

# Informal document WP.24 No. 4 (2017)

---

Distr.: Restricted  
16 November 2017

English only

---

## **Economic Commission for Europe**

Inland Transport Committee

### **Working Party on Intermodal Transport and Logistics**

**Sixtieth session**

Geneva, 23-24 November 2017

Item 10 of the provisional agenda

**Preparing National Master Plans on freight transport and logistics**

## **Freight Transport and Logistics Action Plan of Germany**

**Submitted by the Government of Germany**



Federal Ministry  
of Transport and  
Digital Infrastructure

# Freight Transport and Logistics Action Plan

- Towards a Sustainable and Efficient Future







# Foreword

Dorothee Bär, Member of the German Bundestag  
Parliamentary State Secretary at the Federal Ministry of Transport and Digital Infrastructure  
and Federal Government Coordinator for Freight Transport and Logistics

Economic growth and logistical performance are inextricably linked. The foundations of future prosperity are properly functioning and globally connected flows. For this, we need a strong freight transport and logistics industry that organizes, coordinates and moves these mobility flows – safety, securely, quickly and efficiently. Nowhere in the world does this work better than in our country. Germany has once again been crowned logistics world champion by the World Bank and is at the top of all industry rankings. This is the result of the work of our freight transport and logistics operators and a seal of approval awarded to their performance.

It is now imperative that we further strengthen and expand Germany's position as a global leader in the logistics sector. The key to success is a close partnership between the private and public sectors. The Federal Ministry of Transport and Digital Infrastructure thus joined forces with the industry to evolve the „Freight Transport and Logistics Action Plan“ that was launched a few years ago. Many activities have been successfully implemented, and we now face new challenges in the years ahead. This brochure, entitled „Freight Transport and Logistics Action Plan – Towards a Sustainable and Efficient Future“, presents the updated tasks and newly included measures.

The Federal Government's agenda focuses on three key areas.

First: investment – we will increase our investment in transport infrastructure to an all-time high. Over the period to 2018, we will invest 40 percent more funds in the structural maintenance and upgrading of our infrastructure. In doing so, we will implement a step change towards the user pays principle and involve more private sector capital, especially in the form of public-private partnerships (PPPs). Second: modernization – we will support the industry in putting mobility innovations such as alternative drivetrains or longer goods vehicles on the road, thereby leveraging the inherent efficiency potential. Third: digitalization – we will take superfast broadband into rural areas and remain the leading innovator in automated and connected driving. As a result, Germany will become a powerhouse of digital wealth creation and take a leap towards Logistics 4.0. In addition, we want to inject more dynamism into recruitment. As is the case in updating the Action Plan, it is the joint responsibility of government, trade associations and companies in the freight transport and logistics industry to promote occupational profiles that will attract new recruits to the sunrise sector of logistics.

I would like to thank all those who have worked with such dedication to evolve the Freight Transport and Logistics Action Plan. Implementation of the measures contained in the Action Plan will also be in accordance with good practice and involve the industry.

Since digitalization covers all spheres of life, the evolution of the Freight Transport and Logistics Action Plan will in the future be described on our website. This brochure provides you with a snapshot. It will be continuously updated on [www.bmvi.de](http://www.bmvi.de). Because in the era of the „one-hour delivery“, we can no longer be satisfied with an „annual update“.

A handwritten signature in blue ink that reads "Mre Dorothee Bär".

# Table of Contents

## Foreword

<b>1. Strengthen Germany as a logistics centre</b> .....	<b>4</b>
a. Implement the National Strategy for Sea and Inland Ports .....	5
<b>b. Implement the Rail Freight Masterplan</b> .....	<b>7</b>
<b>c. Implement the Aviation Strategy</b> .....	<b>7</b>
d. Further consolidate the freight transport and logistics network .....	8
e. Evolve the marketing of Germany as a centre for logistics in cooperation with the logistics industry and with the participation of the federal states.....	9
f. Exploit the advantages offered by the European rail freight corridors .....	11
g. Implement a security strategy for the freight transport and logistics industry .....	12
h. Counter theft in the freight transport sector in the public street environment .....	13
i. Putting longer goods vehicles into permanent operation .....	14
<b>2. Maintain, modernize and expand efficient transport infrastructure</b> .....	<b>17</b>
a. Prepare a network-based 2030 Federal Transport Infrastructure Plan .....	18
b. Take targeted action to unblock bottlenecks in the rail sector.....	18
c. Make longer freight trains possible .....	19
d. Ensure the worthiness of road bridges, railway overpasses and locks.....	20
e. Implement the 2015 Road Transport Telematics Project Plan .....	22
f. Create additional parking areas on federal motorways .....	23
g. Ensure reliable funding bases for federal infrastructure .....	23
h. Evolve PPP projects in the federal trunk roads sector .....	26
i. Create more public acceptance for necessary infrastructure schemes .....	27
j. Further optimize roadworks management on federal motorways .....	28
<b>3. Enhance the interconnectivity of all modes of transport</b> .....	<b>30</b>
a. Ensure high-performance digital infrastructure for freight transport and logistics .....	31
b. Develop a strategy for improving the interconnectivity and integration of the modes of transport .....	33
c. Optimize the information structure in the road haulage sector.....	34
d. Ensure an adequately high level of funding for terminals operated by private combined transport undertakings.....	35
e. Improve interoperability on the railways .....	36
f. Provide open data for the development of cross-modal applications (mFUND/mCLOUD).....	37

<b>4. Promote environmentally friendly and energy-efficient freight transport.....</b>	<b>39</b>
a. Improve the protection of the public against traffic noise.....	40
b. Promote alternative drivetrain technologies.....	42
c. Develop measures to strengthen logistics in urban areas.....	44
<b>5. Ensure recruitment and support good working conditions .....</b>	<b>46</b>
a. Support efforts to improve the image of jobs in the freight transport and logistics sector .....	47
b. Counter the shortage of new recruits to the occupation of professional driver.....	48
c. Improve welfare conditions for professional drivers.....	49
d. Improve operations at loading ramps.....	50
e. Regularly survey the working conditions in the freight transport and logistics sector.....	51





1.

# Strengthen Germany as a logistics centre



Germany enjoys a leading position in the world as a centre for logistics. Internationally, it is not only acknowledged but also held up as a model for the high quality of its logistics services. One of the crucial factors contributing to this is the fact that all its modes of transport have very good infrastructure compared with other countries and are interlinked at seaports, inland ports, airports and combined transport terminals. Other major factors include a pronounced capacity for innovation, a high standard of technology, a predominantly pro-competitive market environment and the punctuality and reliability of the German logistics operators – most of which are SMEs – and their workforce.

This positive health check must not result in us settling back contentedly and not tackling existing challenges. Rather, all stakeholders – whether they belong to the logistics industry or public authorities – must ambitiously work on not only maintaining but also further consolidating Germany’s leading position. Appropriate activities must be undertaken at an early stage to future-proof our country as a centre for logistics while further strengthening Germany as a major exporting nation. To this end, enhanced cooperation is required in order to exploit opportunities for development, dismantle any barriers that still exist and remove any factors that have an adverse impact on Germany’s role as a centre for logistics.

## 1 a. Implement the National Strategy for Sea and Inland Ports

### Current situation

Given the strong integration of the German national economy in the intercontinental production processes with their division of labour and sales markets, the sea and inland ports are of key importance to the economy as a whole. Almost all international trade, as well as the bulk of European trade, is handled by the seaports. The inland ports, as major hubs, are becoming increasingly important for transport operations within Germany and Europe. Thus, all ports make a major contribution to the prosperity of Germany and to the development of its whole economy.

In the ongoing parliamentary term, the National Ports Strategy has been evolved into a new Federal Government code of practice that reflects the importance of the German sea and inland ports for international freight transport. The new National Ports Strategy was adopted by the Federal Cabinet on 20 January 2016 and is designed to assist all players in tackling the challenges of the future and provide them with a common framework for action. All in all, the National Ports Strategy comprises seven fields of action with 155 individual measures that are to be implemented by the Federal Government, the federal states and the ports sector.



© Uwe Miethe - Deutsche Bahn AG



One of the reasons why the evolution of the National Ports Strategy was necessary is that the ports sector has changed in many fields since 2009, for instance with regard to:

- a great need for maintenance and upgrading of the transport and port infrastructures as well as the superstructures;
- fiercer international and European competition between ports;
- new EU initiatives in the ports sector;
- offshore wind energy;
- technological developments (automation of cargo handling, IT);
- environmental protection and climate change mitigation;
- alternative fuels;
- security, especially in the field of cybersecurity;
- demographic change.

To implement the National Ports Strategy, a steering group, chaired by the responsible state secretary from the Federal Ministry of Transport and Digital Infrastructure, has been established at the Ministry. The steering group met in spring and autumn 2016. In place of the former steering committee, a Ports Working Party, chaired by the Head of the Waterways and Shipping Directorate-General, has been established that will implement the requirements of the steering group and meet at least once a year. The composition of the working party is flexible and based on the issues to be addressed. The first meeting of the Ports Working Party was held on 26 September 2016. **The next meeting is scheduled to be held in autumn 2017.**

To support the German ports in researching and developing innovative port technologies as well as in cargo handling and the movement of goods out of the ports, the Federal Ministry of Transport and Digital Infrastructure has launched a successor programme to ISETEC I and II. The IHATEC (Innovative Port Technologies) programme is a new financial assistance programme to improve port logistics and develop innovative port technologies. **The first call for applications for funding was launched in November 2016. The result is that it has been possible to provide financial assistance to 15 innovative projects at various German ports. A second call for applications for funding is planned for autumn 2017.**

#### Objective of the measure

Given that the German economy is highly dependent on smooth cargo handling at the seaports and inland ports and on the rapid onward movement of goods by sea and inland, the overarching objectives of the National Ports Strategy are:

- to ensure that ports continue to be able to master the economic and logistical challenges;
- to further enhance the competitiveness of seaports and inland ports as hubs of domestic and international trade and central freight distribution centres;
- to support a shift of freight traffic to the railways and waterways; and
- to contribute towards achieving the Federal Government's climate change and environmental protection targets.



© DB Schenker - Deutsche Bahn AG

### Description of the measure

To achieve the aforementioned objectives, all parties involved are called on to make binding arrangements regarding the implementation of the measures described in the Ports Strategy. The Coordination Unit, which is based at the Federal Ministry of Transport and Digital Infrastructure, is responsible, among other things, for coordinating the measures of the Federal Government; it reviews the implementation of the measures of the National Ports Strategy at regular intervals and is the central point of contact for all issues concerning the National Ports Strategy. The parties involved have agreed to immediately start implementing the measures that have been identified as having priority where this has not yet happened.

