary for the Deutschlandtakt. For this reason, it would be expedient if the increased requirement plan budget could be achieved at an early stage, coordinated with the status of planning (see action area 2.1 no. 1).

All stakeholders must cooperate in the implementation. The German Bundestag and the Federal Government should ensure that the requirement plan funds are increased to at least 3 billion euros per annum in the medium term and to 4 billion euros per annum by the end of the decade and that this ramp-up continues in the subsequent years and is consistent with demand. To preclude risks of a discontinuous investment policy and to create willingness in the sector to build the necessary capacity, the establishment of a longer-term and statutorily binding financing basis in the form of a fund is
One major challenge remains the acceleration of the planning and delivery of the construction projects and the enhancement of their societal acceptance. The Federal Government and DB AG have already commenced work to accelerate railway infrastructure projects by speeding up the planning process, digitalization and modularization of construction and planning processes, and this work offers important approaches for tackling this challenge. Regional alliances comprising representatives of government, industry, civil society and the public authorities should continue to be pursued in order to take more account of and to communicate the benefit of infrastructure projects that accrues on the ground. The regional dialogue processes will result in greater acceptance of projects by better communicating and discussing the bases and objectives of the projects. Evaluation and evolution of this approach would thus appear expedient.

Within the scope of the 2030 Climate Action Plan and the trilateral declaration of intent with the railway infrastructure companies, the Federal Government will, for the first time, create a strengthening funding basis for minor and medium-sized infrastructure projects (KMMs). A procedure, coordinated with the sector, for a KMM launch portfolio has already been found, which contains not only line-related projects but also service installations. There are as yet no transport appraisals and cost determinations,
and there is also no determination of the appropriate total volume of the programme portfolio. The projects are then to be prioritized on this basis. The extension of the number of cases not subject to planning law and wider protection of acquired rights would make it possible to speedily implement projects. What is especially important is the permanent implementation of the capability to fund KMMs, especially given that the projects can be implemented in the short term and will have a significant impact on operational stability. This means the ability to speedily implement and a speedy impact, for instance over the next five to eight years.

The digital revolution represents a key technology for the enhancement of the capacity and efficiency of the rail network. One example is the capacity enhancement resulting from a shortening of block lengths. This measure can be delivered significantly more simply and cost-effectively using the European Train Control System (ETCS) than with conventional technology. Moreover, after a technical upgrade in a further stage of development, the ETCS will even work without fixed block sections. Together with digital signal boxes, the ETCS forms the “Digital Railways in Germany” (DSD) technology platform for the digital transformation of railway operations. The feasibility study commissioned by the Federal Ministry of Transport and Digital Infrastructure reaches the conclusion that even the medium-term effects of the DSD will produce a positive overall benefit that also stands out as positive compared with alternatives.

The DSD is also important for the implementation of the Deutschlandtakt, because the increase in the number of services contained in the target timetable will require more capacity on many existing lines. The simplest way to create this additional capacity is by shortening block lengths or by implementing the DSD. The strategic coordination of the rollout should also focus on synchronization with the phased approach (see above) of the Deutschlandtakt. The progressive deployment of the DSD can be taken into account in capacity planning.

In autumn 2019, a sector-wide commitment to the rollout of the Digital Railways in Germany (DSD) was agreed. With the provision of public funds for the DSD starter package on the basis of an overall approach, the model funding of rolling stock in the Stuttgart metropolitan region and with a commitment to the implementation of the DSD, the Federal Government has adopted a clear position on the nationwide implementation of the DSD. In the Federal Government’s medium-term fiscal planning, the investment in infrastructure for the starter package is appropriately reflected in the federal budget. The project for implementation has been launched.

Preparations are currently underway for the conclusion of funding agreements for the DSD starter package projects. Afterwards, it will be necessary to create the technical, operational, manpower, legal and capacity conditions for the subsequent nationwide rollout and the provision of the necessary public funding. A uniform system for managing all the command, control and signalling (CCS) equipment projects would reduce the complexity of implementation.

A system change in railway command, control and signalling equipment will be successful if the infrastructure and the necessary rolling stock equipment are regarded as a single entity. Funding and incentive programmes are to be developed in particular for the retrofitting of rolling stock with on-board ETCS equipment (mobile ETCS infrastructure). Funding totalling 28 billion euros for infrastructure and 4 billion euros for rolling stock equipment will be required over the period to 2040.

In addition, digital (and also usable by the transport operators) railway technologies for traffic management and real-time capacity monitoring have to be quickly developed and established. In this way, network operations will be able to respond to disruptions more quickly and in a more targeted manner. The objective is a reliable rail network with maximum capacity and customer friendliness.
Action areas and next steps for the expansion of capacity

Action area 2.1:
Speedily implement major priority projects for removal of bottlenecks

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| 1  | Increase in requirement plan funds  
A ramp-up of the requirement plans funds to at least 3 billion euros per annum in the medium term and to 4 billion euros per annum by the end of the decade is required, and this ramp-up must be continued in the subsequent years and be consistent with demand. Ideally, this should be done making use of a longer-term and binding financing basis (e.g. fund) in order to facilitate the development of capacity required. | Federal Ministry of Transport and Digital Infrastructure, Bundestag, Federal Ministry of Finance | Permanent task |
| 2  | Synchronization with the phases of the Deutschlandtakt  
Synchronized with the implementation phases of the Deutschlandtakt, all major priority projects are to be progressed to planning and delivery making use of all the new possibilities for speeding up the planning process. | Federal Ministry of Transport and Digital Infrastructure, DB AG | Permanent task |

Action area 2.2:
Speedily implement minor and medium-sized infrastructure projects (KMMs)

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| 1  | Establishment of an initial portfolio  
A list for a first tranche of KMMs is to be developed, validated and permanently updated. | Federal Government/sector | 2021/permanent task |

Action area 2.3:
Speedily commence the rollout of "Digital Railways in Germany"

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| 1  | Launch of ETCS/rollout of digital signal boxes  
The agreed strategy for the rollout of ETCS and digital signal boxes as part of the DSD is to be implemented. | DB, non-federally owned railways, industry and others | Immediately |
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<td>2</td>
<td>Development of financial assistance programmes for stationary and mobile ETCS infrastructure</td>
<td>Federal Ministry of Transport and Digital Infrastructure, EU, railway undertakings, industry</td>
<td>Permanent task</td>
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<td></td>
<td>Public sector funding of mobile ETCS infrastructure (retrofitting of rolling stock) going beyond the Stuttgart digital hub is to be implemented, with consideration also being given to EU funding. Within the scope of the implementation it is necessary and essential that each rolling stock manufacturer cooperates on the basis of partnership in the interests of the overall project. The creation of a standardized system interface for the integration of the ETCS rolling stock equipment at European level is necessary. Measures are to be taken for the speedy and efficient retrofitting of rolling stock, for instance by taking account of the current situation regarding standards exclusive for the appraisal of the new train protection portion and for the amendments to rolling stock undertaken as a result of the conversion.</td>
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<td>3</td>
<td>Financial instruments for the ETCS/digital signal box rollout</td>
<td>Federal Ministry of Transport and Digital Infrastructure, Bundestag, DB AG, Federal Ministry of Finance</td>
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<td>The key aspect is ensuring funding of the infrastructure implementation of the overall DSD rollout that is consistent with demand, incorporating existing budget items, with funding totalling around 28 billion euros over the period to 2040 for implementation of the overall DSD rollout. To preclude risks of a discontinuous investment policy and to ensure the sustained willingness of the sector to build the necessary capacity, the establishment of longer-term and statutorily binding financing basis in the form of a fund is recommended. To integrate the non-federally owned railway infrastructure companies and railway undertakings, it will be necessary to find appropriate technical, infrastructure and financial solutions, including the interfaces (connection facilities) between the federally owned and non-federally owned infrastructures. In addition, to implement digital railways, the radio standard must reflect the latest state of the art. Here, the introduction of 5G as a possible successor to the obsolete GSM radio standard is to be considered in the preparation of future budgets.</td>
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<td>4</td>
<td>Rapid build-up of manpower and structures</td>
<td>Federal Ministry of Transport and Digital Infrastructure, sector</td>
<td>Immediately</td>
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<td>For the equipping and retrofitting of infrastructure and rolling stock, all players need to build up manpower consistent with demand, focusing on the next few years. The structures and processes at the federal authorities are to be evolved in interaction with the sector.</td>
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<td>5</td>
<td><strong>Accelerated implementation through open, upwardly compatible solutions</strong></td>
<td>Federal Ministry of Transport and Digital Infrastructure, sector</td>
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<td>The deliverability and operational maturity of the technical solutions on</td>
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<td>the basis of performance specifications that are interoperable across</td>
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<td>Europe for an upwardly compatible and future-proof deployment of the</td>
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<td>command, control and signalling equipment must be ensured by the industry</td>
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<td>at an early stage. In the interests of an agile implementation process,</td>
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<td>care must be taken to ensure that, on the one hand, solutions are quickly</td>
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<td>available and, on the other hand, that further functionalities can be</td>
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<td>retrofitted at a later point in time via open standards.</td>
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<td>6</td>
<td><strong>Make DSD standard</strong></td>
<td>Federal Ministry of Transport and Digital Infrastructure, Bundestag, DB AG,</td>
<td>Immediately</td>
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<td>In addition, ETCS is to be made standard equipment for all construction,</td>
<td>Federal Ministry of Finance</td>
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<td>retrofitting and upgrade projects (infrastructure and rolling stock). The</td>
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<td>rapid launch of the digital transformation of the rail network, which will</td>
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<td>take more than a decade, with a nationwide rollout of electronic signal</td>
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<td>boxes and ETCS requires comprehensive agreement that, as of now, all</td>
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<td>investment in command, control and signalling equipment on the rail</td>
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<td>network has to be integrated into the overall picture of a comprehensive</td>
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<td>nationwide rollout of electronic signal boxes/ETCS by 2040.</td>
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3. **Boosting the competitiveness of rail transport**

**Objectives of competitive rail transport**

Boosting the competitiveness of the rail mode is a major objective of the Alliance for the Future of Rail. It will not be possible to shift passengers and goods to the railways unless this form of transport is reliable, convenient and reasonably priced and is more attractive than the range of transport services previously used.

Shortcomings in terms of punctuality and reliability, which are also attributable to infrastructure bottlenecks, have harmed the reputation of the industry. Punctuality, good service and high quality must become the hallmark of all railway undertakings in Germany. It is up to all stakeholders to take decisive action here. Kick-starting innovations and bringing them to market is, like in other industries, a shared responsibility of the undertakings in the sector and the state.

Railway law in the EU has been largely communitized. Despite all the endeavours by the EU, there still exist obstacles in interoperability, organization and the operation of international services in the Member States and it is imperative that these obstacles be dismantled in order to boost the railways in cross-border Europe-wide intermodal competition.

Improving the general conditions in favour of the railways in intermodal competition and the appropriate customer-focused organization and regulation of intramodal competition on the railways are the two main action areas of the EU, the Federal Government and the federal states. For this purpose, the following specific measures have been identified, which will be jointly supported by the industry and the Federal Ministry of Transport and Digital Infrastructure.

**Opportunities for and challenges faced by competitive rail transport**

Boosting the competitiveness of the rail system presents itself as an intramodal and intermodal challenge. To improve the efficiency, range of services and quality of rail transport and consequently increase the market share of rail transport, intermodal competition (i.e. competition between the railway undertakings) has to be appropriately shaped and regulated and the railway undertakings have to be managed transparently and with corresponding objectives and incentivization schemes. Here, due regard must be paid to the benefit for the customers (passengers and shippers), the stability and innovative capacity of railway operations and the interests of the workforce and undertakings. One constant challenge is the competition for infrastructure capacity and train paths, especially between long-distance, regional/local and rail freight services.

The Coalition Agreement states that railway regulatory law is to be evaluated. This will involve examining whether the Act on Boosting Competition in the Rail Sector, which entered into force in 2016 and has at its core the Railway Regulation Act, which transposes the European Directive establishing a single European railway area and is geared towards boosting intramodal competition (primarily facilitating non-discriminatory access to railway infrastructure and fleshing out the rules governing charges for the use of railway infrastructure), has achieved its objectives or whether it needs to be evolved in line with requirements. The main objectives to be pursued here are: boosting the railways in intermodal competition as well; improving the efficient and customer-focused operation of the infrastructure; providing targeted funding to the modernization and upgrading of the railway infrastructure in line with the objectives for increasing market share; and securing regular interval timetables in the passenger sector and systemized train paths in the rail freight sector over several years.

The changeover in path allocation to systemized train paths within the scope of the Deutschlandtakt would appear to be a promising approach for reconciling the different interests such as planning certainty, short-termism and the optimum use of existing capacity. In this context, it is also necessary to improve the information on the available capacity and the reliability of the capacity enhancement.