### Time horizon

This measure will be implemented continuously within the next 10 years.

## 1 b. Implement the Rail Freight Masterplan

### Current situation

Because of the superior physical advantages of the wheel-on-rail system, the fact that a high proportion of rail freight is already powered by electric traction, the uncomplicated conversion of electrical energy into tractive power and the unique system of regenerative braking where braking energy is fed back into the railway power grid, rail freight stands out from other forms of transport and will be energy efficient and have a low climate change impact in the long term. These inherent advantages make rail freight predestined to be a key element of a sustainable logistics, mobility and transport strategy. These inherent advantages are to be combined to an even greater extent with economic efficiency and the logistics capabilities of the rail freight sector in order to significantly increase its market share in the future. To this end, a Round Table on Rail Freight, chaired by the Federal Ministry of Transport and Digital Infrastructure and involving representatives from the sector, was established. This body developed the Rail Freight Masterplan, which was presented to the public by the Federal Minister of Transport and Digital Infrastructure, Alexander Dobrindt, in June 2017.

### Objective of the measure

Rail freight in Germany is to be given a sustained boost, thereby enabling more freight to be shifted to the railways.

### Description of the measure

The Masterplan comprises a description of the current situation („Policy context of the initiative“), a vision for the „future of rail freight“ and 10 packages of measures. The packages of measures range from the provision of high-capacity infrastructure, through the greater use of digitalization and automation to changes in the regulatory framework.

In addition, five measures for immediate action have been adopted:

- additional public funds to reduce track access charges;
- 740 metre network (cf. also measure 2 c);
- entrepreneurial contributions by the sector to the modernization of rail freight;
- establishment of the first test bed for the digitalization and automation of the marshalling of freight trains;
- preparation of a blueprint for the Federal Government programme entitled „The Future of Rail Freight“.

Initial measures have already been launched. The implementation of the Masterplan is being monitored by the Round Table on Rail Freight.

### Time horizon

This is a permanent task. Under each of the packages of measures mentioned in the Masterplan, milestones have been formulated stating the responsibilities and timelines.

## 1 c. Implement the Aviation Strategy

### Current situation

In recent years, there has been a fundamental change in the framework governing air transport in Germany. In particular, air carriers now face much fiercer competition, while at the same time people's need for protection and the interests of environmental protection have become more important. The Federal Ministry of Transport and Digital Infrastructure believes that an aviation strategy must be based on robust figures. The Ministry's first step was thus to award a contract for a consultancy study analysing the competitive position of Germany as an air transport hub in the European/international context. A steering party, comprising representatives from the relevant federal government departments, and a working party, comprising representatives from the sector, the federal states, environmental pressure groups and the trade unions, monitored the work on the study. To strengthen and safeguard Germany's position as an air transport hub, a comprehensive aviation strategy

was developed on this basis. The Aviation Strategy was presented by the Federal Minister of Transport and Digital Infrastructure, Alexander Dobrindt, as a departmental strategy on 3 May 2017 and has been published on the Federal Ministry's website.

#### Objective of the measure

The Aviation Strategy is to be implemented continuously to boost and safeguard Germany as an air transport hub.

#### Description of the measure

The salient features of the aviation strategy to be pursued are as follows:

##### 1. Ease the burden on airlines:

- Reduce the German air navigation service charges with the help of Federal Government funding (€111 million is earmarked in the 2017 Budget Act) and increase German Air Navigation Services' equity by a total of €102 million for the period from 2017 to 2019 for a further reduction of air navigation service charges. This sum will have an additional impact to the charge-reducing measures for the period from 2015 to 2019 totalling €500 million.
- In the case of any further inclusion of aviation in the EU Emissions Trading Scheme with regard to the decision taken by the International Civil Aviation Organisation on global market-based measures, the Federal Ministry of Transport and Digital Infrastructure is opposed to the double counting of CO<sub>2</sub> emissions.
- The Federal Ministry of Transport and Digital Infrastructure calls on the federal states to relax the strict rules governing existing night-time flying restrictions in such a way that procedural delays on which the airport users can exert no influence are not to their detriment.
- The Federal Ministry of Transport and Digital Infrastructure advocates considering whether aviation tax could be reduced in the next parliamentary term and/or the fiscal revenue could be invested in research and development projects in the aviation sector. The Federal Ministry of Transport and Digital Infrastructure believes that it would be very appropriate to continue considering whether, and if so how, it would be possible to limit the aviation security charges for the users.
- The Federal Ministry of Transport and Digital Infrastructure is in favour of expanding aeronautical research.

##### 2. Boost the most important airports:

- Draw up a whitelist of airports of national significance based on various criteria.

- On the basis of these criteria, the Federal Ministry of Transport and Digital Infrastructure considers the following airports to be of national interest (arranged in alphabetical order by place name): Berlin (BER) in the future, Braunschweig (BWE), Cologne/Bonn (CGN), Düsseldorf (DUS), Hamburg (HAM), Hanover (HAJ), Leipzig (LEJ), Munich (MUC), Nuremberg (NUE), Oberpfaffenhofen (OBF) and Stuttgart (STR).
- The airports of national interest are to be boosted by the following measures:
  - Implement as soon as possible projects already in progress for capacity enhancement (BER, DUS, MUC).
  - Optimize surface access links to the airports within the scope of the Federal Transport Infrastructure Plan.
  - A clear „no“ is to be said to more restrictive hours of operation. There is to be no general ban on night-time flying. Nor is there to be any change to operating hours at our airports that exist on the basis of plan approvals.

##### 3. Further measures

These include, but are not limited to, expediting liberalization based on the principle of reciprocity without unilateral concessions, the greater involvement of air carriers in the process of calculating airport charges, regular market analyses and the promotion of intermodality by exploring the scope for modal shift from the air to the railways.

##### Time horizon

Implementation of the package of measures commenced in the 18th parliamentary term and is to be continued in the next parliamentary term. Some of the tasks are permanent.

#### 1 d. Further consolidate the freight transport and logistics network

##### Current situation

One of the Federal Ministry of Transport and Digital Infrastructure's key concerns is to pursue a transparent transport policy that is responsive to local people's needs. Accordingly, the Ministry is already engaged in a constructive dialogue with the freight transport industry at all levels. Examples include the annual National Freight Transport and Logistics Conference, which is hosted by the Federal Minister of Transport, or the network conferences addressing issues from the Action Plan, which are hosted by the Federal Government Coordinator for Freight Transport and Logistics, who is a parliamentary state secretary at the Ministry.





© BMVI

### Objective of the measure

The existing network of stakeholders is to be further cultivated and widened. There is to be a regular exchange of information to further improve mutual understanding among the parties involved. This will involve discussing issues that are important for freight transport and logistics in order to identify areas for political action.

### Description of the measure

Every opportunity will be taken to highlight the socio-political importance of freight transport and logistics more strongly than in the past in order to enhance public acceptance of this sector of the economy and to help improve the image of the logistics industry. Networking

events organized by the Federal Ministry of Transport and Digital Infrastructure will, if necessary, be supplemented by workshops addressing specific topical issues. They are to focus on, among other things, EU projects that have been announced or are ongoing, so that German interests and positions can be identified at an even earlier stage and even better asserted vis-à-vis national and international decision-making bodies. Not only associations from the transport and logistics sector will be invited to the events organized by the Federal Ministry of Transport and Digital Infrastructure, but also associations from the environmental sector and academia, as well as representatives of the federal states and other federal government departments. In addition, greater use will be made of the „Logistics Alliance Germany“ PPP project as a platform of communication (cf. measure 1 e.). In addition, those who order logistics services, especially trade and industry, are also to be invited.

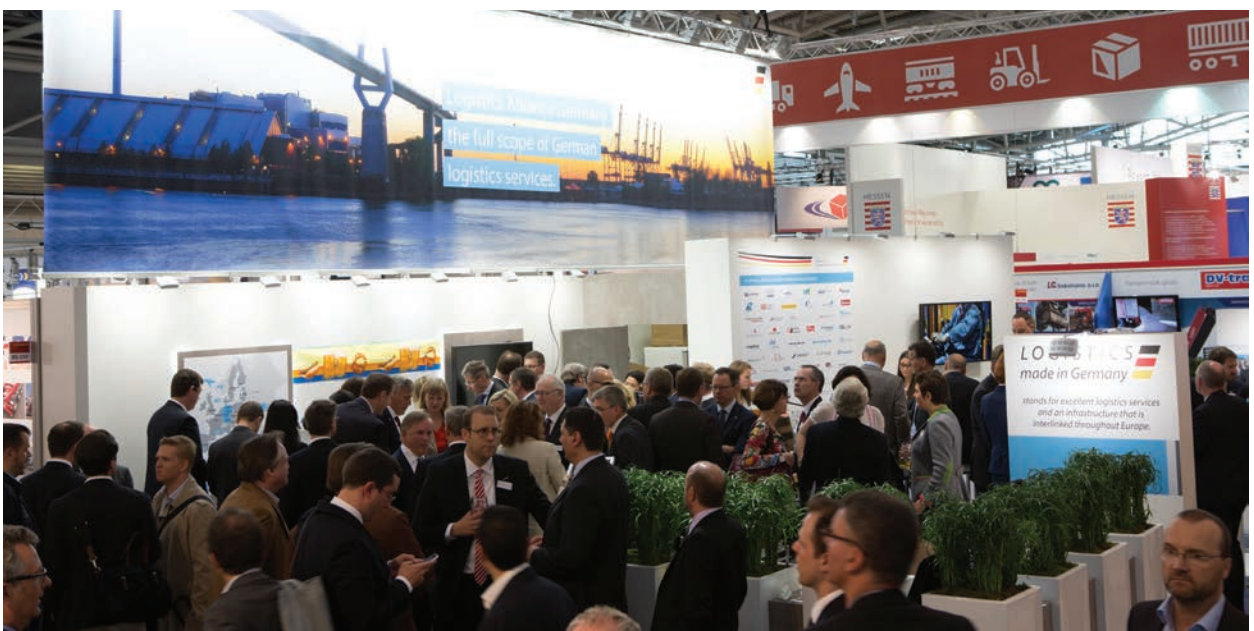
### Time horizon

This is a permanent task.

## 1 e. Evolve the marketing of Germany as a centre for logistics in cooperation with the logistics industry and with the participation of the federal states

### Current situation

The trademark-protected marketing drive entitled „Logistics made in Germany“ is being conducted as a successful PPP project under the likewise trademark-



© BMVI

protected name of „Logistics Alliance Germany“ (LAG). The LAG comprises the Federal Ministry of Transport and Digital Infrastructure and the LAG funding association, to which large as well as small and medium-sized logistics enterprises and major trade associations from the individual modes of transport belong. The LAG conducts trade fair activities and – with the active participation of the Minister and state secretaries from the Federal Ministry of Transport and Digital Infrastructure as well as members of the LAG funding association – organizes visits by delegations to the major emerging markets in the world, for instance in South America and Eastern Asia, and undertakes a wide range of other marketing activities at home and abroad. Since 2016, LAG delegations have also been visiting relevant European markets with the aim of tapping into them. Funding comes from the federal budget and the LAG funding association.

### Objective of the measure

Awareness of Germany as a centre for logistics and the high-quality German logistics services is to be continuously enhanced worldwide in order to generate orders for the German logistics industry among foreign clients and support collaborative schemes between foreign and German logistics service providers. To this end, the aforementioned brands are to be further strengthened and – with the active participation of the Minister and state secretaries from the Federal Ministry of Transport and Digital Infrastructure plus high-level members of the LAG funding association – relevant target groups on the logistics markets important for Germany are to be approached. In addition, the brands are to be used to promote freight transport and logistics in Germany as well. In addition, the PPP project will be used to carry out measures that enhance the competitiveness of Germany's logistics operators.



© BMVI

### Description of the measure

By increasing the number of members in the LAG funding association, the LAG as a whole is to be placed on a stronger financial footing, thereby enabling the transport industry in the medium term to honour its pledge to contribute an amount to the marketing drive that is at least as high as that of the Federal Government. To this end, the support of the German logistics industry for the LAG funding association is to be canvassed.

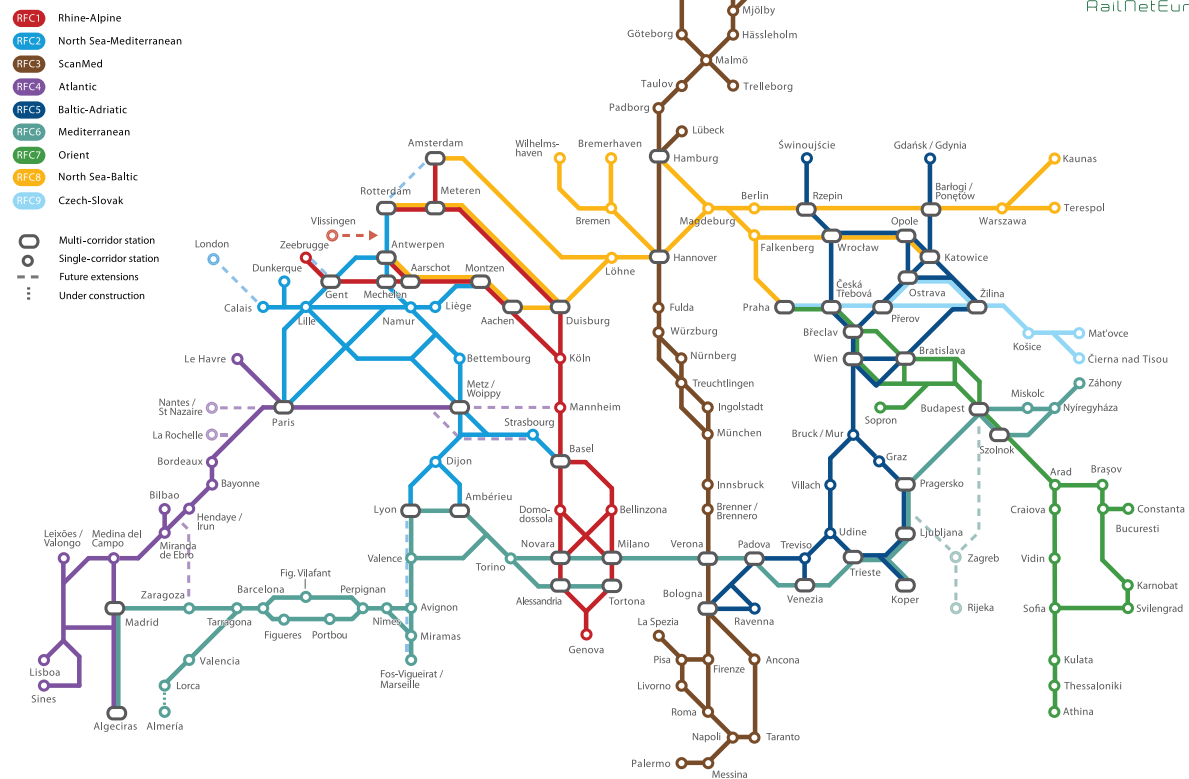
The marketing strategy, in which the potential target markets and target groups are described, is to be updated annually and coordinated with the LAG funding association. At the discussions to be held regularly with the federal states, possible synergies are to be identified and implemented. Visits by delegations to the target countries are to comprise a suitably high number of participants (at least five from the LAG funding association), who are to be as high-ranking as possible, both on the part of the Federal Ministry of Transport and Digital Infrastructure and regarding the representatives from the LAG funding association and the federal states. The visits are to focus in particular on international trade fairs and events. Further, efforts should be stepped up to present foreign delegations from the target markets, which are identified in a regularly updated marketing strategy, with German logistics excellence. In addition, to enhance the visibility of „Logistics made in Germany“ in other countries, cooperation between the LAG and internationally operating media is to be intensified and, in collaboration with the Federal Foreign Office, German missions abroad are to be supported in promoting Germany as a centre for logistics and German logistics services. Here, digital media, in particular, will be employed.

Beyond the aforementioned activities for the international marketing of Germany as a centre for logistics, the Federal Ministry of Transport and Digital Infrastructure and LAG funding association should consider within the LAG how the aforementioned brands can be used within Germany to promote German freight transport services and thereby improve their image. However, this must not result in any special costs accruing to the federal budget.

### Time horizon

This is a permanent task.

**Rail Freight Corridors (RFCs) map 2015**  
Including extensions expected in 2016 as indicated by the RFCs



Based on Regulation (EU) No 913/2010, this map was created by RNE and agreed with all RFCs. Any use without modifications of this map in electronic or printed publications is permitted with the explicit reference to the RNE as author and holder of the copyright. © 2015 RNE

© RailNetEurope (RNE)

## 1 f. Exploit the advantages offered by the European rail freight corridors

### Current situation

Rail freight is a commercially viable alternative to road haulage. The railway reforms in Europe, the completion of the Single European Railway Area with the adoption of the 4th Railway Package, the unstoppable rise of the container and, not least, its environmental and safety advantages present rail freight with enormous future potential.

Accordingly, the European Commission regards the rail freight corridors as the lifeblood of the activities to shift significant amounts of freight traffic to the railways in the long term, as envisaged in the Commission's Transport White Paper. Regulation (EU) No 913/2010 concerning a European rail network for competitive freight entered into force on 9 November 2010.

**The work done so far has already improved the quality of the services provided and simplified procedures for shippers and railway undertakings by, among other things, creating a one-stop shop. In the process, the capabilities of the freight corridors is portrayed in a positive manner, especially through the inclusion of clients and terminals via advisory groups.**

### Objective of the measure

Environmentally sustainable rail freight is to be strengthened and a significant portion of the increase in long-distance international freight traffic is to be shifted from the roads to the railways. The „pre-arranged“ train paths for trains on the corridors, as described in EU Regulation No 913/2010, provide an attractive product that will significantly enhance the quality of international freight services on these corridors.

### Description of the measure

EU Regulation No 913/2010, which is directly effective and does not require national transposition, strikes an adequate balance between the desire to strengthen international rail freight and the interests of the main transit countries such as Germany. At the start of 2014, within the scope of the TEN/CEF recast, the number of initial rail freight corridors passing through Germany rose from three to six.

Today, the following six corridors pass through Germany.

- „Rhine-Alpine“ (NL, BE, DE, IT, CH), in operation since 10 November 2013; this corridor is considered to be a model for the other corridors, both in terms of the lessons already learned on it and due to the fact that it is already operational;



- „North Sea-Baltic“ (DE, NL, BE, PL, LT, LV, EE), in operation since 10 November 2015;
- „ScanMed“ (SE, NO, DK, DE, AT, IT), in operation since 10 November 2015;
- „Atlantic“ (PT, ES, FR, DE), in operation since 10 November 2016;
- „Orient/East-Med“ (CZ, AT, SK, HU, RO, BG, EL, DE), to commence operation on 10 November 2018;
- „Rhine-Danube“ (FR, DE, AT, SK, HU, RO), to commence operation on 10 November 2020.

Governance of the individual rail freight corridors is performed by the executive board and the management board. The management board, comprising the infrastructure managers from the countries through which the corridor passes, is responsible for performing the operational functions for the establishment and implementation of the corridor. This includes, in particular, updating the implementation plan, in which the characteristics of the corridor are described and the actual alignment is determined on the basis of the findings of corridor-related transport market studies. Another major task of the management board is to set up a one-stop shop for each corridor, which is responsible for allocating pre-arranged paths and capacities exclusively for international freight services on the respective corridor.

The authorities of the Member States through which the corridor passes form the executive board of the corridor. In Germany, this function is performed by the Federal Ministry of Transport and Digital Infrastructure. The executive board defines, for instance, the framework for the allocation of capacity on the freight corridor and approves major decisions taken by the management board, such as the implementation plan.