The seamlessness between the planning of available capacity and the allocation of specific paths is to be further enhanced in the interests of planning certainty, higher capacity and the quality of the timetable and operations. Timetables are only established once a year, and the
currently applied priority criteria of “interval between services”, “integration into the network” and “highest standard charge” do not guarantee efficient infrastructure utilization. Moreover, on the one hand, there has been no planning certainty beyond one timetable year since the abolition of the framework agreements, which means that there is no reliability, especially for local and regional passenger rail services with long-term binding agreements, and too little investment certainty for capital-intensive rolling stock and logistics systems. On the other hand, train path requests for the annual timetable have to be submitted nine months in advance, which in many cases is too long for the highly volatile and spontaneous rail freight sector and does not reflect market realities.

This entails the following challenges for an evolved path allocation model:

- The railway undertakings require planning certainty for their services and investment, taking into account the market requirements of the different types of traffic.

- The public transport authorities, federal states and railway undertakings, especially in the passenger services sector, require a framework within which they can deliver reliable transport strategies with regard to intervals between services and connections.

- The investment by the Federal Government and the railway infrastructure companies must be safeguarded and pay off in the form of additional capacity on the railways and a higher quality of operations.

- For both regular and occasional rail freight services, the number of paths available must meet current and future needs and be of the quality required by the market.

This results in requirements that have to be taken into account in the evolution of railway regulatory law – subject to an in-depth discussion on, inter alia, the legislative process and consultations with the associations.

- Basic approach: seamless planning of infrastructure capacity, guided by the overall demand, will be developed on the basis of the Deutschlandtakt.

- On the basis of the available capacity and the target timetable derived from the Deutschlandtakt, a timetable is to be devised that is of an optimum nature, tailored to the market and optimized in terms of capacity and quality.

- The actual implementation of this pre-arranged timetable is to be made possible within the scope of the marketing of the capacity (path allocation) by means of greater systematization of services and observing the European law principles of open network access. This is designed to increase the number of usable paths and enhance the quality of operations.

- In an iterative process, the target timetable is to be progressively approached with each annual timetable via the phased approaches until the capacity model is reached.

- Implementation of the Deutschlandtakt over several annual timetable periods will enhance investment protection for railway undertakings, public transport authorities, the Federal Government and DB Netz and will take account of the requirements of the economic operators (including new market entrants).

- The capacity planning and the preparation of the target timetable must ensure that train paths are secured for all types of traffic on an equal footing. This includes both safeguarding long-term service strategies and providing market-based strategies for occasional services for which paths are requested at short notice.

- It should be possible to resolve conflicts in advance, taking into account economic objectives and competition interests of the railway undertakings. To this end, a network usage policy should be developed for all lines on the basis of the target Deutschlandtakt timetable and in a non-discriminatory and transparent manner and a mix of traffic types should be defined. The policy will be the basis for the preparation of the annual timetable and the design of the specific timetables.

In its report on the evaluation of the Railway Regulation Act, the Federal Network Agency stated that the procedural
rules governing the congested railway infrastructure are not sufficient to relieve the congestion. To this end, it suggested, among other things, changes in the plans to enhance railway infrastructure capacity. These measures include mandatory approval of the plans to enhance railway infrastructure capacity and an obligation to implement the measures contained in the approved plans. These will be reviewed to determine whether they are likely to deliver as quickly as possible the additional capacity required by enlarging the infrastructure, thereby relieving the burden on the congested railway infrastructure.

There are also opportunities for increasing the railways’ modal share in the sphere of intermodal competition (i.e. competition with other modes of transport such as road or air). Alongside the entrepreneurial activities, the policy framework also plays a role here.

One action area for enhancing the intermodal competitiveness of the railways is the setting of track access charges. Track access charges are calculated in accordance with European and national law. The calculation is based on the direct costs of train operations (marginal costs), on which mark-ups for full cost recovery are levied, which depend on the market viability in the types of traffic and segments. In the future, track access charges in the local and regional passenger rail service sector will be statutorily defined. The levying of mark-ups in the long-distance passenger rail service and rail freight sectors on the basis of market viability is economically complex and weakens the railways in intermodal competition. Because the use of the infrastructure of other modes of transport is not encumbered with “viability charges”. This would also appear likely to achieve results on the railways. The funding of track access charges by the Federal Government in the rail freight sector constitutes a first step towards this. In addition, the current system involves substantial effort for the infrastructure managers and the regulatory authority as well as legal uncertainties for all parties involved.

The rail mode is especially suitable for guaranteeing performance and punctuality, because it is planned down to the last detail and disruptions can ideally already by taken into account by the infrastructure and more easily intercepted. It should thus be considered whether additional liability under railway law for poor performance, by both the access beneficiaries and the infrastructure managers, is likely to further enhance the quality of the rail network and thus the competitiveness of the sector. From the perspective of some network users, the corresponding rules governing the quality promises given by the infrastructure managers and the established incentivization schemes for quality improvement still require development. In addition, well balanced systems provide incentives for sufficient precautionary measures such as cutting back vegetation or keeping reserve capacity ready.

In conformity with the objectives of the Coalition Agreement, economic targets, such as increasing the market share of the railways, are to be enshrined in the articles of association of the federal railway infrastructure companies and the DB AG group as a whole and the boards of these undertakings are to be required to meet these targets. For the railway infrastructure, the emphasis is not on maximizing profit but on appropriately maximizing rail traffic. However, to ensure a level playing field on the transport market, this appropriate project must be confined to the infrastructure companies of the group and must not affect the entrepreneurial remit of its railway undertakings.

The Federal Government will continue to speedily implement the Rail Freight Masterplan, which was adopted in 2017, with its 66 measures and five measures for immediate action to improve competitiveness. Alongside the funding of track access charges (since July 2018) and the Federal Government Programme on the Future of Rail Freight, which was launched in the spring of 2020, the next major step will be the implementation in the near future of the funding of facility prices with a focus on boosting wagonload traffic.

With the help of emerging technologies, innovative rolling stock strategies, such as the introduction of digital automatic coupling (DAC) and the increasing use of digital technology, we will appreciably increase the logistics capabilities of the railways and value perception of the range of transport services. The opportunities presented by the digital revolution are also to be used in order to standardize and accelerate the necessary data flows. By reducing transit times on the rail network and through technological modernization, the rail freight sector can
significantly enhance its competitiveness. By moving higher-value goods, it can achieve greater margins, thereby making investment in innovations possible.

We want to ensure that the railways have permanent access to the freight transport volumes of the future. To this end, we will seek equivalent access to the railways throughout the country, especially at industrial sites, logistics centres and business parks. We want to systematically boost products with network functions for the entire railways, such as wagonload traffic. We want to shape a framework that is reliable in the long term. This also includes a user pays system that is intermodally competitive.

Despite a high level of environmental friendliness, the railways suffer under specific energy tax/levy burdens such as environmental tax and renewable energy surcharges. Even before the sharp rise in climate change levies, the relatively high taxation of electricity, in particular, had an inhibitory effect in the largely electrified rail transport sector and threatens to have an even greater adverse impact on the competitiveness of the railways in the future.

Despite all the endeavours by the EU to achieve standardization, there is still great foreclosure of the national markets in rail transport and railway engineering. Moreover, the regulations and standards are extremely peculiar to individual branches, and this weakens the attractiveness of the rail sector for investors and industries that are geared towards economies of scale and digital transformation.

Germany has a strong rail industry (for instance rolling stock manufacture, signalling systems, digital technology), which we want to preserve and strengthen. For this reason, great importance attaches not only to the funding of innovation (see Chapter 5) but also the way in which tendering procedures are shaped, by requiring local content in them wherever EU law permits. By doing so, we want to prevent wage dumping and safeguard jobs in the EU. The same also applies to the construction industry with its many highly productive small and medium-sized enterprises. We want to take this into account and shape invitations to tender and lot sizes such that these SMEs can participate.

The railway sector, including the railway and construction industries, is firmly committed to the railways as a growth market and will rapidly expand its capacity, especially with regard to the great need for planning and construction capacity.

In the local and regional passenger rail service and rail freight sectors, there has been a positive trend in intramodal competition and the market share of the non-federally owned railways has risen. In the long-distance passenger rail service sector, there has been intensive intermodal competition, but no appreciable intramodal competition has emerged since the reform of the railways. The causes of this trend have to be investigated and, if appropriate, removed because, as international examples show, intramodal competition in the long-distance passenger rail service sector could contribute to rising market shares for the railways. There is agreement in the Alliance for the Future of Rail that “competition on the market” must be compatible with the *Deutschlandtakt* and the flexible use of the regular interval trains by travellers.

Passengers should be able to enjoy a smooth travel experience. Today, the Integrated Ticketing Association of the Federally and Non-Federally Owned Railways in Germany already guarantees through ticketing for most rail journeys on which trains operated by two or more railway undertakings are used. Acceptance of the railways by the public could also be improved by evolving the fare landscape in passenger transport in order to enable all commercial operators to provide services feeding into and out of local transport and to offer rail customers seat reservations, season tickets and flexible tickets of a nationwide fare structure for the use of all regularly operating trains regardless of the operator. At the same time, the investment made by the sector must be protected in competition. Consideration should also be given as to how a situation can be reached in which all railway undertakings operating regular passenger services recognize flexible tickets, through tickets and season tickets (including international passes such as Interrail) on domestic services and as an extension or part of international journeys. As far as the aforementioned issues are concerned, the Alliance for the Future of Rail believes the onus is on the railway undertakings and public transport authorities involved to engage in a dialogue with
The passenger associations to develop solutions, including at the European level, and specify any adaptations of the framework that may be necessary.

The quality promise given by the railways also includes an especially good level of service for the customers. The reimbursement process that is not yet digital, the exclusion of or restrictions on certain tickets and also the process of the reciprocal recognition of tickets of other undertakings show where there is scope for optimization. Furthermore, the ticketing barriers on international services have to be dismantled. There is an increasing lack of through international tickets. In addition, season tickets, discounted tickets, customer loyalty programmes, etc. are all exclusively oriented to the domestic market. This is outdated in the era of a united Europe.

**Action areas and next steps for competitive rail transport**

**Action area 3.1:** Review of the current track access, station and facility pricing system

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<thead>
<tr>
<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>The sector will present proposals on the restructuring of the track access, station and facility pricing system in the near future.</td>
<td>Sector</td>
<td>2020</td>
</tr>
<tr>
<td>2</td>
<td>Relief by providing more funding of track access, station and facility prices</td>
<td>Federal Ministry of Transport and Digital Infrastructure, DB AG</td>
<td>Permanent task</td>
</tr>
</tbody>
</table>

**Action area 3.2:** More competitiveness and quality incentives

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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td>1</td>
<td>Consider whether additional liability under railway law for poor performance, by both the access beneficiaries and the infrastructure managers, is likely to further enhance the quality of the rail network and thus the competitiveness of the sector.</td>
<td>Federal Government</td>
<td>2020/21</td>
</tr>
<tr>
<td>2</td>
<td>Evaluate (and, if necessary, evolve) railway regulatory law so as to be able to shift more traffic to the railways.</td>
<td>Federal Government/federal states/sector</td>
<td>In progress 2020/21</td>
</tr>
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</table>
Action area 3.3:  
Evolution of the funding of private sidings and funding of combined transport

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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td>1</td>
<td>Continue and evolve the ongoing funding of combined transport terminals (requirement plan, Combined Transport Funding Guidelines) and private sidings and allocate the appropriations it requires in the federal budget.</td>
<td>Federal Government</td>
<td>Permanent task</td>
</tr>
<tr>
<td>2</td>
<td>The funding guidelines will be evolved with the objective of shifting more traffic to the railways.</td>
<td>Federal Government</td>
<td>2020/21</td>
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</table>

Action area 3.4:  
Boosting wagonload traffic in the rail freight sector as an alternative to the HGV

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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td>1</td>
<td>Develop and implement guidelines for the funding of facility prices, focusing on wagonload traffic as an alternative to the movement of goods by HGV.</td>
<td>Federal Government</td>
<td>2020/21</td>
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Action area 3.5:  
Relieving the burden on rail transport

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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Relief by reducing the three-fold burden imposed by electricity tax, the renewable energy surcharge and prorated charges from emissions trading and by funding track access, station and facility prices.</td>
<td>Federal Government/federal states</td>
<td>Permanent task</td>
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</tbody>
</table>
Action area 3.6:
Enhancing the attractiveness of the rail sector for investment

<table>
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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td>1</td>
<td>Create sufficient scope for entrepreneurial action by optimizing and digitalizing business processes and functionally fleshing out products and services. Only in this way will the sector remain sufficiently attractive for making further investment and enabling necessary innovations. This also includes a detailed review of the current market framework.</td>
<td>Sector</td>
<td>2021</td>
</tr>
<tr>
<td>2</td>
<td>We want to require local content in tendering processes, to the extent that EU law permits, in order to safeguard businesses and jobs in the EU. We want to take account of the structure of the construction industry, with its many small and medium-sized enterprises, by shaping invitations to tender and lot sizes such that these SMEs can participate.</td>
<td>Federal Government/sector</td>
<td>Permanent task</td>
</tr>
<tr>
<td>3</td>
<td>The railway sector, including the railway and construction industries, is firmly committed to the railways as a growth market and will rapidly expand its capacity, especially with regard to the great need for planning and construction capacity.</td>
<td>Sector</td>
<td>Permanent task</td>
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Action area 3.7:
Simpler rail travel

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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>All options are to be explored for making access to through rail tickets and passenger information as simple as possible, in Germany and at European level. In addition to transparency and cooperation between the railways, the digital transformation will play a key role here.</td>
<td>Federal Government/sector</td>
<td>Permanent task</td>
</tr>
<tr>
<td>2</td>
<td>The establishment of a uniform European booking system that is accessible to people with disabilities will simplify cross-border travel by train and boost the railways’ market position.</td>
<td>Federal Government/sector</td>
<td>Permanent task</td>
</tr>
</tbody>
</table>
4. Progressing noise and climate change mitigation in rail transport

Objectives of greater noise and climate change mitigation in rail transport

The Federal Government is pursuing the objective of reducing railway noise as the volume of traffic rises significantly, including on existing lines, so as to be able to shift increasing amounts of traffic to the railways, to ensure the permanent acceptance of rail transport and enable further growth. The current focus is on halving rail noise by 2020 and the implementation of the ban on noisy freight wagons starting with the 2020/2021 timetable change.