**The activities of these freight corridors is supported by a network of corridors. The core functions of this network, in which Germany is represented at ministerial level, are to merge the corridors into a uniform network with uniform rules in keeping with the concept of best practice, to create a common interface with other European structures in the rail freight sphere and to support the evolution of the corridors, focusing on markets and market players. The network seizes on corresponding initiatives taken by the market and joins forces with the market players to implement them within the scope of projects, although the focus is on independent enterprise within the existing regulatory framework. In this context, legislative measures are envisaged only as a last resort to remove obstacles that cannot be overcome by the market.**

**The current objective is to increase freight traffic levels by providing attractive journey times and high-quality services, sustain the customer-focused evolution of services on pre-arranged paths and further develop cooperation between the individual freight corridors. This includes ensuring that the attractiveness of the range of services remains consistently high and that a sufficient number of paths are available, including interaction with other types of traffic on mixed-traffic networks.**

**There is permanent cooperation with the TEN-T Core Network Corridors, as well as with other network structures, to exploit the synergies that exist for the respective corridors. In addition, consideration will be given to evolving the existing corridors, depending on how the market develops and supported by updated transport market studies.**

#### **Time horizon**

**This is a permanent task.**

### **1 g. Implement a security strategy for the freight transport and logistics industry**

#### **Current situation**

In terms of an abstract security threat and in comparison with other countries, Germany already enjoys a high level of logistics security. However, there are two aspects where there is a need for improvement. First, the existing security strategy is sectoral and selective and should therefore take greater account of a linking-up of the different modes of transport. Second, the focus has so far been heavily on preventive protection, especially against terrorist threats, whereas very little has been done for the coordinated management of a crisis that has occurred. For these reasons, the Federal Ministry of Transport and Digital Infrastructure joined forces with the industry to develop a cross-modal security strategy that is designed to improve risk and crisis management in all modes of transport. The aim of the strategy is to safeguard and develop the ability to control and coordinate in cross-modal security in cooperation with the trade associations.

**A joint working party with companies and associations has been formed, which first prioritized the principal elements of the security strategy to permit efficient use of the limited resources for security. Targeted and cost effective action, the exchange of best practice instead of new regulation and a transparent and cooperative approach have already been stipulated as major guidance for action. The Federal Ministry of Transport and Digital**

Infrastructure has repeatedly lobbied for this in the European and international bodies.

As part of the further implementation of measures, the Federal Ministry of Transport and Digital Infrastructure has optimized its internal crisis management structures and established a communication platform for crisis management. Technical executive agencies have been more closely interconnected for the risk analyses in the Federal Government's civil protection and via the Federal Ministry of Transport and Digital Infrastructure's network of experts on the risks of climate change. With the participation of the trade associations, the operators of critical transport infrastructure were determined using a uniform method for the whole of Germany and specific working groups were created to address cargo theft and cyber security.

#### Objective of the measure

The jointly developed cross-modal security strategy now has to be implemented. This will be done by adopting a comprehensive approach comprising six action areas:

- strengthening of resilience;
- adoption of risk-based approaches;
- developing a cross-sectoral understanding of security;
- cooperation and dialogue;
- raising the awareness and improving the knowledge of stakeholders; and
- international cooperation

Here, too, the businesses concerned will be heavily involved. Account is to be taken of international agreements and a duplication of regulations is to be avoided.



© BMVI

#### Description of the measure

The Federal Ministry of Transport and Digital Infrastructure is already working on providing funding for analyses and appraisals of resilience in the transport sector in order to derive further necessary measures building on this.

#### Time horizon

Enhancing supply chain security and the resilience and risk/crisis management of the state and the economy are permanent tasks.

### 1 h. Counter theft in the freight transport sector in the public street environment

#### Current situation

In the public street environment in Germany and Europe, the organized theft of cargo, complete cargo carriers and fuel from goods vehicles is on the rise. Thus, in some cases, complete goods vehicles or freight wagons are plundered or stolen. This results in damage worth tens of millions of euros. However, police functions are normally not the responsibility of the Federal Government but of the federal states. And the situation is especially complicated in the case of international transport operations.

**Possible initiatives have been identified and coordinated with the trade associations and businesses affected at a Round Table chaired by the Federal Government Coordinator for Freight Transport and Logistics with the participation of the appropriate federal ministries.**

#### Objective of the measure

Since the Federal Government does not have any responsibility of its own for preventive police measures, it can only provide assistance. Nevertheless, in the interests of freight operators in all modes of transport, the Federal Ministry of Transport and Digital Infrastructure gets together with the businesses affected to continuously



© Jan Bergrath

discuss measures by means of which the theft of cargo, cargo carriers or fuel can be countered in the long term.

#### Description of the measure

**The following measures are being pursued jointly with the parties involved in the Round Table in the Cargo Theft Working Group established for this purpose.**

- Discussing possible improvements with the federal states, which are responsible for police matters; **to this end, the Federal Ministry of Transport and Digital Infrastructure has been able to persuade several federal state criminal police offices to cooperate;** subsequently, the Ministry will request the Standing Conference of Transport Ministers to refer the issue to the Standing Conference of Interior Ministers in order to initiate more extensive approaches for solving the problem;
- The reports prepared by the Federal Office for Goods Transport and the Federal Criminal Police Office for an initial improvement of the situation report are to be regularly updated and refined.
- The findings of the working group are regularly addressed by the Federal Ministry of Transport and Digital Infrastructure's Logistics Security working party.
- The European Commission (Transport and Mobility plus Migration and Home Affairs Directorates-General) has been made aware of the issue and has been requested to explore activities at European level.

#### Other possible initiatives could involve:

- **encouraging vehicle manufacturers to offer appropriate security measures; and**
- **raising the awareness of freight transport and logistics bodies in the international environment (for instance the UN-ECE's Inland Transport Committee and the International Transport Forum) in order to**

**launch suitable cross-border measures going beyond the Single European Market.**

#### Time horizon

**The initiatives launched in the 18<sup>th</sup> parliamentary term are to be continued in the 19<sup>th</sup> parliamentary term and further appropriate measures are to be launched.**

#### 1 i. Putting longer goods vehicles into permanent operation

##### Current situation

A five-year longer goods vehicle field trial has produced a large number of data which suggest that longer goods vehicles can actually make a contribution towards enhancing the efficiency of the road mode. The final report presented by the Federal Highway Research Institute in September 2016 proves, as did the September 2014 interim report, that the expectations associated with the use of longer goods vehicles have even been surpassed. Accordingly, longer goods vehicles exhibit numerous efficiency benefits, especially with regard to the reduction in the number of journeys („3=2“) and the resultant reduction in CO<sub>2</sub> emissions. Nor did the trial reveal any higher need for structural maintenance of the infrastructure or a modal shift from the railways to the roads. In terms of the large number of issues addressed, the number of challenges identified is low (for instance enhancing the conspicuity of „longer goods vehicle“ signs on the rear of vehicles). Moreover, depending on the type and number of longer goods vehicles, most of these challenges can be offset by the substitution of longer goods vehicles for conventional goods vehicles observed in the field trial. Because the share of longer goods vehicles is likely to be low, they can also be classified as negligible on the basis of a risk assessment. On the whole, the results of the scientific research supporting the field trial clearly



© Elflein Spedition & Transport GmbH



militate in favour of a continuation of the operation of longer goods vehicles. The only exception is the Type 2 longer goods vehicle (articulated vehicle with centre axle trailer), for which the results of the supporting scientific research documented so far are not yet sufficient for a recommendation to be given without hesitation that longer goods vehicles should be put into permanent operation. Here, subsequent studies were necessary.

The Federal Ministry of Transport and Digital Infrastructure has enacted amending regulations for putting longer goods vehicles up to 25.25 m into regular operation on specified routes after the end of the field trial on 31 December 2016. Since 1 January 2017, these longer goods vehicles have been able to operate permanently on the approved network. The regulations allow these longer goods vehicles to permanently engage in regular operations on specified routes on the existing positive network (based on notification of the suitable roads by the federal states).

During the field trial, the approved road network was enlarged by six amending regulations. It has been possible for the already published interim or final scientific reports to be used by other federal states to rethink their attitude – which has so far tended to be one of reluctance – towards longer goods vehicles. After Baden-Württemberg and North Rhine-Westphalia in 2015, Brandenburg joined the ranks of the federal states that have actively approved routes

for longer goods vehicles in 2016. **The next amending regulations will incorporate routes in Rhineland-Palatinate and Saarland.**

#### Objective of the measure

If the forecast growth rates in freight traffic are to be managed, all modes of transport will have to enhance their efficiency. Now that the field trial has demonstrated that longer goods vehicles help to enhance the efficiency of the roads as the principal mode of transport and a scientific study has produced positive results, especially with regard to environmental impact, efficiency enhancements in freight transport, modal shifts, road safety and infrastructure effects, the majority of the longer goods vehicles will be put into regular operation on specified routes, taking into account the findings of the final report of the supporting scientific research conducted by the Federal Highway Research Institute.

#### Description of the measure

Because of the requirements of EU law, deployment of longer articulated vehicles can only be continued on an experimental basis. The Federal Ministry of Transport and Digital Infrastructure will send the outcome of the field trial to the European Commission in the hope of encouraging it to rethink its position on this type of vehicle.



© Fahrzeugwerk Bernhard Krone GmbH

First, further trials are being conducted with the Type 2 longer goods vehicle in order to obtain practical findings to back up findings on vehicle dynamics that have so far only been theoretical. Following these trials, a decision will be taken on its further approval.

The Federal Ministry of Transport and Digital Infrastructure may, as in the past, continue to update and enlarge the approved network. To this end, the federal states are continuously reviewing routes to determine whether they are suitable. In this context, it is the lower-level administrative authorities of the federal states that decide, on the basis of their specific knowledge of the local circumstances, whether a route on the secondary network of a federal state is suitable for use by longer goods vehicles.

In addition, the positive findings of the Federal Highway Research Institute's final report are being used to hold talks with federal states that have not so far allowed the operation of longer goods vehicles, or not allowed it to the full extent, with the aim of encouraging them to likewise approve routes. The lessons learned from the field trial will inform further deliberations, including those at international level.

#### **Time horizon**

Longer articulated vehicles (Type I longer goods vehicles) will be approved on an experimental basis for a further seven years until 31 December 2022. Over this period, investigations are to be carried out to determine whether their operation results in accidents or difficulty in the trafficability of traffic installations due to their special length. Regarding Type 2 longer goods vehicles, further investigations will be carried out before a final decision can be taken on their permanent operation. They will initially be approved until 31 December 2017.

The approved network of routes that may be used by longer goods vehicles will be continuously enlarged by means of further amending regulations.

In 2017, amending regulations are to be enacted which, taking into account the Federal Highway Research Institute's final report, will optimize the operation of longer goods vehicles in certain aspects from a legal point of view.