Within the scope of the National Platform on the Future of Mobility, the project of shifting freight to the railways was allocated a dimension, namely the objective of achieving a market share of 25% for rail freight. For 2030, this is equivalent to a traffic potential in the corridor of 190 to 250 billion tkm.

Other objectives specifically agreed in the Coalition Agreement are: rules governing the form to be taken by noise mitigation measures of particular importance for the tourism or health industry; exploring options for the greater dovetailing of noise mitigation on existing railway lines and noise action planning; and the introduction of noise monitoring in order to document the progress made in noise reduction in a comprehensible manner.

Shifting more traffic to the railways also calls for, inter alia, the upgrading and corrective maintenance of the existing network. Like train noise, the temporary construction noise this generates is to be reduced as far as possible.

In addition to the reduction in railway noise, the Coalition Agreement for the 19th parliamentary term also stated that Germany would, in accordance with the Paris Climate Change Agreement, commit itself to limiting global warming to 1.5 degrees Celsius if possible. This requires a significant reduction in greenhouse gas emissions. Rail transport is the only mode in which the term "climate neutral transport" can become reality in the years ahead. Even today, rail transport accounts for less than 1% of all greenhouse gases emitted by the transport sector (carbon equivalents, see Figure 3).

Figure 3: Sources of emissions from transport in 2017 (excluding CO2 from biofuels)
Combined with the objective of shifting traffic to the railways, the spotlight is now also on decarbonisation and further noise reduction on the railways. The objective is for rail transport to continue to be at the vanguard of climate-friendly mobility. First, by increasing the share of energy from renewable sources and second, by minimizing energy consumption, thereby making rail transport more energy efficient and reducing its emissions. In addition, additional noise mitigation measures must offset the rising levels of emissions resulting from the growth in traffic caused by the modal shift.

Opportunities for and challenges faced by greater noise and climate change mitigation

The key objective of halving railway noise can only be achieved by (a) retrofitting existing freight wagons and prohibiting the operation of noisy freight wagons on the German rail network and (b) by further progressing the deployment of stationary noise mitigation within the scope of the programme for noise mitigation on existing federal railway infrastructure. When the operation of noisy freight wagons on the German rail network is banned in principle at the end of 2020, further reductions in emissions are likely.

Railway noise affects people mainly during their periods of rest and recreation, i.e. especially at night, at weekends and on public holidays. Even a halving of railway noise will not yet always result in satisfactory noise reduction on very busy lines. Further efforts are thus required if the targets recommended by the World Health Organization (WHO) in 2018 are to be approached. Here, consideration should be given to the guidance provided by the WHO, which, with regard to the scientific findings concerning railway noise, has indicated a need for further research. If the WHO targets are to be met, a discussion is also necessary on, inter alia, a further lowering of the exposure action values in noise mitigation on existing railway lines.

The noise produced by processes and warning devices when engineering work is being carried out on the track are also increasingly being perceived as a nuisance. The general discussion shows that there is a greater need for action here. There are currently no noise limits, nor is it mandatory to mark construction and maintenance machines. The Federal Environment Agency is currently considering the way forward.

Figure 4: Existing rolling stock development by brake block type on the national register of rolling stock (source: Federal Railway Authority)
The status of retrofitting noisy freight wagons with quiet brake blocks has been evaluated continuously since the end of 2016. The status on 30 April 2020 was that just 88 percent of the freight wagons operating on the German rail network (including freight wagons not included on the national register of rolling stock) are fitted with quiet brake blocks.

Moreover, as the number of quiet freight wagons increases, importance attaches to noise reduction on other types of rolling stock (primarily locomotives and railcars) and the acoustically optimized maintenance of the rolling stock and the track, for instance by preventing flat spots. There should be further research into the causes of flat spots and basic research into wheel-on-rail contact, especially of wheels braked by composite brake blocks, with regard to the potentially necessary development of wheel-slide protection systems for freight wagons.

<table>
<thead>
<tr>
<th></th>
<th>DB Cargo 5</th>
<th>VPI wagon keepers</th>
<th>Foreign wagon keepers 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of freight wagons in Germany1</td>
<td>183,000</td>
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<tr>
<td>Fleet of TSI-compatible wagons according to EBA register2</td>
<td></td>
<td></td>
<td></td>
<td>111,218</td>
</tr>
<tr>
<td>Fleet of TSI-compatible wagons in neighbouring countries3</td>
<td></td>
<td></td>
<td></td>
<td>36,234</td>
</tr>
<tr>
<td>Fleet of other quiet wagons at 1 December 2019 4</td>
<td></td>
<td></td>
<td></td>
<td>13,053</td>
</tr>
<tr>
<td>Total number of quiet wagons</td>
<td></td>
<td></td>
<td></td>
<td>160,505</td>
</tr>
</tbody>
</table>

Quota with 160,505 quiet wagons as at 30 April 2020 relative to 183,000 wagons operating in Germany 87.7 %

1 According to the 2011 benchmark agreement on noise-differentiated track access charging systems
2 Fleet of active freight wagons with D, K, LL blocks according to National Rolling Stock Register and Retrofit Register, subdivided into DB, Association of German Wagon Keepers and foreign, as at 30 April 2020
3 Fleet of active freight wagons (built in 2009 or after) of the following countries: CZ, AT, DK, PL, CZ, SVK, IT, CH, FR, LUX, BE and NL according to ECVVR (as at 1 January 2020), weighted by cross-border operation to Germany (according to Eurostats, Istat), as at January 2020
4 Quiet wagon fleets not or not yet reflected in the registers (e.g. retrofitted but no grant applied for) according to information provided by the wagon keepers to the EBA, as at 1 December 2019
5 DB Cargo incl. 100 % DB Cargo subsidiaries in Germany and abroad, plus DB AG subsidiaries DB Bahnbau, DB Fahrzeuginstandhaltung, DB Fahrwagenten, DB Fernverkehr, DB Mobility Logistics, DB Internodal Services, DB Netz, DB Regio and DB Cargo Logistics (incl. former DB Schenker Nieten)
6 Also includes in the register fleet < 150 TSI-compatible wagons of German keepers that are not VPI members

Source: Representation on the basis of data from the National Register of Rolling Stock and Retrofit Register, Federal Railway Authority
Last evaluation: 30 April 2020

Figure 5: Evaluation result updated to 30 April 2020 (source: Federal Railway Authority)
Starting with the December 2020 timetable change, the Railway Noise Mitigation Act, which was adopted unanimously by the German Bundestag and Bundesrat and prohibits in principle the operation of noisy freight wagons, will apply. Together with the noise-differentiated track access charging systems that have been organized in the Netherlands, Germany, Austria and Switzerland and the associated public discussion of railway noise, this Act has provided a significant impetus to the EU to address noise mitigation at source, thereby contributing to the planned introduction of quieter routes. Starting with the December 2024 timetable change, there will be an EU-wide ban on noisy freight wagons operating on the quieter routes, i.e. all lines on which more than 12 freight trains operate during the night.

Figure 6: Quieter routes on the German rail network (source: Federal Railway Authority)
In the interests of transparency and efficiency, we will seek to more closely dovetail the programme of noise mitigation on existing lines with the instruments of the Environmental Noise Directive. Appropriate possibilities for harmonization are currently being considered in a project launched by the Federal Ministry of Transport and Digital Infrastructure and administered by the Federal Railway Authority. There is regular coordination on the way forward for the project within a monitoring working party comprising representatives from federal authorities, federal states, local government associations, professional associations, citizens’ action groups and academia. The project is due to be concluded by the end of 2021.

Given that residents are still exposed to railway noise and that the modal shift objectives mean that they will be exposed even more in the future, plus the great threat posed by climate change, further efforts to mitigate noise and climate change are necessary. Priority will be given to measures and instruments that tackle the problem at its source and link the two objectives of noise mitigation and climate change mitigation. A successful reduction of noise pollution requires an integrated overall approach comprising measures at source (rolling stock and track) and on the propagation path plus acoustically optimized maintenance.

The railways will become significantly more important as a climate-friendly and environmentally friendly mode of transport. To ensure that rail transport continues to be at the vanguard of climate-friendly mobility, it also has to play its part in reducing greenhouse gas emissions. Two levers are available to achieve this – increasing the share of energy from renewable sources and reducing energy consumption, to make rail transport more energy efficient and less polluting as a whole. In addition, the rail system has to be adapted to effects of climate change. In particular, the infrastructure has to be adapted such that it can withstand extreme weather events. To this end, care must be taken – if possible as early as the planning and construction stages – to ensure that the technology used and the maintenance measures selected allow operation that is as safe and reliable as possible under the conditions that are likely. The outcomes are technologies, methods and procedures whose deployment will (a) help to reduce carbon emissions and (b) help to address the challenges posed by climate change.
## Action areas and next steps for more noise and climate change mitigation in rail transport

### Action area 4.1: Reducing noise exposure

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<tr>
<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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</table>
| 1  | Reducing noise exposure during construction works  
To reduce noise exposure during construction works on the railway infrastructure, especially in densely populated areas, and enhance acceptance in the population, the following recommendations, in particular, are to be taken into account:  
• appropriate consideration is to be given during planning and construction to the noise generated by the building site;  
• the data situation of machines and processes is to be improved and the development of new less noisy machines and processes is to be expedited;  
• measures to reduce noise exposure resulting from construction works are to be taken into account when funding agreements and contracts between the contracting authority and the contractor are being framed;  
• for the comprehensive use of low-noise construction machines in Germany, incentives and, in the long term, a reliable regulatory framework must be created;  
• targeted communications to enhance acceptance of engineering works by those affected;  
• use is to be made of possible alternatives to stationary warning devices;  
• in noise-sensitive areas, the aim should be for construction to take place normally during the day from Monday to Friday. | Federal Government/sector | Permanent task |
| 2  | Reducing noise emission during stabling und platforming  
To reduce noise emissions during the stabling and platforming of trains, initial proposals and recommendations for action for new and existing rolling stock for the sector and policymakers have been contributed to the Alliance for the Future of Rail. Alongside the funding of infrastructure projects by widening the programme of noise mitigation on existing lines to cover holding sidings and the non-federally owned railway infrastructure companies, the funding of noise optimization measures on existing rolling stock and the development of a general approach to the issuing of tenders for noise-optimized rolling stock (existing and new rolling stock) within the scope of invitations to tender for transport projects was proposed. | Federal Government/sector | Permanent task |
### Use of high-speed lines by freight trains during the night

To reduce the burden on noise-intensive lines, consideration is to be given to the technical feasibility of making paths on high-speed lines available for use by freight trains during the night. DB AG has named some measures for improving the use of high-speed lines by freight trains. Among other things, it suggested optimizing the command, control and signalling equipping and increasingly fitting motive power with ETCS for cross-border services and the use of ECTS corridors. DB AG will consider these measures in detail, especially to establish the conditions under which and the periods during which they can be implemented. In the future, use by freight trains is also to be planned in the construction of new high-speed lines.

**No.** 3  **Next steps**

**Use of high-speed lines by freight trains during the night**

- **Parties involved:** DB AG
- **Time horizon:** Permanent task

### Innovative traction unit

In a future project entitled “innovative traction unit”, alternative drivetrain technologies and low-noise components for locomotives and railcars are to be researched. It is also to take account of the low-noise stabling of traction units. The use of alternative drivetrains could reduce emissions of particulate matter, nitrogen oxides and CO₂ on non-electrified or partly electrified lines. As a preliminary stage for this project, a “Study to identify research approaches and technical foundations for the development of a quieter, more environmentally friendly and operationally feasible innovative traction” is currently being prepared. Findings are expected to be available in the fourth quarter of 2020.

**No.** 1  **Next steps**

**Innovative traction unit**

- **Parties involved:** Federal Government
- **Time horizon:** 2020, subsequently depending on the outcome of the study
With the deployment of DAC and the associated automation and digital transformation of the rail freight sector, the modernization of the wagon fleet and in parallel the use of low-noise brakes (composite brake blocks, disc brakes with acoustically optimized wheelsets) and other noise-reducing components that have been tested in the BMVI’s “Innovative Freight Wagon” project will be accelerated. Via electricity and data lines, it is possible to operate, for instance, sensors that detect noise-producing flat spots or other causes of noise at an early stage so that the causes can be identified and eliminated before noise is even produced. With this at-source noise mitigation, it is possible, unlike with locally limited stationary noise mitigation, to deliver area-wide noise mitigation. To support the process of migration, the Federal Ministry of Transport and Digital Infrastructure will, by June 2020, commission a research project entitled “DAC Demonstrator” with a lifetime of 30 months.

Action area 4.3:
Trialling and test beds

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<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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<tbody>
<tr>
<td>1</td>
<td>“New and application-oriented noise mitigation trialling” initiative (I-LENA)</td>
<td>Federal Government</td>
<td>2020/21</td>
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<tr>
<td></td>
<td>The “New and application-oriented noise mitigation trialling” initiative, or I-LENA, addresses the trialling of stationary noise mitigation technologies on the track. Around 30 innovative noise reduction measures are currently being trialled in real world operations in this initiative. The project will run until the end of 2020. After 2020, further trialling of stationary noise mitigation technologies on the track with the same objectives will be carried out by the German Centre for Rail Traffic Research (DZSF), combined with the establishment of LärmLab 21.</td>
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<tr>
<td>2</td>
<td>LärmLab21</td>
<td>Federal Government</td>
<td>2020/21, at the latest with establishment of the digital test bed in Lusatia.</td>
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<td></td>
<td>Within the scope of delivery of the immediate action entitled “Establishment of an open digital test bed in Lusatia”, which was adopted by the Steering Group on 15 October 2019, the “LärmLab21” project will be launched. As an institution of the German Centre for Rail Traffic Research, this “LärmLab21” is to research options for reducing noise pollution by rail transport.</td>
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### Action area 4.4:
Increasing funding for noise mitigation on existing lines and noise research

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<tr>
<th>No</th>
<th>Next steps</th>
<th>Parties involved</th>
<th>Time horizon</th>
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</table>
| 1  | **Increasing funding for noise mitigation on existing lines**  
   To meet the noise reduction targets set by the Federal Government and the Alliance for the Future of Rail, it will be necessary to allocate appropriate funds going beyond the current financial planning. This is the only way to ensure permanent and plannable noise mitigation on existing railway lines and noise research. | Federal Government | Permanent task |

### Action area 4.5:
Tackling climate change by increasing the degree of electrification of the rail network

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| 1  | **Electrification programme**  
   The Federal Government wants to increase the proportion of electrified lines on the rail network from the current figure of 61 percent to 70 percent by 2025. This measure will help to tackle climate change and also reduce noise pollution. For its implementation, the Federal Ministry of Transport and Digital Infrastructure is developing the “Electric Freight Railway” financial assistance programme. Sufficient funding is to be provided in the federal budget to achieve the electrification objective. | Federal Government | 2025 |
The Innovative Freight Wagon research project showed that there is further scope for reducing noise emissions. To boost the reduction of noise at source, the Federal Government will thus lobby at EU level for an ambitious update of the noise emission levels for rolling stock. At the national level, all instruments that promote the operation of rolling stock with noise emissions significantly below the levels are to be used. When new noise technologies have been recognized as state of the art, efforts are to be made to ensure that the lower emissions they enable are taken into account when levels are established in the relevant TSIs and are included in the emissions assumptions of the Schall 03 noise calculation provision within the meaning of part 9, the subject of which is the consideration of deviating railway technology and sonic innovations.

One of the basic requirements of protection against railway noise that is acceptable and avoids health risks is that it must take into account the findings of noise impact research, especially the WHO’s very sound 2018 scientific guidelines on environmental noise. If the WHO targets are to be met, a discussion is also necessary on, inter alia, a further lowering of the exposure action values in noise mitigation on existing railway lines. The new findings, approaches and requirements regarding the level of protection should be included in immission control law. To this end, the intention – formulated in the Coalition Agreement – of preparing a “cross-modal noise strategy” should be implemented, or at least launched, in this parliamentary term on the basis of a broad and transparent dialogue between policymakers and society.

The shortcomings of the Traffic Noise Mitigation Regulations, for instance the fact that they look at the transport infrastructure to be changed in an isolated manner, i.e. the lack of an overall noise assessment, or major modification only as a result of significant structural interventions, i.e. no consideration given to increases in noise levels due to operations, or the fact that they fail to address the long-distance impact of the construction of a new or the upgrading of an existing alignment, are often complained about and ways should continue to be sought to remedy them.
5. Funding innovation in rail transport

Objectives of funding innovation in rail transport

In recent years, research activities in the rail sector have not been controlled in a manner that is sufficient to meet requirements and have not been made generally accessible. Moreover, for reasons of cost, innovative technologies often do not manage to get onto the market. It is imperative that new innovative dynamism be injected into the rail system, by both the Federal Government and the sector.

The German Centre for Rail Traffic Research (DZSF) and the Federal Government’s Railway Research Programme will facilitate the practical implementation of innovations and strengthen the German rail system as a whole through applied research to the benefit of all parties involved.

One of the key challenges is the constant updating and consistent implementation of the Federal Government’s Railway Research Programme with the aim of effectively boosting rail transport by means of targeted and practice-based research in order to meet the requirements set out in the EU’s 2011 Transport White Paper. The White Paper calls for, inter alia, technological innovation to achieve a faster and cheaper transition to a more efficient and sustainable European transport system. It is to act on three main factors:

- vehicles’ efficiency through new engines, materials and design;
- cleaner energy use through new fuels and propulsion systems; and
- better use of networks and safer and more secure operations through information and communication systems.

Figure 7: Organizational structure of the German Centre for Rail Traffic Research (as at May 2020)
One objective is to develop Germany into the world’s lead market in research and application in rail transport and to strengthen the position of the railway industry as the lead provider of innovative and sustainable mobility solutions in global competition. By conducting rail research, the Federal Government is strategically supporting industrial competencies, value creation and employment in Germany and Europe.

Opportunities for and challenges faced by the funding of innovation

In implementation of the Coalition Agreement, the Federal Government’s Railway Research Programme was launched which, in addition to passenger rail services and rail freight, also comprises infrastructure and all other spheres relating to rail transport. The programme is structured into three thematic areas: value for money; the environment and sustainable mobility; and safety. It also addressed the four following cross-cutting issues: the digital transformation; automation; migration; and law. In addition, specific innovations for rail freight can be trialled within the scope of the Federal Government’s Programme on the Future of Rail Freight and, if appropriate, launched on the market.

In May 2019, the German Centre for Rail Traffic Research (DZSF) was founded as a practice-based and technological/scientific Federal Government research establishment with offices in Dresden and Bonn. To be able to conduct applied research, in particular, tests and trials that reflect everyday practice are necessary. To this end, an open digital test bed coordinated by the Centre will be established in Lusatia. One component of this test bed will be the LärmLab 21, which will focus on applied noise research. The aim is to establish the Centre in the long term as a platform for collaboration with industry and academia.

Implementation of this programme will be coordinated by the Centre. As a departmental research establishment of the Federal Government, the Centre has sound knowledge and the ability to provide strategic advice to policymakers on all issues relating to rail transport. The Centre will prepare the evolution of the content of the programme for the Federal Ministry of Transport and Digital Infrastructure and to this end will ensure that there is close coordination with the rail sector and academia. Within the scope of rail transport research, national and EU-wide research efforts are to be linked up, thereby generating synergies. However, it should be borne in mind that a clear line has to be drawn between research focusing on the interests of public welfare and research conducted from an entrepreneurial point of view. A basic prerequisite here is close interaction and continuous coordination between policymakers, the sector and academia. Research conducted or commissioned by the German Centre for Rail Traffic Research itself plus innovative projects funded by the Federal Government are to be reviewed with regard to ecological, economic and social criteria and in terms of their impact on passengers, the workforce and the general public. Accordingly, the Federal Government’s Railway Research Programme will be regularly evaluated.

Similarly, the research activities and innovation cycles are also to be expanded independently by the sector. Here, it is imperative that new developments and system innovations be identified in a targeted manner – weighing up the technical and economic risks – and that there be networking within the sector during implementation plus cooperation with institutions of higher education and research establishments, possibly with the provision of funding to them, for instance by means of endowed chairs.


The necessary innovation processes in the rail transport sector are to be kick-started and accelerated by commissioned research and the provision of funding to research and technological development. These different instruments complement each other and can, if necessary, also be used in parallel. The initial focus will be on commissioned research. With its problem-oriented, practice-based and interdisciplinary approach, this core area covers the broad spectrum of responsibilities of the Federal Government in the rail sector. It develops independent expertise at the interface of academia, research, industry, government and policymakers that is available to the entire railway sector. In addition, in the
medium to long term, ideas and new technologies are to be developed within the scope of research programmes with a specific focus by providing research funding. The funding will be provided on the basis of funding guidelines and will be addressed to businesses, research establishments and universities as well as to their collaborative projects. The findings achieved are to be application-oriented and should, if possible, be able to be demonstrated.

In the interests of result-driven and practice-based research, the development of innovative and low-noise rolling stock in the local, regional and long-distance passenger service sector and in the rail freight sector is to be funded, among other things. Funding is also to be provided for the development of innovative low-noise and energy-efficient technologies for rail transport and for digitalization for the planning, construction and operation of the infrastructure.

To boost passenger rail transport, innovations for improving the reliability and punctuality of rail services must be progressed. Here, it is not only optimized boarding and accessibility of the rolling stock and an increase in the number of seats and areas for standing passengers on the trains, but also modern procedures for making better use of the entire length of platforms and better arrangements for channelling passengers that play a role, as do an enhancement of the reliability of passenger counting systems and edge of platform indicators. The standardization of rolling stock for rail passenger services also has to be expedited.

Another challenge in the field of innovation and research is the digital transformation of the infrastructure and railway operations. The possible applications of digital technology in railway operations go beyond the introduction of ETCS (see Chapter 2). Thus, for instance, digital technology can be used to ensure proactive infrastructure and wagon maintenance. In addition, the nationwide and cross-organization use of Building Information Modelling (BIM) in the cooperation between all players and stakeholders involved in planning, plan approval, authorization, construction and operation of the infrastructure speeds up planning procedures and continuously updates the availability information.

The use of further new digital technologies will be a crucial factor for enhancing the performance of the rail system. These include sophisticated sensor technology for environment sensing and real-time positioning of trains, traffic management based on artificial intelligence plus 5G and cloud technologies that provide a corresponding high level of data connectivity and data processing capacity. This is the basis for further innovations such as automated and autonomous driving.

In addition, the rail freight sector is to be further expanded. The development and trialling of innovations for rail freight also serves this purpose. Key action areas are the digital transformation and automation in the field of infrastructure and in relation with operations and innovative rolling stock technology. With the Federal Government’s “Future of Rail Freight” programme, an instrument has already been created for trialling innovations from these fields and launching them on the market.

A major lever for improving the value for money and competitiveness of rail transport is the (partial) automation of railway operations and their operational processes. Alongside technological issues, operational implementation and research into value for money problem-solving approaches and their migration are to be studied. This applies in particular to shunting operations and breakbulk traffic on the “last mile” (consolidation and distribution traffic). The interfaces in multimodal transport chains can also be automated and thus made more efficient.

Rail transport can make a crucial contribution towards reducing emissions of greenhouse gases, noise and air pollutants in the transport sector. For this to happen, there has to be an increase in acceptance and competitiveness. There are good opportunities for modal shift in urban conurbations, along existing railway lines and tram routes, and in transport between cities and their rural hinterlands. In particular, a massive boost needs to be given to innovative projects in the local passenger rail service sector in order to make available to the public, more quickly and more strongly, the proven benefits in terms of environmental protection and climate change mitigation.
compared with other means of transport, especially road and air transport.

In addition to improving the possibilities for a shift – of both passengers and freight – to environmentally friendly rail transport, the criteria of “environmental friendliness and energy efficiency” of the rolling stock to be ordered (both new and modernized existing rolling stock) are to be enshrined in the sets of regulations and acts such that they provide public procurement certainty.

An additional challenge is the further decarbonization of rail transport. With the help of alternative drivetrains and more extensive electrification of rail transport, with a simultaneous changeover to energy from renewable sources, rail transport has an opportunity, like no other mode of transport, to very quickly become climate neutral and offer seamlessly sustainable mobility. For this reason, the development of technologies and innovations to improve energy efficiency is to be expedited.