**2.**  
**Maintain, modernize  
and expand efficient  
transport infrastructure**



The German transport network has a quality that is recognized as being high and offers good and diverse transport opportunities for freight vehicles. One of the priorities of transport policy must therefore be to maintain the efficiency of our infrastructure for all modes of transport. This relates to all Federal Government transport modes in equal measure. In addition, existing bottlenecks have to be removed and infrastructure has to be expanded. Use must be made of technical and operational possibilities so that we can adapt the transport infrastructure to the requirements of modern freight transport and make it even more efficient.

To achieve all this, it will be necessary to make great efforts, including in financial terms, as the provision of the funds required for investment from the federal budget has reached its limit. New sources of funding have to be explored and, if necessary, organized – with an open mind but adhering strictly to the value for money principle. One expedient way of doing this is to increase application of the „user pays“ principle in funding our infrastructure, as is making greater use of partnerships between government and industry. Efforts are also required to generate public acceptance of construction projects in the infrastructure sector in our predominantly very densely populated country.

## 2 a. Prepare a network-based 2030 Federal Transport Infrastructure Plan

This measure has been implemented in its entirety.

The Draft Federal Transport Infrastructure Plan (FTIP), which had been developed by the Federal Ministry of Transport and Digital Infrastructure, was adopted by the Federal Cabinet on 3 August 2016. The FTIP is the most important governance tool for the development and upgrading of the Federal Government's transport infrastructure. It was developed on the basis of the traffic forecast for 2030, which was published in the summer of 2014, and involved the participation of the public. On 2 December 2016, the German Bundestag passed three upgrading acts, including the respective requirement plans for the railways, roads and also, for the first time, the waterways, which entered into force at the end of 2016.

## 2 b. Take targeted action to unblock bottlenecks in the rail sector

### Current situation

There is great potential inherent in the railways – especially on the European corridors (cf. measure 1 e) but also beyond – as a less polluting mode of transport for an environmentally sustainable enhancement of the efficiency of German transport infrastructure as a whole. Following German reunification, the initial focus was on the necessary rehabilitation of the rail network in Eastern Germany, upgrading East-West routes and enhancing the attractiveness of long-distance passenger rail services by upgrading the high-speed network. In addition, priorities were shifted to upgrading the rail freight network.

### Objective of the measure

A substantial effort will be required to remove existing bottlenecks on the rail freight network and thereby to exploit opportunities for growth. Implementation of the requirement plan for the federal railway infrastructure, which is an annex to the Federal Railway Infrastructure Upgrading Act and fleshes out projects to be implemented, will focus on the main arteries and hubs of the rapidly growing rail freight sector, as described in measure 1 f. In addition, it will be necessary to push ahead with ongoing schemes. One important priority will be improving inland links to and from seaports.

### Description of the measure

If rail freight is to be made more competitive, the efforts to upgrade the lines and hubs important for rail freight have to be intensified and sustained. The European corridors (cf. measure 1 f) are one of the priorities here. In addition, the provision of a link to and from the Jade-Weser Port by upgrading the Oldenburg – Wilhelmshaven line and the upgrading of the Munich – Mühldorf – Freilassing line to provide better rail links for the Bavarian Chemicals Triangle are of great importance for Germany as a competitive site for economic activity. In addition, a large number of sensitive bottlenecks on the rail network are currently being removed that are of significance for rail freight in particular. Examples include construction of the new Schwarzkopf Tunnel on the Hanau – Nantenbach line, upgrading of the terminals in Duisburg-Ruhrort Docks and Lehrte, upgrading of the marshalling yard in Halle (Saale) plus double-tracking and electrification between Hoyerswerda and the German-Polish border.

In addition, smaller projects with a level of investment of up to €400 million are being prepared within the scope of the Second Immediate Action Programme for Inland Traffic to and from Seaports. These projects are designed to



© Frank Kniestedt - Deutsche Bahn AG

take targeted action to remove bottlenecks that have been identified on the seaport hinterland rail network.

In addition to accelerating the continuation of the schemes in progress, it is necessary to clearly prioritize the projects required for removing bottlenecks in a targeted manner. The new 2030 Federal Transport Infrastructure Plan provides the basis for this.

#### **Time horizon**

This is a permanent task.

The smaller and quickly deliverable projects in the Second Immediate Action Programme for Inland Traffic to and from Seaports are due to have been implemented by 2020.

## **2 c. Make longer freight trains possible**

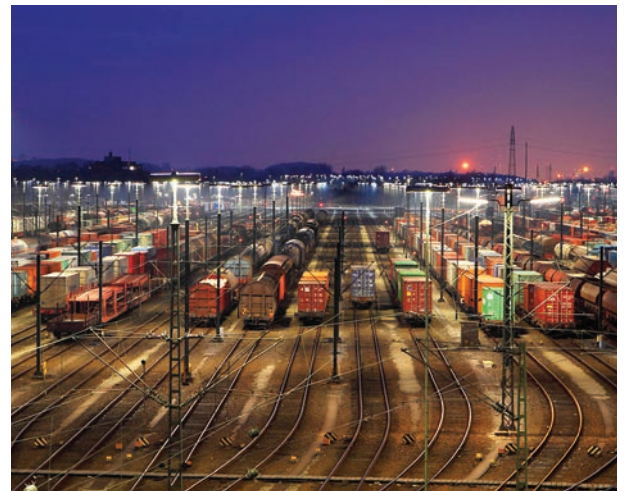
### **Current situation**

At present, freight trains in Germany are, to a very large extent, limited to a length of 740 m, due to the fact that most passing loops have a usable length of up to 750 m. As the current traffic forecast shows, the level of rail traffic will continue to grow in the years ahead. As a result, there will be a significant increase in the demand for longer and more efficient freight trains in the future. The infrastructure conditions for 740 m trains are not yet in place over the entire length of major main lines.

To enhance the efficiency of rail freight, 835 m long freight trains have, since December 2012, been running in revenue operations on the route between Padborg (DK) and Maschen near Hamburg. During the preparations for this, the impact on safety and infrastructure was identified and necessary structural and operational measures were implemented. Since December 2015, the direct link between the Hamburg Docks and the Padborg (DK) – Maschen line has been approved for trains with a length

of up to 835 m. In cooperation with the Hamburg Port Authority (HPA), the infrastructure investigations were carried out and the necessary proof furnished.

In addition, there have already been successful research and development activities and a few trial runs with 1,000 m long trains on the route from Rotterdam (NL) via the Betuwelijn and Emmerich to Oberhausen. It has been demonstrated that longer freight trains enhance efficiency, because more goods can be moved per unit of time. However, the trials took place under „laboratory conditions“ during a shutdown for engineering works when no other trains were running.



© volkerr - Fotolia.com

### **Objective of the measure**

By making it possible for longer freight trains to run on major routes, significant efficiency enhancements are to be achieved in the rail freight sector in the medium and long term. These enhancements are necessary in order to manage the sizeable increase in the volume of goods carried by the railways that is likely in the future.

### **Description of the measure**

A major element for further enhancement of the network capacity is that 740 m long freight trains must be able to use the entire length of the major main lines. For this reason, DB AG proposed an extension of around 100 locally designated passing loops on the German rail network to accommodate 740 m long freight trains for inclusion in the new Federal Transport Infrastructure Plan. This programme relates predominantly to the railway lines that form the core TEN network in Germany. Appraisal of the works necessary for this has commenced, but due to the high requirements, the necessary level of detail will probably not be available until some time during 2017. This investigation involves an elaborate methodology, because it contains components of both train formation („On what

parts of the network would longer trains operate if they could and what would be the economic impact of this?“) and timetable-based infrastructure development („Where, and under what scheduling conditions, do passing loops have the greatest impact and how is this to be quantified?“). The programme still lacks adequate funding. DB AG expects funding from the federal budget, for which there is currently no basis.

DB Netz AG will explore whether, following the pilot line from Padborg (DK) to Maschen, there are other line sections on which longer freight trains up to 835 m could run without significant infrastructure upgrading. On the other routes that might be suitable, feasibility studies will be carried out to determine the market potential, the technical solutions and the economic viability. At a meeting with transport policymakers from the German Bundestag on 27 November 2014, the latter asked DB AG to also consider, by the end of the parliamentary term, operational possibilities that could help to reduce the infrastructure work that would be necessary for the operation of longer freight trains.

To complement these activities, the possibility of running freight trains up to 1,500 m long on suitable routes is to be explored based on demand. The key problem of trains longer than 1,000 m is that they require distributed traction and braking control. Solutions such as those in operation in the US appear to be not feasible in Germany, because they require, among other things, the use of central buffer couplings that can transmit higher forces than the couplings customary in Western Europe. Research and development activities, with DB AG playing a lead role and involving European industry stakeholders, have commenced within the scope of the European Shift2Rail research programme. The objective of the project is to prove that trains up to 1,500 m long, consisting of up to three coupled trains with locomotives distributed over the length of the train, are technically and operationally feasible and commercially viable. The first project phase is due to have been completed by the end of 2018. This phase is to develop a prototype, eligible for approval, for the control of several distributed locomotives in a train convoy, launch initial trial operations and identify the new train length that can be implemented in an optimum manner.

On the whole, however, it must be borne in mind that any extension of the rail network to accommodate longer trains must take into account the impact on the infrastructure and safety. Moreover, this will require significant expenditure on infrastructure that can only be funded – after a review and mostly in phases – where it is appropriate because of the volume of freight traffic.

### **Time horizon**

The appraisal of the measures required on the German rail network to strengthen the relevant corridors for 740 m long trains is likely to have been completed by the end of 2017. The findings of the studies commissioned by DB AG into further lines suitable for 835 m trains will be published upon completion.

DB AG cannot take a decision on the introduction of revenue operations by trains with a length between 1,000 m and 1,500 m until the findings of the research project on trains with a length of 1,500 m are available. A total of at least five years will be required for completion of the technical development work, and a further period of time that cannot yet be estimated will be required for retrofitting the rolling stock and adapting the railway infrastructure.

## **2 d. Ensure the worthiness of road bridges, railway overpasses and locks**

### **Current situation**

Road bridges, railway overpasses and locks on federal waterways are especially important for the well-developed German transport networks. Investment in replacement infrastructure and preventive maintenance on these structures entail very high costs. Due to ageing and the disproportionately high increase in traffic volumes – on federal trunk roads, this relates especially to heavy goods traffic, but also to rising gross vehicle weights – the excess capacity of many older bridges is increasingly being depleted. On the federal waterways, around one half of the locks and weirs were constructed before 1950, and around 10 % of the installations were constructed before 1900. Today, this historical evolution is resulting in problematical age structures and thus in a need for short-term and medium-term action.