With the likely rise in the number of quiet freight wagons, the future focus of noise avoidance in the rail freight sector will be on developments of further noise-reducing technologies for locomotives and wagons, more specifically on the avoidance or early detection of flat spots and addressing further noise sources (e.g. superstructures, bogies, rods, buffers). Even if the impact on level-based assessment variables of transport noise is to be classified as low in the case of quiet rolling stock, these issues must not be neglected as a single event. At the same time, standardized condition surveying systems for in-service rolling stock are of great importance. As a consequence, there will be an increasing need for monitoring systems to detect and remedy corresponding noise-generating damage at an early stage.

In the overall field of security, resilience structures have to be established to ward off attacks of both a physical and a digital nature. Because digital connectivity creates new targets for cyber attacks and data misuse, which are countered by retaining and developing core competencies for cyber security and data sovereignty in the EU and Germany and taking them into account in public procurement.

At the same time, there is a need for research activities with regard to measures to ensure the safety and integrity of passengers’ and railway staff’s health, which impact on the design of rolling stock and infrastructure.

To expedite the modernization of rail transport in the near future, a triad of research, trialling and market roll-out of innovations is needed. This will require a concerted effort by the sector and policymakers. With the adoption of the Federal Government’s Railway Research Programme, the opening of the DZSF and the launch of the Federal Government’s “Future of Rail Freight” programme for the funding of innovations, the first steps have already been taken. It is now necessary to systematically continue along the road that has been embarked on.
Action areas and next steps in the funding of innovations in rail transport

Action area 5.1: Research projects

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<td>1</td>
<td><strong>Open digital test bed (automation, digitalization, migration)</strong> To prepare for and develop automated/autonomous operations in all segments of rail transport, the establishment of suitable laboratories and stationary and mobile test tracks/beds should be progressed to ensure practice-based research. Essentially, this will involve establishing an open digital test bed in Lusatia. The establishment of this test bed is designed to boost the innovative capacity and competitiveness of the rail sector and promote the long-term cooperation between enterprises, research establishments, public authorities and operators in the development of innovative solutions for rail transport. A scoping study, which is due for completion at the end of 2020, is currently identifying the conditions and requirements to be met by the implementation of this test bed. On the open digital test bed, automated and driverless operations in all types of traction with and without overhead wires and based on all signalling systems in use in Germany will be possible. In addition, it will involve the establishment and conduct of the LärmLab21 pilot project in accordance with the Coalition Agreement. As a basic prerequisite for the successful implementation of this and further research, it must be ensured that the funds allocated to the German Centre for Rail Traffic Research meet current and future requirements.</td>
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| 2 | Digital automatic coupling (DAC)  
The rail freight sector can best exploit the competitive advantages offered by the use of DAC if it is introduced at European level. Germany will lobby for its application at European level, starting with the setting of the agenda during the German EU Council Presidency in the second half of 2020. The overall aim is to be to expedite the EU-wide introduction of DAC. For this to happen, there has to be agreement on binding standards and technical requirements plus a funding model. In addition, agreement has to be reached on a time corridor within which migration can be carried out and at the end of which there must be rules stipulating for which of the freight wagons certified in the EU fitting or retrofitting is mandatory. | Federal Government/sector | Starting in 2020 until completion of EU-wide migration |
| 3 | Innovative traction unit  
The Federal Ministry of Transport and Digital Infrastructure has commissioned a study designed to identify the research approaches and technological bases for the development of a quieter, environmentally friendly innovative traction unit. By means of this study, alternative drivetrain technologies and low-noise components for locomotives and multiple units are to be developed with a view to a possible market launch. | Federal Government | 2020, subsequently depending on the outcome of the study |
| 4 | Innovations in the rail freight sector  
Trials and market launches of innovative technologies from the fields of digitalization, automation and rolling stock technology will also be progressed through the Federal Government’s “Future of Rail Freight” programme. The sector and government have agreed to each provide one half of the funds required. To ensure the sustained economic viability and logistics capabilities of the rail freight sector through innovations, it is necessary to increase funding for the Federal Government’s “Future of Rail Freight” programme. At the same time, the sector must ensure that complementary funds are available and that projects can be implemented promptly. | Federal Government/sector | Permanent task |
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<td>5</td>
<td><strong>Further innovations</strong>&lt;br&gt;To implement the further issues of the sector, as described in detail in the Alliance for the Future of Rail’s interim report, financial assistance programmes are suggested for the following spheres of innovation:&lt;br&gt;- Intelligent, predictive maintenance&lt;br&gt;- Automation of rail transport&lt;br&gt;  - with the development of automated operational control schemes,&lt;br&gt;  - with the development of systems for line monitoring,&lt;br&gt;  - with the development of tool chains for the automatic processing of requirements management and for the generation of test cases as well as for testing methods and tools that enable a highly automated conduct and evaluation of the standardized tests,&lt;br&gt;  - with the development of systems and components for autonomously operating rolling stock.&lt;br&gt;- Measures to improve passenger and journey comfort&lt;br&gt;- Advanced crowd and passenger management at stations</td>
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<td>6</td>
<td><strong>Environment and sustainable mobility</strong>&lt;br&gt;The projects launched in recent years by industry and research establishments involved to replace fossil fuels in rail transport by hybrid or all-hydrogen and battery based drivetrain systems will be boosted in the near future by an expansion of funding and appropriate innovative projects. One prerequisite for the use of innovative zero-emission drivetrain systems is the installation of the necessary infrastructure, such as hydrogen refuelling points or (partial) electrification.&lt;br&gt;&lt;br&gt;As one of the Federal Ministry of Transport and Digital Infrastructure’s departmental research establishments, the German Centre for Rail Traffic Research will address the following issues:&lt;br&gt;• research into and trialling of the potential use of energy from renewable sources for the railway infrastructure;&lt;br&gt;• an environmentally sustainable and energy-efficient upgrade of the railway infrastructure;&lt;br&gt;• adaptation of the railway infrastructure to the consequences of climate change.&lt;br&gt;&lt;br&gt;To implement the further issues of the sector, as described in detail in the Alliance for the Future of Rail’s interim report, financial assistance programmes are suggested for the following spheres of innovation:&lt;br&gt;• funding for low-energy and low-noise auxiliary units (e.g. heating schemes and air-conditioning systems);&lt;br&gt;• discovering, researching and trialling alternative refrigerants (incl. procurement and disposal chain).</td>
<td>Federal Government/sector</td>
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<td><strong>Security</strong>&lt;br&gt;In addition to the classic security issues, the German Centre for Rail Traffic Research and the sector will look into the following questions related to cyber security, in particular:&lt;br&gt;• identification of existing potential for attacks;&lt;br&gt;• appraisal of possible approaches to security incl. a forecast of security needs;&lt;br&gt;• simulation of cyber attacks at the ETCS laboratory.&lt;br&gt;Another objective is to join forces with our European partners to strengthen core competencies in the EU for the railways as critical infrastructure. In addition, the German Centre for Rail Traffic Research will, within the scope of epidemic prevention, launch research on minimizing health risks posed by communicable diseases to customers and staff in the rail transport sector.</td>
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### Action area 5.2: Increasing funding for research and financial assistance

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| 1  | **Increasing funds for research in the budget**  
To achieve the objectives set by the Federal Government and the Alliance for the Future of Rail and to remain at the vanguard of global competition, the Federal Government and the sector have to provide an appropriate level of funding for rail transport research.  
When the German Centre for Rail Traffic Research is fully up and running and has started regular operation, it is likely that there will be a further rise in the funding required. | Federal Government | Starting in 2021, permanent task |
6. Recruiting skilled workers for the railways

Objectives for the recruitment of skilled workers

Tomorrow’s mobility must sufficiently meet key societal, ecological and economic requirements. It must be ultramodern, multimodal, connected, digitalized and at the same time convenient and simple. The expectations regarding the rail system are great.

The digital revolution and the rapidly increasing technical capabilities are resulting in a wide range of different occupational opportunities, some of them totally new. This produces equally diverse and new requirements to be met by the personnel working in and on the rail system.

What is needed is staff with a first-class training who have strong capabilities and are willing to engage in continuing professional development and who contribute to the success of the railways with their identification and commitment.

For their part, the undertakings must offer first-class opportunities for training and continuing professional development and an attractive social and working environment plus pay that reflects the high level of skills if they are to successfully compete with other sectors for skilled workers.

Today, the opportunities for the sector to have a better image and a greater appeal are better than ever. Because of their environment and climate friendliness, the railways, as a modern means of transport, are at the heart of the efforts to produce climate-friendly mobility; new technologies and digital solutions in railway infrastructure and in railway operations create the basis for “Rail 4.0”. Both are outstanding prerequisites for interesting and secure apprenticeships and jobs in different fields of the rail sector.

These objectives can only be achieved with a highly motivated and skilled workforce. Only with them can the environmentally friendliest means of transport of the digital society actually become a passion for people.

Opportunities for and challenges posed by the recruitment of skilled workers

The basic challenge is to retain and recruit sufficient skilled workers for all occupational fields in all areas of the rail sector. Given the growing competition for skilled labour, the sector must become more attractive for young people, for specialists, for engineers and experts in the IT professions.

Over the past 15 years, the market share of rail freight operators has risen by 2.9 percentage points to 19.4 percent, and passenger operators have been able to increase their market share by 1.5 percentage points to 10.3 percent. The rail sector stands for more than 260,000 full-time jobs – this figure is verified and is rising.
The actual number of people directly employed in the sector is significantly higher. Thus, for instance, the statistics do not include the jobs at railway technology producers that are not organized in the German Railway Industry Association (VDB), the jobs at the firms organized in the Association of Wagon Keepers in Germany (VPI), the jobs of the over 800 industrial railways in Germany or the bulk of the jobs at the maintenance depots, the service and retail jobs at stations (station bookshops, cafes, etc.) or those employed by rail forwarding agents.

The trade associations put the total number of direct and indirect jobs in the sector at 640,000. The study commissioned on the importance of the rail sector to the national economy is designed to shed more light on this (see below: action area 6.1 no. 1).

In the rail sector, there are well over 500 different occupational profiles. The most numerous occupational groups include train drivers (31,000) and the drivers of underground trains and trams (16,000). Although the number of people working in these occupations is rising from year to year, trains are being cancelled more and more frequently because there is a shortage of these skilled workers. In 2017, there were 100 vacancies for train drivers, but only 40 train drivers looking for work, and the figure has now fallen to a mere 25.

To achieve the ambitious objectives set out in the Coalition Agreement and to deliver the Deutschlandtakt, numerous and extensive maintenance, renewal, upgrading and construction works are necessary for which appropriate personnel are required. The railway construction companies expect an additional requirement of 15,000 staff over the period to 2024.

Alongside this, trends such as demographic change and the increasing digital transformation of the world of work are resulting in a revolution. “New work” is changing the structure of work and people’s attitude towards their work plus the way in which they work and is resulting in changed organizational and work models. The work-life balance is also becoming increasingly important in the rail sector.
Against this background, anyone wanting to attract workers to shift work and retain them in the long term must pay due regard to the individualization involved with these processes and the need for more participation in shaping the conditions of service and in the drawing up of duty rosters.

The number of jobs in the rail industry will continue to grow in the years ahead. At DB AG alone, the figure will be 100,000 in the next few years, and several thousand at the major rolling stock manufacturers. In the local public transport and local passenger rail service sector (excluding DB AG), the Association of German Transport Companies (VDV) believes there are likely to be over 9,000 new recruits. On aggregate, more than 40,000 new job contracts are likely to be concluded in the rail sector in 2020.

In our country, train drivers enjoy high esteem and trust. According to a representative survey conducted by the GfK market research institute, train, bus, underground and tram drivers are among the top five in the ranking of occupational groups – on the same level as physicians and pilots. However, the overall image of the railways in Germany is not very attractive. Thus, for instance, the number of 2,500 apprentices in the “railwayman/railwaywoman in operational service” occupational profile, with around 800 completing their training each year, is nowhere near enough to meet requirements. Another challenge facing the sector is the increase in the proportion of women in the workforce of the railways and infrastructure managers.

The industry is addressing these challenges with initiatives such as that launched by transport operator employers (in-dir-steckt-zukunft.de), campaigns such as Bau Dein Ding and Werde Bauingenieur for the construction sector, a joint online job portal (SchienenJobs.de), cross-company networks of women (Mobilität braucht Frauen plus Women in Mobility) and image competitions (Eisenbahner mit Herz, Innovationspreis Mobilitätsgestalterin).

In the years ahead, the Federal Government will make available substantial investment funds (in the multi-digit billion range) to achieve its policy objectives in passenger and freight transport. This will have an enormous impact on jobs in the rail sector. First, in 2030, the number of jobs in the rail sector, including the public service, will be an estimated 50 percent higher than today and second, the nature of the work will change, especially as a result of the digital revolution.

New occupations such as data scientist will be widespread in the rail sector at the beginning of the next decade, whereas occupation hitherto common such as shunter or level crossing attendant will be on the decline or have disappeared. Other occupations such as train driver will change greatly as a result of digital transformation and automation. In the future, the rail sector will require both interdisciplinary all-rounders and specialists.

Freight operators focus on their “keystone occupations” – the driving and service occupations. It is they who deliver the range of mobility services and will continue to be indispensable for ensuring the mobility of persons and the transport of goods.

The Federal Government and federal state railway administrations expect that there will be a great need for information and communications technology (ITC) specialists and engineers (STEM occupations) that will exceed labour supply by far.

Three examples will illustrate how existing occupational profiles are likely to evolve:

- Rail construction and maintenance operatives: Training will reflect the state of the art, thereby upgrading the occupational profile. The various training and continuing professional development courses will have to be reviewed and adapted on the basis of the modernized training and the system as a whole will have to become even more transparent.

- Train dispatchers: The occupational profiles and training courses will evolve but will continue to play a major role in infrastructure management. The dual apprenticeship system (today for instance railwayman/railwaywoman in operational service specializing in track) will remain the backbone of strengthening the skills base in this field.
Civil engineers and construction supervisors: Training will have to meet the future requirements. This applies especially to the digitization of processes. New planning methods and processes such as BIM (Building Information Modelling) will make a major contribution to this. The groundwork for this has to be laid during the bachelor’s degree programme, where students have to be taught the absolutely essential basic skills.

Examples of totally new occupational profiles include:

- drone pilots, who ensure that operational facilities or infrastructure (track, overhead lines and many more) are monitored;
- network engineers with responsibility for the operational mobility infrastructure and the stability of the digital control and information networks;
- big data analysts, who analyse, manipulate and shape information for interested groups of persons inside and outside the operations.

When occupations and jobs gain momentum, the work environment changes along with them. The reason for this development lies in the changing occupations, but also has other causes. These include, for instance, the greater importance of lifelong learning, changed attitudes to life and younger generations’ aspirations regarding the world of work and the work/leisure time balance. In this connection, the public transport authorities must also play their part in creating a suitable quantitative and qualitative environment in the companies.

The most recent results of collective bargaining negotiations make it clear just how important the individual shaping of the working time framework and the participation of the employees in the form of options is. One example of an option is more money or more leisure time. The trend is clearly towards more leisure time.

With increasingly diverse societal and changed family structures plus spatial distance between home and workplaces, the “soft” factors are becoming more important. There is now a great demand for mobile working, working from home and part-time working, especially in the “office jobs”, and they place higher demands on the technical equipment of workplaces.

To ensure that the workforce remain keen to be employed in infrastructure upgrading in the sector, the specific external environment in infrastructure companies, such as weekend, public holiday and night-time working, is to be shaped such that a work-life balance is achieved. Monetary incentives in the job adverts should also be considered.

In the railway administration (public service), the working conditions and environment could be improved by filling vacancies earlier, providing a central pool of established posts and/or systematic knowledge management, including the targeted promotion of mixed-age working, and by discontinuing the use of fixed-term contracts. A further possibility would then be to make it easier for employees to change to a civil service career as lateral entrants.

The large number of lateral entrants who have scarcely come into contact with the rail system during their studies and at the beginning of their career is typical of the engineering occupations in the rail sector. There are relatively few training institutions that offer a broad-based course of study in engineering specifically tailored to the rail system. This results in a great need for special training courses in order to familiarize new employees with the complex requirements in the rail sector.

Continuing professional development is also an integral component of a future vision of a modern world of work. This includes, but is not limited to, expanding the various bridges that already exist between vocational and academic education and have to be rebuilt. The dual apprenticeship model is a powerful instrument for skills development at the structural level. There are already examples of successfully completed dual apprenticeships for the occupation of train driver. It has to be evolved for the continuing professional development sector in the form of systematic skills development cooperation between businesses, institutions of higher education and the industry. For years now, railway undertakings have been participating in dual courses of study or collaborative schemes with institutions of higher education and have been funding professorships. Internal skills development
and in-house training courses are becoming increasingly important.

Forward-looking companies must live up to the high expectations of skilled workers. This includes modern and safe workplaces, attractive and performance-related pay, “flexibility” in the system of remuneration tailored to the individual needs of specialists and top executives, supplementary company benefits and company pension schemes, innovative working time models tailored to the expectations of families, targeted internal human resources development and support in career planning.

To ensure a level playing field, statutory rules state that, in the event of a new contract for local passenger rail services being awarded, the workforce must continue to be employed. This provision should be systematically implemented. This is an important element for preventing competition being carried out on the back of the workforce and the rail sector becoming less attractive as a career prospect.

In addition to the top argument of an attractive and secure job in the rail sector, rail transport is the most environmentally friendly motorized means of transport. Compared with other motorized means of transport, the environmental benefits of the railways have grown over the years.

Rail transport will be the first mode of transport to operate with zero carbon emissions including the generation of energy. Rail transport as the epitome of sustainable mobility and the lifeblood of the transformation of the transport system – this dyad is a trump card when it comes to recruiting and retaining skilled and motivated workers.

**Action areas and next steps in the recruitment of skilled workers**

**Action area 6.1:**
**Obtaining information on the employment situation**

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<tbody>
<tr>
<td>1</td>
<td>Study on the importance of the German rail sector to the national economy on the basis of its job creation impact</td>
<td>Federal Government</td>
<td>2020/21</td>
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To improve the data basis and obtain a comprehensive overview of the economic job creation impact of the entire rail sector, including its upstream and downstream spheres, the Federal Ministry of Transport and Digital Infrastructure has commissioned, as a first step, a study that is to fill this gap and to take into account both the importance of functional links between the rail sector, freight transport chains and the industry and of external determinants (such as the Federal Government’s climate change targets, digital transformation, etc.) for employment that is dependent on the rail sector. The study is also to form the basis for future regular identification of manpower requirements.
### Action area 6.2:
**Identifying the wide range of modern employment opportunities in the “sunrise” rail sector**

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<td>1</td>
<td><strong>Enhancing the image of the “sunrise” rail sector</strong>&lt;br&gt;Publicity advertising training and employment in the rail sector has to be as modern as the industry itself already is and is to become – it must use positive keywords such as versatile, exciting, diverse, reliable, safe, digital, connected, cool, modern ...&lt;br&gt;To complement the campaigns already underway in the rail sector, the following measures are to be taken:</td>
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<td>Permanent task</td>
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<td>1.a <strong>Advertising for training and employment</strong>&lt;br&gt;The Federal Ministry of Transport and Digital Infrastructure will develop a proposal on how advertising for apprentices and skilled workers for the rail sector can be integrated into an overarching framework of the planned communications campaign for the Deutschlandtakt.</td>
<td>Federal Government</td>
<td>2020/21</td>
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<td>1.b <strong>Rail Day</strong>&lt;br&gt;The Federal Government, federal states, regional authorities plus associations and businesses from the rail sector will, once a year, declare a “Rail Day” and develop a coordinated strategy to flesh it out (e.g. local events, (job) fairs, open days, roadshows such as the “climate change train”, recruiting days, etc.). The first Rail Day is to be held in 2021 in the European Year of Rail. Lead responsibility for the “Rail Day” will be shared by the Federal Ministry of Transport and Digital Infrastructure (chair) and the sector (co-chair). A steering group will be formed in which the Federal Government, federal states, regional authorities, Deutsche Bahn AG and associations from the sector are represented. The Ministry plans to provide adequate funding for organizational and coordination tasks. The members of the Rail Day Steering Group will contribute resources of their own at the different levels to shape and organize the events.</td>
<td>Federal Government/ federal states/sector</td>
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| 1.c | **Conference on the future of the railways**  
Each year, on the “Rail Day”, a conference on the future of the railways will be held as a flagship project. It will be a sectoral dialogue for the presentation of the “sunrise” rail sector and for an exchange of ideas and experience on innovations, lessons learned and best practice models. At the same time, the conference will provide a forum for a regular exchange of ideas and experience and the monitoring of trends in the rail sector by the members of the Alliance for the Future of Rail. The chair of the Rail Day Steering Group will coordinate a strategy for the conference with the members of the steering group. | Federal Government/federal states/sector | Annually as of 2021 |
| 2 | **Laboratory on the future of education, good work and the digital revolution**  
In the years ahead, training and employment in the rail sector will be subject to great change and result in new challenges. The digital revolution will acquire strategic importance for the future of the rail sector. For this reason, the topic of the digital revolution, in all its diversity, must be included in the occupational profiles and the shape of training. It is also imperative that training and skills development standards that are uniform throughout the sector be developed/evolved by the railway undertakings, including for lateral entrants. The Alliance for the Future of Rail has adopted a blueprint for the “Laboratory on the future of education, good work and the digital revolution” with the following clusters: “work and employment of the future”; “occupations and skills of the future”; and “learning and skills development in the future” and advocates its implementation. Within the Federal Government, the Federal Ministry of Transport and Digital Infrastructure will champion implementation of the strategy and funding of the laboratory. | Federal Government/federal states/sector | 2021 – 2026 |
## Action area 6.3:
Modernizing and expanding opportunities for training and continuing professional development

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<td>1</td>
<td><strong>Agreement on a training quota at railway undertakings</strong>&lt;br&gt;The railway undertakings will reach agreement on a training quota to jointly express that they are prepared to make their own contribution to more training and skills development. Whether or not the quota is met is to be determined by whether there is a suitable number of applicants. In addition, the Federal Association of Local and Regional Passenger Rail Authorities will suggest to its General Meeting that it recommend that the authorities responsible for local and regional passenger rail services stipulate targets for training quotas by means of an incentivization scheme when awarding contracts for local and regional passenger rail services. These measures will be addressed in particular to those railway undertakings that have so far not had any training courses of their own or that have to significantly enhance their courses to meet the undertaking’s own needs.</td>
<td>Federal states/public transport authorities/sector</td>
<td>2020/21</td>
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<td>2</td>
<td><strong>Taking account of rail freight in logistics training</strong>&lt;br&gt;The syllabuses relating to the rail mode are to be incorporated into the training regulations and framework curricula for freight forwarding clerks and made mandatory and relevant to the examinations. This will open up a wider occupational field for both apprentices and undertakings. The Alliance for the Future of Rail thus supports measure no 10.5 already agreed in the Rail Freight Masterplan and recalls the decision taken by the Standing Conference of Transport Ministers on 20 April 2018, in which the chair requested the support of the federal state ministers in implementing the measures set out in the Masterplan.</td>
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<td>3</td>
<td><strong>Funding of endowed chairs</strong>&lt;br&gt;To ensure that the growing demand for skilled labour in the rail sector is met, including jobs with higher skills requirements, it is imperative that sufficient training capacity be provided and sufficient appointments be made at the chairs at the universities and institutions of higher education in a systematic way. Here, responsibility lies primarily with the federal states and their institutions of higher education and universities. In addition, the Federal Ministry of Transport and Digital Infrastructure will lobby, within the Federal Government and after consultation with the federal states, to ensure that more (junior) chairs are established and funded, targeting future strategically important subjects in the rail sector. The Federal Ministry of Transport and Digital Infrastructure will develop a scheme for this – comparable to the funding of “chairs of cycling”. In addition, the Federal Ministry of Transport and Digital Infrastructure will, via the German Centre for Rail Traffic Research, commission a study to establish which chairs and which universities and institutions of higher education in Germany currently train graduates for the rail sector, how many professorships they have and what degrees they award.</td>
<td>Federal Government/federal states</td>
<td>2021/permanent task</td>
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<td>4</td>
<td><strong>Action plan for an efficient public service in the rail sector</strong>&lt;br&gt;In view of the challenging transport policy objectives and sharply rising investment in the years ahead, the public service at Federal Government and federal state level must not become a bottleneck in terms of its staffing. An indispensable prerequisite for high-performing railways is a permanent increase in the number of jobs in the Federal Government and federal state transport administrations. In this context, the Standing Conference of Transport Ministers considers the development of an action plan to enhance the attractiveness of working conditions, pay, training and staff development to be necessary (decision adopted in October 2019). The Alliance for the Future of Rail will invite the federal state chairing the Standing Conference of Transport Ministers to speedily assume the initiative for developing an action plan. The Federal Government would be willing to participate. The preservation, expansion and staffing of the relevant chairs at the institutions of higher education could be part of this plan.</td>
<td>Federal Government/federal states</td>
<td>2020/21</td>
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| 5  | Providing financial support to second-chance training schemes for railwaymen/railwaywomen in operational service  
The rail sector supports “second-chance” training schemes for functionally trained locomotive drivers wishing to become railwaymen/railwaywomen in operational service within the scope of external examinations conducted by chambers of industry and commerce. Here, the primary focus is to be on in-house second-chance training. The measure is seen as a contribution to the professionalization of locomotive driver activities and to the opening up of career prospects for the workers. To be able to fund the associated training costs and operational downtime costs, the Federal Government will consider the extent to which other financial support measures alongside the funding options provided by the Skills Development Opportunities Act are appropriate. | Federal Government/sector | 2020/21 |
| 6  | Making the wide and diverse range of further training opportunities visible  
There are a large number of further training providers in the rail sector. No overview has been published anywhere. Some providers have so far only offered in-house courses (e.g. DB Training, Learning & Consulting), others offer their programme on a cross-company basis (e.g. the Association of German Technical Railway Colleges, VDV Academy, VDEI Academy). Numerous new academies have recently been founded (e.g. Spitzke Akademie, RT&S Lokführer-Akademie). The Federal Ministry of Transport and Digital Infrastructure will, via the German Centre for Rail Traffic Research, commission a study to prepare an up-to-date list of non-university further training courses and make it available to the associations and institutions in the sector for communication. | Federal Government/sector | 2020/21 |
Action area 6.4:
Providing an attractive social and operational environment for the workforce

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<td>1</td>
<td><strong>Fair procedures for the award of contracts for local and regional passenger rail services</strong>&lt;br&gt;To ensure a level playing field, statutory rules state that, in the event of a new contract for local passenger rail services being awarded, the workforce must continue to be employed. This provision should be systematically implemented. This is an important element for preventing competition being carried out on the back of the workforce and the rail sector becoming less attractive as a career prospect. In addition to requiring adherence to collectively agreed pay conditions and a transfer of manpower, self-provision quotas for key individual items (train drivers, conductors, security) should also become a general standard in invitations to tender for local and regional passenger rail services.</td>
<td>Federal states/public transport authorities</td>
<td>2020/permanent task</td>
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7. Pressing ahead with implementation of the Rail Freight Masterplan

Objectives

In the years ahead, there is likely to be a significant increase in the volume of freight moved. Because of the physical advantages of the wheel-on-rail system and the fact that there is already a high share of energy from renewable sources today, rail freight significantly helps us in meeting our climate change targets and the transforming of our energy system and makes a crucial contribution towards securing economic prosperity. Our objective is thus to increase the railway’s share of freight traffic in Germany to 25 % by 2030.