For the federal trunk roads, the Federal Ministry of Transport and Digital Infrastructure joined forces with the Federal Highway Research Institute and, after consultation with the competent federal state road construction authorities, developed a „Strategy for Strengthening the Road Bridge Stock on the Federal Trunk Roads“, defining the uniform nationwide course of action, the facility-related recalculations and the systematic bridge strengthening planning. A report on this was submitted to the German Bundestag's Transport, Building and Urban Development Committee in May 2013. To speed up implementation of the necessary strengthening works on the federal trunk road network, a bridge modernization programme was launched in





© Robert Grahn - euroluftbild.de

2015. Within this programme, major bridge strengthening works with investment totalling over 5 million euros in each case are shown separately and the funds earmarked for bridge strengthening are identified separately in the corresponding structural maintenance item.

For the railway infrastructure, a Second Service Level and Funding Agreement was concluded with DB AG on 12 January 2015 for the structural maintenance and modernization of the existing rail network. This agreement regulates the provision of funds for the railways over the period to 2019. Regarding the federal railway infrastructure, it must be borne in mind that the Federal Ministry of Transport and Digital Infrastructure cannot exert any influence on the operational business of DB AG or its railway infrastructure company DB Netz AG, which operate as commercial enterprises. Nevertheless, the conclusion of the Second Service Level and Funding Agreement in January 2015 has enabled DB AG/DB Netz AG to continue in the financially comfortable position of being able to make the necessary investment in the replacement of their railway overpasses and to assume their own entrepreneurial responsibility for doing so. Likewise, contractual agreement was reached on an appropriate preventive maintenance amount to be paid by DB AG.

#### **Objective of the measure**

It is imperative to ensure that the aforementioned structures, as major components of the transport network, be preserved in a serviceable condition, especially since individual outages would result in massive disruptions to freight traffic, in some cases covering large areas. Future disruptions to freight traffic resulting from load restrictions or even the closure of bridges and locks must be avoided as far as possible.

#### **Description of the measure**

In the federal trunk roads sector, the systematic implementation of the bridge strengthening strategy requires not only a facility-related examination and recalculation of the load-bearing capacity on the basis of current and future traffic volumes but also network-related bridge strengthening planning that transcends federal state boundaries. This planning must be cross-sectoral, take into account the transport impact and be integrated into the structural maintenance planning for the federal trunk roads. The bridge strengthening strategies of the individual federal states are regularly coordinated with the federal states and adjusted to the meet the Federal Government requirements. Major routes used by heavy goods traffic requiring authorization are taken into account as far as possible when prioritizing measures to strengthen bridges as part of the structural maintenance of federal trunk roads.

In the period from 2017 to the end of 2020, around €2.9 billion is available in the bridge modernization programme. As of 2017, the budget estimates also include a basic amount of €100 million annually for the strengthening of smaller bridges with investment totalling less than €5 million in order to accelerate the modernization of bridges on entire sections of road,

In the federal railway infrastructure sector, the €28 billion available in the federal budget over the period to 2019 for the preventive maintenance, replacement and modernization of the existing network are to be used, among other things, to renew at least 875 railway overpasses. DB AG will submit a report to the Federal Ministry of Transport and Digital Infrastructure annually detailing progress made as part of the infrastructure condition and development report agreed on in the Second Service Level and Funding Agreement.

On the federal waterway network, the serviceable condition of the locks and weirs is indispensable for freight transport. Along with the bridges, siphons, culverts and pumping stations, they form the major component of the transport infrastructure. The main priorities of the investment in the transport infrastructure will be maintenance of the structural fabric of the existing federal waterway network with its installations plus network optimization and upgrading. In the years ahead, an average of around €670 million will be available for this, including the infrastructure acceleration programme for construction of the fifth lock chamber at Brunsbüttel (Kiel Canal).

#### Time horizon

This is a permanent task.

## 2 e. Implement the 2015 Road Transport Telematics Project Plan

#### Current situation

In the past few decades, telematics has not only fundamentally transformed the logistics sector but also made a major contribution towards enhancing capacity on all transport infrastructure and in almost all modes of transport. With its help, transport systems can be better interlinked, transport safety can be improved and the flow of traffic as a whole can be smoothed. Traffic information data, provided inter alia by linking the traffic control centres to the Mobility Data Marketplace (see measures 3 b and 3 c), are a major foundation for the deployment of transport telematics. **The Federal Government is providing the federal states with around €50 million per annum to install road transport telematics systems.**

#### Objective of the measure

The strategic deployment of telematics systems is designed to further enhance the capacity and safety of busy sections of federal motorway and to improve the flow of traffic (by preventing congestion).



© Niedersächsisches Ministerium für Wirtschaft, Arbeit und Verkehr

#### Description of the measure

More efficient and demand-driven use is to be made of spare capacity on the road network by means of dynamic measures that have an impact on the flow of traffic, such as overtaking bans, maximum speeds, temporary hard shoulder running and variable direction signs. On the basis of the positive experience of installing adaptive traffic control systems on sections of road prone to accidents and congestion, the Road Transport Telematics Project Plan, which expired in 2015, will be evolved at the strategic level in cooperation with the federal states. It will incorporate new and forward-looking „intelligent transport systems“ (ITS). Examples include projects that use telematics to park goods vehicles and measures to introduce cooperative systems on the Rotterdam – Frankfurt am Main – Vienna C-ITS corridor. The Road Transport Telematics Project Plan is included as a measure in the ITS Action Plan and is monitored by the ITS Advisory Council.



### Time horizon

Road transport telematics measures will be continuously developed and implemented depending on the local traffic situation.

## 2 f. Create additional parking areas on federal motorways

### Current situation

The Federal Ministry of Transport and Digital Infrastructure has set itself the goal of further expanding HGV parking capacity on federal motorways. The target for the 18th parliamentary term was 6,000 new parking spaces. This target has been met. Thus, by the end of the parliamentary term, around 49,000 HGV parking spaces will be available at rest areas throughout the country. Since 2008, the Federal Government has invested over €950 million in the traffic spaces at rest areas.

Nevertheless, surveys of the HGV parking situation show that there are still night-time shortages at some rest areas on the major road haulage arteries.



© Irmin Kerck

### Objective of the measure

All road users are to enjoy a modern system of parking and services along the federal motorways that is tailored to their requirements. Mobile workers must have had a good rest and their needs must have been catered for if they are to continue their journey safely and refreshed. One of the key issues here is a significant improvement in the availability of parking areas for HGVs. The digital assistance provided to drivers looking for a parking space is to be improved. **Because of the likely rise in the volume of freight traffic, it thus remains an important task to increase HGV parking capacity at rest areas.**

### Description of the measure

**The new 2030 demand forecast will probably be available in autumn 2017. On this basis, it will be possible to consider further measures (for instance pilot projects on the use of areas alongside the federal motorways**

**incorporating private sector investors on suitable road sections if proof has been furnished of a need for procurement and taking account of all regulatory and economic frameworks).** The demand for HGV parking space is to be met initially by means of conventional construction works at the rest areas on federal motorways. The projects in question are coordinated with the federal states at regular meetings. In addition, there are the telematics-based guidance schemes, in particular parking in columns and compact parking plus HGV guidance systems. Future routes for HGV parking guidance systems will be coordinated with the federal states and consolidated in a project plan. The statistical data from rest areas and the dynamic data from the HGV parking guidance systems will be offered to private sector service providers who will ensure, by means of smartphone apps and other telematics services, that the information is transmitted into the driver's cab, thereby informing drivers about available parking spaces.

### Time horizon

Given the rising demand for HGV parking, the construction of HGV parking spaces is a permanent task. The project plan for parking guidance systems will be incorporated into the measures to update the Road Transport Telematics Project Plan (cf. measure 2 e).

## 2 g. Ensure reliable funding bases for federal infrastructure

### Current situation

Germany is a driver of growth in Europe and enjoys an excellent reputation as a country of innovations. One of the major foundations of this is the quality and efficiency of its infrastructure. By pursuing a mobility policy with a sustained level of funding, the Federal Ministry of Transport and Digital Infrastructure ensures the renewal and upgrading of our infrastructure and invests in the future of the competitiveness of our country.

To implement this mobility policy, the funds in the federal budget for investment in transport infrastructure have been increased to an all-time high. And clear priorities have been established. Investment will be made where it has the greatest transport impact and the greatest economic benefit. The 2030 Federal Transport Infrastructure Plan was developed in line with these objectives. In addition, the Federal Ministry of Transport and Digital Infrastructure has stepped up application of the „user pays“ principle. On 1 July 2015, HGV tolling was extended to cover 1,100 km of federal highways, and since 1 October 2015 vehicles weighing 7.5 tonnes or more have also been covered by the



tolling scheme. In addition, to ensure planning and funding certainty in the capital investment sphere from one year to the next, the 2014 federal budget created the budgetary conditions required for this.

#### Objective of the measure

All necessary measures are to be taken to permanently safeguard the new direction in our investment policy and the necessary investment in federal transport infrastructure for all modes of transport and their interfaces with other modes. Here, an important principle

is: „structural maintenance must be given precedence over construction and upgrading.“

#### Description of the measure

In the federal budgets of the 18th parliamentary term, the Federal Ministry of Transport and Digital Infrastructure's level of investment for infrastructure projects will be progressively increased. **The following table shows the investment that benefits exclusively transport infrastructure:**

Infrastructure investment in millions of euros	2014	2015	2016	2017	2018
Federal railway infrastructure	4,229	4,604	4,998	6,064	5,631
Roads	5,091	5,093	6,208	6,480	7,389
Waterways	1,005	977	974	1,056	956
Other sectors (incl. combined transport)	132	131	127	157	137
<b>Total</b>	<b>10,457</b>	<b>10,805</b>	<b>12,307</b>	<b>13,757</b>	<b>14,113</b>

More specifically, the five billion euro package agreed upon will be implemented over the period to 2017. Of the additional funds for investment, €1.05 billion will go to the federal railway infrastructure, €3.6 billion to the federal trunk roads and €350 million to the federal waterways. In addition, the increase in transport investment has been continued in 2018 and 2019 with additional funds totalling €1.8 billion in each year.

Additionally, around €3.1 billion will be provided for federal transport infrastructure from the Federal Government's ten billion euro package for future-oriented investment over the period from 2016 to 2018. Of this total, around €1.9 billion will be invested in the federal trunk roads, around €1 billion in the federal railway infrastructure and around €200 million in the federal waterways.