To achieve this objective, the Rail Freight Masterplan continues to be the guiding package of measures. In the future, we will continue to permanently and systematically progress implementation of the measures contained in the Masterplan.

Use should be made of this societal consensus within the context of the climate change debate to boost rail freight, together with the necessary investment, on a lasting basis. Another crucial factor is a framework that allows rail freight operators to deploy their specific strengths on the freight transport market and, in this way, to make attractive offers. At the same time, it is necessary to create properly functioning transport markets with a level playing field for strong railways. The capabilities and possibilities of rail freight in intermodal competition have to be improved. In an intermodal comparison, there continues to be a lot of catching up to do in leveraging scope for efficiency and deploying innovations. Rail freight will be able to tap into new markets and new categories of goods if the specific requirements of industry and trade are met and the appropriate loading and handling infrastructure plus private sidings are in place.

Our vision for the rail freight of the future – competitive and high quality rail freight transport services persuade shippers and freight forwarders to make greater use of the railways for their logistics. Rail freight is the lifeblood of a resource-conserving mobility of goods. There are access points to the railway throughout the country. Their commercial operability has to be permanently secured. Capacity in the rail freight sector is being continuously enhanced to enable growth on the railways. This includes not only upgrading the infrastructure but also the provision of modern rolling stock and skilled workers in all areas of rail freight. Digital transformation and automation along the entire freight transport chain will make rail freight efficient and reliable and thus competitive and able to deliver logistics services.

Opportunities and challenges

The Rail Freight Masterplan is the blueprint for the present Rail Transport Masterplan. It was published in 2017 as the outcome of an initiative by the sector (including shippers) and government and contains 66 measures and five measures for immediate action to boost the competitiveness and logistics capabilities of the rail freight sector with the objective of significantly increasing the railways’ market share of freight traffic. For each milestone, the parties involved in implementation and a time horizon were defined. The measures set out in the Rail Freight Masterplan can be assigned to three key action areas:

- infrastructure upgrading;
- modernisation through innovations in the fields of digital transformation, automation and rolling stock technology;
- improving the transport policy framework.

Implementation of the measures is continuously monitored and expedited by the Round Table on Rail Freight, chaired by the Federal Ministry of Transport and Digital Infrastructure. Hallmarks of the Rail Freight Masterplan are its broad and permanent participation structure and the interplay between voluntary commitments made by the sector and support from the government. The crucial factor is that both sides must honour their pledges. Other features are its ambitious but nevertheless realistic objectives, the clear definition of projects that can be implemented and the holistic approach reflected in the broad spectrum of topics.

Implementation of the measures contained in the Rail Freight Masterplan is a permanent task and must be continuously progressed. Our fundamental objective of enhancing the competitiveness and thus the market share...
of rail freight is no less topical today than it was at the time of publication. It has been possible to launch or implement the first major measures. They are also enshrined in the current Coalition Agreement and the Federal Government’s 2030 Climate Change Programme and are supported by the German Bundestag.

The five measures for immediate action from the Rail Freight Masterplan have either been implemented or are currently in the process of being implemented.

- The reduction of track access charges through the provision of additional federal funds was implemented by funding guidelines on 1 July 2018. At present, 350 million euros is available in the federal budget for this purpose, which makes it possible to roughly halve the costs imposed on the railway undertakings by track access charges.

- Another measure for immediate action involved including the “740 metre network” in the requirement plan on the basis of the 2030 Federal Transport Infrastructure Plan. The first measures have already been implemented and the others will be progressively funded and delivered.

- The Federal Government Programme on the Future of Rail Freight, which is designed to support innovation, is likewise being implemented by means of funding guidelines. This involves the provision of financial assistance by the Federal Government to user-oriented trials and market launches of innovations from the fields of digital transformation, automation and rolling stock technology. One half of the funding is provided by the Federal Government and the other half by the sector. The funding rate of individual projects may be above or below 50 %. At present, 30 million euros is available in the federal budget each year from 2020 to 2024 for the Federal Government Programme on the Future of Rail Freight. This is designed to help clear the innovation and investment backlog in the rail freight sector.

- The measure for immediate action entitled “establishment of the first test bed for the digitalization and automation of the marshalling of freight trains” at Munich North marshalling yard is also to be supported by the Federal Government programme, subject to the submission of a request and the granting of approval.

- The fifth measure for immediate action consists of entrepreneurial contributions by the sector to the modernization of rail freight. This covers a large number of activities by the rail freight stakeholders, for instance a changeover to freight wagons with noise-reducing brake blocks, the development and procurement of hybrid locomotives, the fitting of points with sensor technology and initiatives by associations and undertakings to recruit and develop human resources.

Of the 66 measures, others have started or are currently being implemented. Thus, for instance, the funding of private sidings is currently being evaluated, a decision has been taken to fund facility pricing to boost wagonload traffic and initial standards for the digitalization of rolling stock have been created. The “Digital Railways in Germany” scheme has been developed and provided with funding. In addition, the introduction of Digital Automatic Coupling (DAC) as a basic innovation for the comprehensive digital transformation and automation of the rail freight sector is being significantly expedited by a migration study and a demonstrator train.

The Rail Freight Masterplan is a gain for the entire sector and, beyond this, the basis for a significant boost to rail freight.

**Conclusion and next steps**

After three years of successful implementation of the Rail Freight Masterplan, it is now time to look ahead. The transport policy objective is to significantly increase rail freight’s share of the modal split – to 25 % by 2030. Notwithstanding the need to continue implementing every single measure in the Rail Freight Master Plan permanently and systematically, we will focus our joint action on the following four main priority areas for boosting rail freight. They are based on the 66 measures and five measures for immediate action in the Rail Freight Masterplan and incorporate new proposals from the development of the Rail Masterplan.
### Action area 7.1: Competitiveness, connectivity and acceptance of rail freight

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<td>1</td>
<td><strong>Attractive freight transport services and an appropriate general framework</strong></td>
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<td>To increase the market share of rail freight on a sustained basis, the competitiveness of rail freight has to be further improved. For this to happen, transport services on the railways have to meet the requirements of customers, for instance in terms of punctuality, reliability, transit time, availability and flow of information. At the same time, there must be an appropriate general framework that enables the railways to make offers that are also attractive in terms of price in order to shift considerably more movements to the environmentally friendly railways. The Rail Freight Masterplan contains various measures for achieving this, such as reducing energy tax and the levies paid by the railways in the form of the renewable energy surcharge and considering possible adaptations of the general conditions governing the initial and terminal hauls in combined transport and conventional wagonload traffic within the context of multimodal freight transport chains including, for instance, considering an exemption from HGV tolls for vehicles using tolled roads. In addition, consideration must also be given to ways in which semi-trailers can be made basically cranable and what the consequences would be, for instance in terms of costs and weight.</td>
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<td>2</td>
<td><strong>Evolving and updating the funding of track access charges</strong></td>
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<td>The evolution and updating of the funding of track access charges in line with the Federal Government’s 2030 Climate Change Programme beyond 2023, based on the outcome of the evaluation of the funding guidelines, is supported by both the railway undertakings and the shippers.</td>
<td>Federal Government/sector</td>
<td>2023/permanent task</td>
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| 3  | **Improving the integration of rail freight into multimodal logistics chains**  
To be able to make optimum use of the inherent advantages of each mode of transport, the integration of rail freight into multimodal logistics chains has to be improved. The railways have decades of experience of climate compatible, environmentally friendly and safe freight transport operations. This advantage should be highlighted more in societal discussion and in activities to attract broad-based support for the rail freight sector. | Federal Government/sector       | Permanent task       |
| 4  | **Enhancing attractiveness for employees**  
In addition, the attractiveness of the sector for employees must be enhanced so as to be able to meet the growing manpower requirements in the rail freight sector in the future. Training should be expedited and continuously adapted to the changing requirements. | Federal Government/sector       | Permanent task       |
### Action area 7.2:
**Systematic introduction of innovations, especially from the fields of digital transformation, automation and rolling stock technology**

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| 1  | **Funding innovation through the Federal Government Programme on the Future of Rail Freight**  
A key lever for enhancing the economic efficiency and commercial viability of rail freight is the accelerated introduction of innovations. Because of its systemic properties – it is guided and can be controlled as an overall system – rail freight can assume a leading role in the digital transformation and automation of freight transport. However, the digital transformation and automation of rail freight have a lot of catching up to do. Here, considerable modernization is possible and necessary, which requires the commitment of the rail freight sector and the public sector. The trialling and market launch of innovations in the fields of digital transformation, automation and rolling stock technology are also to be progressed through the Federal Government’s “Future of Rail Freight” programme. To be able to end the backlog of innovation in the rail freight sector on a sustained basis, there is a need in the short term for a significant increase in the federal funding for the Federal Government’s “Future of Rail Freight” programme. This must be match funded by resources from the sector. The Round Table on Rail Freight has identified a medium-term funding need totalling 1 billion euros for the period from 2020 to 2024, with the Federal Government and the sector each providing one half. | Federal Government/sector | Permanent task |
| 2  | **Introduce Digital Automatic Coupling (DAC)**  
As a major basic innovation for the comprehensive digital transformation and automation of rail freight, digital automatic coupling (DAC) must be introduced in the EU as soon as possible. This will require a migration and funding strategy. | Federal Government/sector | Permanent task |
| 3  | **The “Digital Transformation of Rail Freight” cluster/rail freight data strategy**  
The nationwide introduction of further innovations, such as automated driving on the “last mile” and in the long-distance sector, digitalized rolling stock, intelligent operational control systems, automatic loading/unloading and the digital transformation of the order handling and control processes, can result in significant cost reductions and quality improvements. A “Digital Transformation of Rail Freight” cluster, launched by the sector, and a rail freight data strategy can support the processes that have been started. | Sector | Permanent task |
### Action area 7.3: Nationwide access, infrastructure and rolling stock