Further funds for investment in transport infrastructure in 2018 and 2019, totalling €625 million in 2018 and around €640 million in 2019, were taken into account when drawing up the financial plans.

In addition, EU funding totalling €1.7 billion will be provided for German projects on the Trans-European Transport Network in the period from 2014 to 2019.

Because of the great need for investment, the increase in funds in the federal budget will be further boosted by extending the „user pays“ principle. In 2018, HGV tolling is to be extended to cover all federal highways. The Act on the Introduction of Infrastructure Charging for the Use of Federal Trunk Roads by Passenger Cars is a further milestone along the road to a step change towards the „user pays“ principle for funding infrastructure in Germany. All revenue will be ring-fenced for investment in transport infrastructure.

Beyond the aforementioned measures, the new direction in our investment policy will also entail a greater involvement of private sector capital through additional public-private partnership projects („new generation“) and the evolution of the existing models (cf. measure 2 h).

### Time horizon

The plans to make greater use of the „user pays“ principle are based on the following timescale.

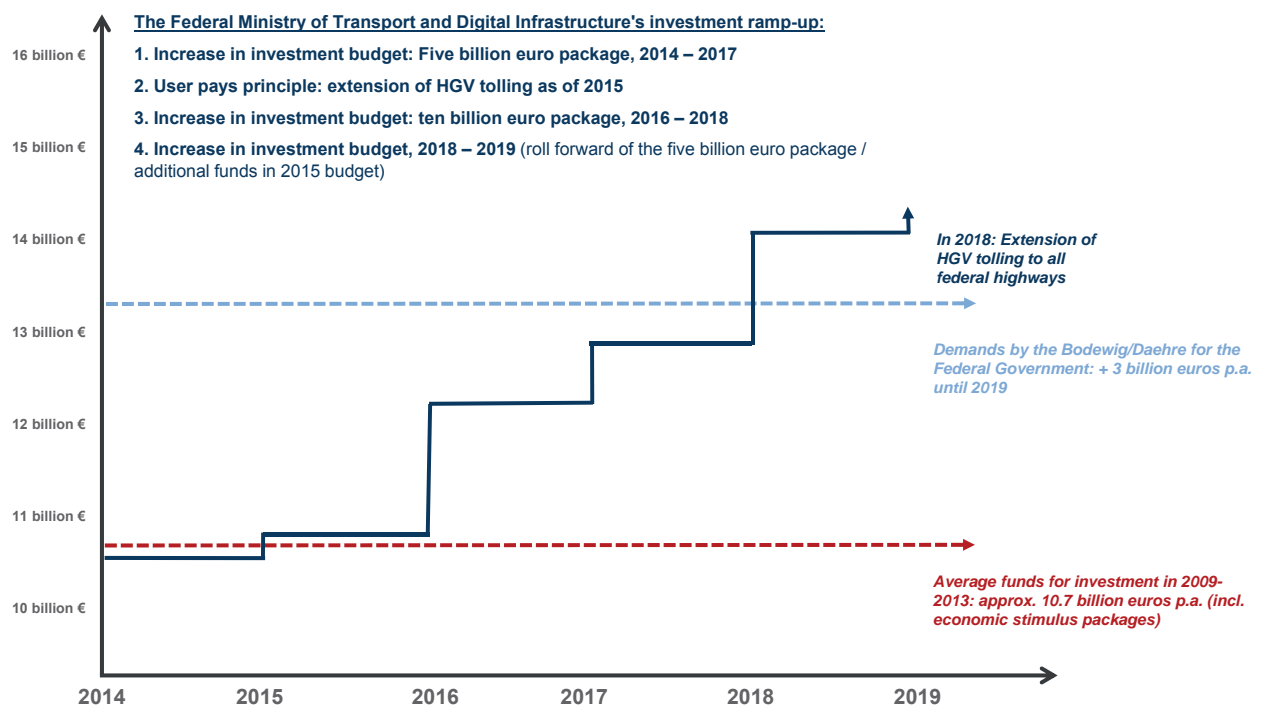
- Introduction of an infrastructure charge for passenger cars, which will make an appropriate contribution to infrastructure funding by keepers of vehicles not registered in Germany.
- Extension of HGV tolling to all federal highways. Implementation is being prepared and the scheme will be introduced in 2018 (revenue up to €2 billion p.a.; new infrastructure cost study required).



© Bundesamt für Güterverkehr

## The Federal Ministry of Transport and Digital Infrastructure's investment ramp-up

Funds for infrastructure investment as of 2014 compared with the period from 2009 to 2013



BMVI

## 2 h. Evolve PPP projects in the federal trunk roads sector

### Current situation

Since 2005, projects in the federal trunk roads sector have continuously been launched as public-private partnerships (PPPs). The whole life cycle approach that is typical of PPP projects, i.e. a „one-stop shop“ for construction, operation, structural maintenance (including structural maintenance planning, detailed design work and management in each case) and pro rata funding, combined with a transfer of risk, provides an incentive to deliver quickly and efficiently in the case of suitable projects.

The four A model pilot projects<sup>1</sup> of the first batch (2005 to 2009) developed PPP as a procurement option in the federal trunk roads sector. A further nine PPP projects

of the second batch<sup>2</sup> with updated project structures are currently either completed, under construction, at the procurement stage or still in the preparation phase. In the last-mentioned case, the PPP procurement procedures will be launched as quickly as possible – in each case depending on when the federal states give the construction go-ahead and on a positive value for money assessment as required by budgetary law. The EU funds PPP projects through various European Investment Bank instruments.

At the end of April 2015, the Federal Ministry of Transport and Digital Infrastructure, building on the lessons learned so far and after consultation with the Federal Ministry of Finance, launched a new generation of PPP projects in the federal trunk roads sector. There are currently 11 new generation PPP projects, comprising around 670 kilometres of federal trunk roads with investment totalling around



© DEGES

<sup>1</sup> The A model for widening motorways by adding lanes became possible with the introduction of the distance-based HGV tolling scheme on motorways. It involves transferring responsibility for the construction of additional lanes, the structural maintenance and operation of all lanes and the funding of the package of measures to a private sector operator. In return, the operator receives the revenue, or part of it, from the HGV tolls charged on the section of road in question. In addition to the HGV toll, the Federal Government can, if necessary, provide start-up funding.

<sup>2</sup> In the implementation of the second batch of PPP projects, the remuneration mechanism was simplified. Thus, in a second batch PPP project, remuneration is via a uniform toll rate, which means that the private sector investor receives a standard toll, determined in competition, per tolled vehicle kilometre. Other second batch PPP projects are designed as availability models, which means that the remuneration is based on the availability of the contract section to road users and is thus no longer dependent on traffic volumes.



€15 billion (of which around €7.5 billion is for construction work and around €7.5 billion for operation, structural maintenance and [pro rata] funding). The new generation of PPPs has the following characteristics:

- designed as an availability model, in individual cases possibly as an F model<sup>3</sup> under the Private Sector Funding of Trunk Road Construction Act;
- upgrading schemes on busy motorways extended to cover structural maintenance projects and schemes to fill existing gaps plus, for the first time, PPP projects on federal highways;
- involvement of institutional funding providers (for instance insurance companies, pension funds) by contractors, also use of new funding instruments such as project bonds.

The PPP procurement procedures for the first new generation projects – the A 10/ A 24 federal motorway between Neuruppin junction (A 24) and Pankow junction (A 10) **and the A 3 federal motorway between Biebelried interchange and Fürth/Erlangen interchange are currently underway.**

To meet the demand for more transparency, the Federal Ministry of Transport and Digital Infrastructure published a „Systematic presentation of rules governing PPP projects in the federal trunk road sector“ on its website in January 2016

#### **Objective of the measure**

In the interests of creating reliable bases of delivery for federal transport infrastructure (cf. measure 2 g), greater consideration is to be given to PPP projects as a component of the infrastructure ramp-up. The new generation PPPs are designed to implement the necessary road construction schemes more quickly and more efficiently, to minimize congestion and the harm to the national economy caused by congestion, and to create a framework for investment opportunities for private sector capital. The Federal Ministry of Transport and Digital Infrastructure's objective is to further exploit the opportunities for cooperation between public sector clients and private sector contractors as an option for delivering projects in the federal trunk roads sector if this represents better value for money. In

---

<sup>3</sup> In an F model under the Private Sector Funding of Trunk Road Construction Act, a private sector investor constructs, operates and maintains a section of road and is given the right to collect tolls from all users (HGVs and passenger cars) himself. The F model is confined to bridges, tunnels and mountain passes along motorways and federal highways plus multi-lane federal highways with separate carriageways for the two directions of traffic.

addition, efforts to move towards standardization are to be stepped up in order to facilitate the establishment of PPP projects in the medium to long term. The objective is to develop different model structures that reflect the Federal Government's heterogeneous procurement needs in the federal trunk road sector.

#### **Description of the measure**

The start of further PPP procurement procedures by the contract awarding agencies responsible in any given case and the exact project configurations depend on when the federal state highway authorities give the construction go-ahead and on the outcome of the respective value for money assessments (VMAs). The aim is to have a continuous „deal flow“ of around 2 projects per year. Various projects are under preparation.

In the case of the 2<sup>nd</sup> batch PPP projects, the remuneration mechanism, in particular, was changed. For this reason, the methodology of the VMAs will be evaluated, evolved and standardized in parallel. In addition, individual funding components and options of PPP projects are to be reviewed.

#### **Time horizon**

PPP is a permanent task.

## **2 i. Create more public acceptance for necessary infrastructure schemes**

#### **Current situation**

In November 2012, the Federal Ministry of Transport and Digital Infrastructure published the Manual for Good Public Participation, addressed to developers, authorities and the public. It sets out the planning process in federal transport infrastructure projects and describes the statutory requirements for public participation at the individual planning levels. In addition, it contains a kind of toolkit with proposals as to how better and more intensive use can be made of the statutory rules governing public participation and how they can be augmented by additional offers of information and participation tailored to individual cases. The manual is designed to ensure that stakeholders are involved at as early a stage as possible in the planning and delivery of transport projects.