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<td>1</td>
<td><strong>Capacity enhancement, ETCS</strong>&lt;br&gt;The capacity of the infrastructure constitutes a limiting factor hampering the improvement of punctuality and reliability and a significant increase in the market share of rail freight. For this reason, an adequate funding line has to be ensured for investment in construction and upgrading schemes for the railway infrastructure relevant to freight. Enhancing capacity on existing infrastructure (e.g. by introducing ETCS) and creating further capacity through new infrastructure must therefore go hand in hand. Digital signal boxes and ETCS will raise command, control and signalling equipment infrastructure into the digital era and will also act as a solution to the demographic challenges in operations. The implementation of digital signal box technology in entire network districts and the systematic introduction of ETCS, in particular, must be funded and speedily implemented such that additional capacity is unlocked. Here, the basic prerequisite is that the equipping of the rolling stock be synchronized with the equipping of the infrastructure. It will therefore be necessary to fund the equipping of the rolling stock. Within the scope of implementation of the <em>Deutschlandtakt</em> and in the requirement plan, sufficient train path and infrastructure capacity that meets the market requirements has to be created for the sharply rising market share of rail freight. Construction work should always be resource-conserving. It is essential that resilient infrastructure be created, especially with regard to the systemic relevance of the rail freight sector.</td>
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<td>Permanent task</td>
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<td>2</td>
<td><strong>Increasing the degree of electrification</strong>&lt;br&gt;To exploit even further the environmental benefits of the railways, the electrification of the rail network should be systematically progressed and solutions for non-electrified line sections implemented. The current Coalition Agreement targets a degree of electrification of 70 % by 2025. To meet this target, the infrastructure projects in the requirement plan for federal railway infrastructure, in particular, should be implemented. With these measures alone, the degree of electrification can be increased to 67 %. The other pillars of the Federal Government’s electrification programme, such as the “Electric Freight Railways” upgrading programme, can further close the gap between this figure and the target figure.</td>
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| 3  | **Nationwide access to the railways**  
To embed rail freight throughout the country, existing access points to the railways must be preserved and upgraded and further access points must be created throughout the country, for instance by means of private sidings, CT terminals and multimodal logistics terminals. Consideration is also to be given to innovative handling at marshalling yards. High-volume industrial sites, logistics centres and business parks, in particular, must be given access to rail freight under conditions tailored to the market. To this end, the CT and private sidings funding guidelines have to be evolved and simplified in a targeted manner. Local authorities are to receive Federal Government support in linking business parks to the rail network. Rail freight is to become part of environmentally sound logistics for the provision of supplies to and the disposal of waste from metropolitan regions. | Federal Government/sector | Permanent task |
| 4  | **Modernizing rolling stock**  
In addition to the capacities of the track and loading infrastructure, sufficiently modern rolling stock must also be available. This requires the comprehensive modernization of freight wagons and motive power. At the same time, appropriate capacity for preventive maintenance is to be provided and the possibility of performing reactive maintenance is to be created. To support this, the rolling stock and energy efficiency funding guidelines should be fleshed out and simplified in line with market conditions. | Federal Government/sector | Permanent task |
Action area 7.4: Interoperability and cross-border rail freight services in Europe

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<td>1</td>
<td><strong>Improving cross-border infrastructure management</strong></td>
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<td>Around one half of rail freight in Germany is cross-border traffic.</td>
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<td>Nevertheless, when a freight train crosses a national and network border,</td>
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<td>this can still result in significant delays and additional</td>
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<td>costs because of complicated handling processes and additional</td>
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<td>necessary technical requirements that have to be met by rolling stock.</td>
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<td>At the European level, the corridors for cross-border competitive rail</td>
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<td>freight services have been established since 2010 with German participation.</td>
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<td>On these rail freight corridors (RFCs), many processes have already been</td>
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<td>improved and work is ongoing on further improvements. Important factors for</td>
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<td>the success of the RFCs are the commitment shown by and the cooperation</td>
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<td>between the infrastructure managers, the railway undertakings and the</td>
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<td>terminals and ports. The RFCs are a catalyst for all international rail</td>
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<td>freight services. As cross-border rail freight is evolved, the focus should</td>
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<td>be on further improving infrastructure management, e.g. cross-border path</td>
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<td>allocation, cross-border worksite management, continuous network for 740</td>
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<td>m freight trains, provision of points of access to rail freight, dismantling</td>
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<td>of language barriers and harmonization of sets of operational and technical</td>
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<td>regulations. It will also be necessary to remove rules inhibiting innovation</td>
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<td>and fund cross-border innovation projects.</td>
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<td><strong>Europe-wide introduction of innovations</strong></td>
<td>Federal Government/sector/EU</td>
<td>Permanent task</td>
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<td>The implementation of innovations can also be trialled on bilateral test</td>
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<td>beds, in particular. However, the extensive potential inherent in many</td>
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<td>innovations is not unlocked until their technology and processes have been</td>
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<td>largely standardized and they have been introduced on an area-wide basis.</td>
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<td>This includes, for instance, DAC or the Europe-wide introduction of ETCS on</td>
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<td>the basis of uniform standards binding on all Member States. Coordinated</td>
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<td>and targeted migration pathways and funding models in the EU are necessary</td>
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<td>for this. The complete electrification of cross-border lines must be</td>
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As part of its Green Deal, the European Commission is planning a new EU Transport Strategy and a revision of the Transport White Paper. On the basis of the Rail Freight Masterplan, these processes are to be informed by ambitious objectives and measures. Along the lines of the Rail Freight Masterplan, the focus should be on ensuring high-capacity infrastructure, comprehensively exploiting the potential for innovation and improving the transport policy framework for rail freight.
C. Next steps

The present Rail Transport Masterplan, with the Rail Pact that builds on it, marks an important milestone in the activities of the Alliance for the Future of Rail. For the first time, an overall strategy for the future of rail transport is in place that is supported by the Federal Ministry of Transport and Digital Infrastructure and the rail transport sector. The parties involved now have to join forces to implement this strategy, and the items that have not been discussed or on which no agreement has been reached have to be discussed in suitable formats.

Now that the substantive work has been completed, the key area of activity of the steering group will be monitoring implementation and continuously evaluating the measures and the process of implementation plus developing proposals for the evolution of the Masterplan. The steering group will meet at least once a year and will be supported infra-annually by a “Strategic Implementation” group. The industry sectors of rail freight (two associations), rail passenger services (one association) and rolling stock manufacture (one association) will be represented in this working group, as will an overarching rail transport association, DB as an infrastructure manager and the Federal Ministry of Transport and Digital Infrastructure. The “Strategic Implementation” group will consult other stakeholders of the rail pact when addressing specific issues and regularly inform the steering group of the progress it has achieved.

With the support of the Federal Ministry of Transport and Digital Infrastructure, the Alliance for the Future of Rail will stage an annual Rail Day. The first Rail Day is to be held in 2021 in the European Year of Rail. Each year, on the “Rail Day”, a conference on the future of the railways (Rail Summit) will be held as a flagship project. It will be a sectoral dialogue for the presentation of the “sunrise” rail sector and for an exchange of ideas and experience on innovations, lessons learned and best practice models. At the same time, the conference will provide a forum for a regular exchange of ideas and experience and the monitoring of trends in the rail sector by the members of the Alliance for the Future of Rail. This conference will bring together all stakeholders from the industry to discuss the status of measures agreed in the rail pact and address new ideas. A steering group comprising the Federal Ministry of Transport and Digital Infrastructure and members of the Alliance for the Future of Rail will be established to support the Rail Day and the conference on the future of the railways. The steering group of the Alliance for the Future of Rail will meet a few weeks before each conference and discuss the status of implementation of the Masterplan and issues that are important for the conference.

On the basis of the current structure of the Alliance for the Future of Rail, the Federal Ministry of Transport and Digital Infrastructure will continue the Deutschlandtakt working group and its subgroups that already exist. To ensure that the railways, as the most climate-friendly and environmentally friendly mode of transport, remain in the vanguard of mobility that is responsive to local people’s needs and climate-friendly, a broad-based and transparent dialogue will continue to be sought and cultivated in the existing structures, for instance in the monitoring working party on the harmonization of noise action planning and the programme of noise mitigation on existing lines, at the noise jour fixe or in events accompanying the topic. In addition, measures launched under the Federal Climate Change Act of 12 December 2019 and the 2030 Climate Change Programme to shift a significant amount of traffic to the railways and to reduce carbon emissions from rail transport will be further progressed.

In the years ahead, the Federal Government will step up its implementation of research and innovation. Here, the German Centre for Rail Traffic Research will act as a platform for a common exchange of ideas and experience between the Federal Government, academic institutions and the sector. Already established activities such as the annual rail transport workshop will be continued. In addition, provision is to be made at an early stage for deliberations on measures necessary for market activation. The activities of the sector to enhance the innovative capacity of the railways are also to be expedited. A basic prerequisite here, in particular, is that close interaction and continuous coordination between policymakers, the sector and academia be ensured on a long term basis.

The permanent implementation of the measures contained in the Rail Freight Masterplan will continue to be monitored and progressed by the Round Table on Rail Freight, chaired by the Federal Ministry of Transport and Digital Infrastructure. The “Implementation of the Rail Freight Masterplan” working group will continue its regular monitoring of the measures and continue its preparation of the contents of the measures.

The Alliance for the Future of Rail will coordinate the joint initiative of the Federal Government and the sector to recruit skilled workers. This issue is primarily the responsibility of the industry, but the Federal Government will provide support wherever it can.
Feasibility study on the “Digital Railways” innovation cluster

Preliminary remarks: This project was launched within the context of the discussions surrounding the Coal Deal and is funded by the Federal Ministry of Transport and Digital Infrastructure. The steering committee of the Alliance for the Future of Rail is familiar with the project and was involved in the coordination of the specifications. This project is thus to be included as a separate chapter in the Rail Transport Masterplan as a further contribution by the Federal Ministry of Transport and Digital Infrastructure (cf. Rail Freight Masterplan).

Challenges and Opportunities

The planned phase-out of lignite mining over the period to 2038 will confront the regions affected – Lusatia, Central Germany and the Rhineland – and the people living there with great challenges. The discontinuation of coal mining will result in a significant turning point in economic development, change or dissolve economic networks that have evolved over time, sever opportunities for professional development and force people to retrain for other jobs, weaken regional purchasing power and thus the wider economic environment, result in uncertainty among people with regard to their professional and private prospects and may promote further out-migration, thereby placing an overall strain on the local polity.

The Federal Government and the federal states affected by the phase-out of lignite mining have agreed to provide active support to the forthcoming structural change in the coal-mining regions, with the Federal Government making a total of 40 billion euros available over the period to 2038. These funds are designed to develop and secure future-proof structures in industry, technology, transport links and public services in order to offer people and industry a further positive personal outlook and economic prospects in the coal-mining regions after the lignite mining has been phased out. There are certainly differences between the starting points and the visions for the future shape of structural change in the coal-mining regions.

But despite these differences, the coal-mining regions have one important thing in common: places such as Bautzen, Görlitz, Niesky, Cottbus, Leipzig, Halle, Wegberg and the city-region of Aachen are major sites of the rail sector, with a frequently very long tradition and important specialist research and academic competencies in this field of industry and innovation.

Objective

In the years ahead, there will be a considerable growth in the status of the rail sector. The railways will become significantly more important as the most climate-friendly mode of transport. The Federal Government’s aim is to double the number of passengers travelling by rail and to shift more freight traffic to the railways by 2030 in order to meet both the growing mobility needs and the climate change challenges.

In addition, the railways are to become more reliable and punctual and their quality is to be enhanced.

The undertakings in the rail sector, for their part, must make every effort and seize all opportunities to satisfy this growing demand with modern products and services. The digital revolution can support the rail sector in shaping this development in many different ways.

To ensure that these challenges are addressed in a manner that is as collaborative as possible, the Federal Ministry of Transport and Digital Infrastructure has commissioned a feasibility study to promote the establishment of a “Digital Rail” innovation cluster. The innovation cluster is to provide an institutionalized platform for longer-term cooperation in research and development between undertakings, academia and research establishments over the entire wealth creation process and be located both nationwide and regionally.

There has so far been no “Digital Rail” innovation cluster, but it could become a crucial nucleus for the shaping and strategic evolution of the major digital challenges in the rail sector. The rail sector and the coal-mining regions, together with the federal states and the authorities responsible for local and regional passenger rail services, have a great opportunity to become the vanguard of “Rail 4.0”. For the coal-mining regions, this can open up new forward-looking economic and job prospects in a mobility sector that is becoming increasingly important – especially for people who were previously employed in the lignite mining sector. The regions will become nationally
and internationally more attractive as R&D partners and locations for business investment. The rail sector, for its part, will be able to boost its hitherto limited innovative capacity, position itself better in national and international competition with new products and services and counter the skilled labour shortage.

Contents and approach
The subject of the project is the development of a feasibility study that identifies the potential and starting points for a “Digital Rail” innovation cluster in the coal-mining regions and makes proposals for the establishment and organization of the cluster.

Three work packages are envisaged:

- analysis and description of major technological trends and a “Digital Rail 2030” vision;

- Stock taking and analysis potential regarding the rail sector in each coal-mining region and interactions with other regions.

- Development of a “Digital Rail” cluster blueprint applicable to all coal-mining regions taking account of the adaptability of the structures of the coal-mining regions and regionally derived cluster blueprints plus development of concrete implementation measures for all coal-mining regions and each coal-mining region plus identification of the impact on occupational profiles, training and continuing professional development in the rail sector.

Right from the outset, the development of the study will intensively incorporate the major stakeholders from the regions so that an impetus for the establishment of the clusters can be provided within this framework. Decisions regarding the subsequent implementation of the findings of the feasibility study will be the responsibility of the stakeholders from the rail sector together with the federal states and coal-mining regions affected.

The project is scheduled to run from May 2020 to April 2021.
Note:
The present Masterplan, which is the joint activity of the industry and the BMVI, forms the basis for the Rail Pact in which the members of the Alliance for the Future of Rail reach agreement on the implementation of the measures identified. The final reports of the six working groups of the Alliance for the Future of Rail and the Rail Freight Masterplan are also part of the Rail Transport Masterplan. All documents are available on the following website: https://www.zukunftsbuendnis-schiene.de/

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