#### **Objective of the measure**

Timely, open and continuous public participation is designed to take seriously the legitimate interests of those affected by infrastructure projects. At the same time, Germany is dependent on high-capacity infrastructure for sustained economic growth and the ability to manage



© Jet-Foto Kranert - Deutsche Bahn AG

transit and export traffic. Transport infrastructure comprises nationwide networks whose efficiency is in the common good. The regional concerns of individuals must therefore always be weighed against the public interest in a properly functioning overall network. It must continue to be possible to implement major infrastructure projects in a dialogue with the public.

#### **Description of the measure**

The Federal Ministry of Transport and Digital Infrastructure is not itself a planning or authorizing authority. However it takes care to ensure that the manual is applied by its executive agencies and by the federal states acting as agents of the Federal Government.

The Federal Ministry of Transport and Digital Infrastructure also reminds people about the manual at every suitable opportunity.

The Federal Ministry of Transport and Digital Infrastructure will, in due course, review the effectiveness of the manual to check whether, and if so how, the individual measures are being implemented in everyday practice, what impact they are having and where there may be a need for readjustment.

#### **Time horizon**

This is a permanent task.

### **2.j. Further optimize roadworks management on federal motorways**

#### **Current situation**

On the basis of a jointly developed roadworks management system, the federal states report their planned roadworks sites on federal motorways to the Federal Ministry of Transport and Digital Infrastructure on a rotational basis, stating the expected duration of the roadworks sites and their transport capacity. This makes it possible, on a case-by-case basis, to estimate, inter alia, the likelihood of congestion and thus to minimize disruption to traffic. The calculation of the duration of roadworks, too, is currently based mostly on empirical values from previous roadworks at the respective highway agencies and is only done systematically in some cases. The current „Catalogue of Roadwork Durations“, which was developed by a working group of the Federal Government and the federal states and contains time allowances for standard methods of construction used in structural maintenance work in road and bridge construction, provided the federal state highway authorities with a practical tool for

calculating appropriately short durations for roadworks on federal motorways. To unlock existing potential for optimization, the Catalogue of Roadwork Durations has been supplemented by a further procedure for calculating the duration of roadworks. It is based on the management accounting system for federal trunk road construction.

#### Objective of the measure

To minimize disruption to road users caused by roadworks on federal motorways, the existing roadworks management system is to be further improved.

#### Description of the measure

The „Guide to Roadworks Site Management on Federal Motorways“, which was introduced by the Federal Ministry of Transport and Digital Infrastructure in 2011, is to be evolved in cooperation with the federal states. **For the assessment of the impact on traffic, there has so far only been a relevant procedure for estimating the disruption to traffic caused by a road works site. For this reason, the Guide to Roadworks Site Management on Federal**

**Motorways will call for the use of IT-based solutions for the economic assessment of the impact on traffic using reference curves. In the future, an assessment of the impact on traffic of a road works site using IT-based aids is to be possible that is uniform and standardized throughout Germany.** To this end, a methodological approach to the appraisal of planned work sites has been developed. This is characterized by a significantly more precise reproduction of traffic flows for the estimation of different structural and operational scenarios for planned work sites. The Federal Ministry of Transport and Digital Infrastructure's aim is to be able, in the future, to estimate the traffic disruption caused by road works sites in terms of the national economy while the works are still at the planning stage by using an IT-based procedure, the „traffic analysis system“, that is uniform throughout the country.

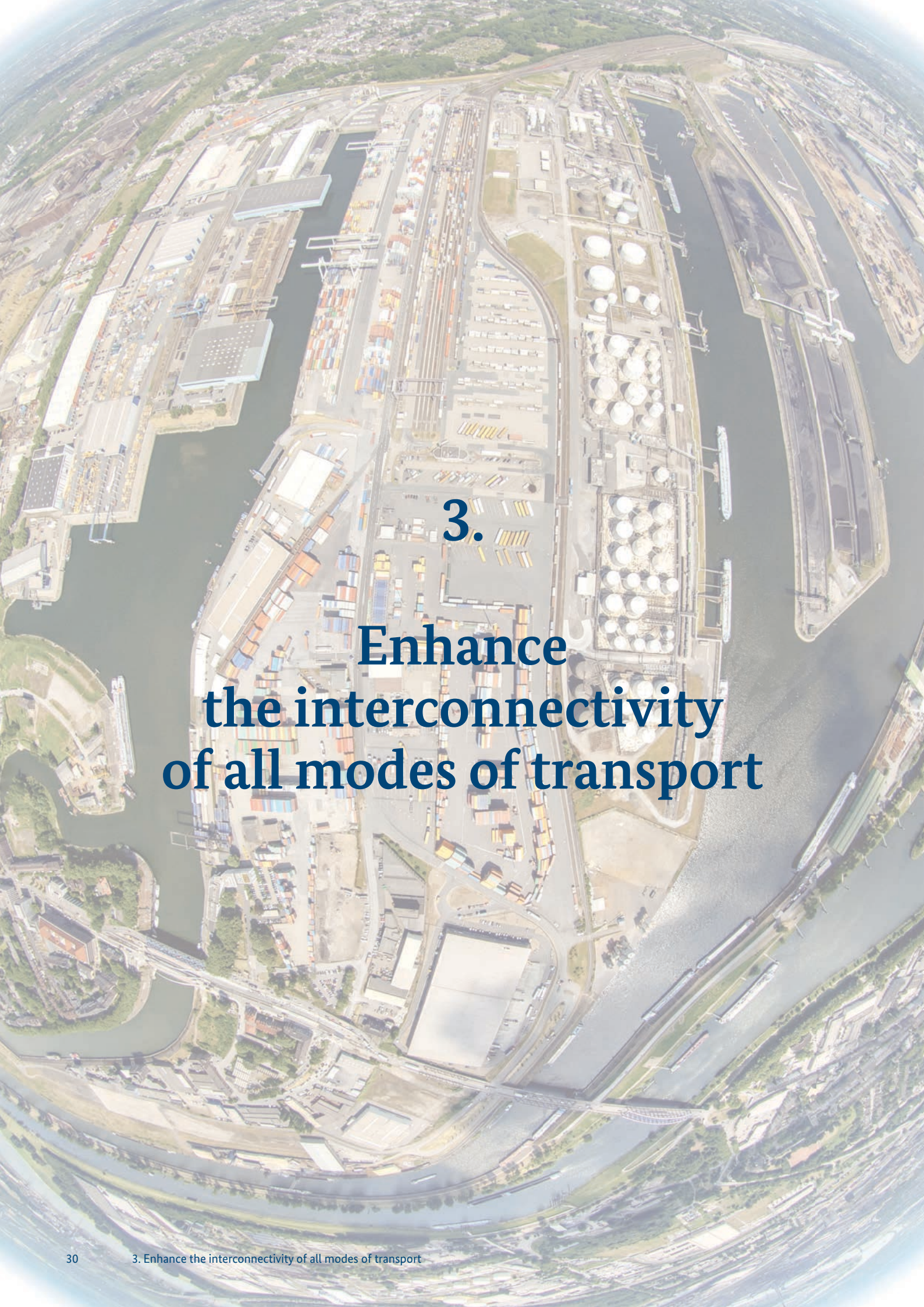
#### Time horizon

**The procurement procedure is currently underway. Development of the software for the traffic analysis systems is to start in 2018.**



© Fotolia RAW - Fotolia.com





**3.**

**Enhance  
the interconnectivity  
of all modes of transport**



Germany offers an extensive network of transport infrastructure with a multiplicity of linkages between the individual modes of transport – rail, road, air and waterborne – that are probably unique in terms of their density, scope and capacity. This means that German forwarders already have a wide range of options when choosing how to optimally organize and efficiently carry out their transport operations. And the individual modes of transport are in direct competition with one another.

Nevertheless, the existing interconnectivity of the modes of transport must be further optimized if we are to manage the above-average growth in the volume of freight traffic in our country predicted in the forecasts for the period to 2030. This means deploying the inherent strengths of the individual modes of transport so that, in their totality, optimum efficiency and environmental friendliness is achieved. To enhance the possibilities of greater intermodality in the short, medium and long term, the course must be set at an early stage and the necessary technical, organizational and infrastructure innovations undertaken. This includes incorporating the opportunities offered by digitalization.

### 3 a. Ensure high-performance digital infrastructure for freight transport and logistics

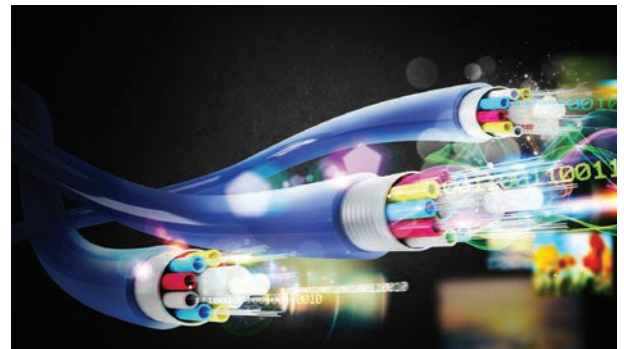
#### Current situation

The quality of the digital infrastructure is becoming increasingly crucial in determining the competitiveness of businesses and the safeguarding of jobs. High-performance digitalization is thus not just a key societal issue. Broadband roll-out is also the infrastructure lifeblood of the digital transformation for freight transport and logistics companies. For this reason, a reliable and robust network infrastructure must be ensured, and there must be universal high-speed internet access for the companies in the freight transport and logistics sector.

The automated exchange of information between terminals such as machines, vehicles or containers with one another or with a control centre are current trends of „Logistics 4.0“. Enterprises are increasingly coming to realize that digitalization makes efficiency gains possible and offers logistics operators great potential for development in global competition. Physical and digital infrastructure are being brought together, for instance by fitting components with computer chips. Approaches here include concepts such as the „smart factory“ or „connected supply chain“. High-performance information and communications technology is the basic prerequisite

for translating these approaches into logistical applications. „Logistics 4.0“ and concepts such as the „smart factory“ or „connected supply chain“ can only be implemented on the basis of high-performance digital infrastructure.

**In recent years, Germany has already taken crucial steps setting out the future course. For industrial networks, there are numerous generally assigned frequency ranges which, with the stipulated conditions, can be directly used for short-range wireless networks (WiFi) and radio applications. In addition, specific technologies can be used by industrial enterprises to establish dedicated mobile communications networks. In addition, special mobile communications services are available for interconnection, which can be used over very large areas via the well-developed mobile communications networks. As digital infrastructures that can be used on the move become increasingly important, the mobile communications networks, in particular, will be further optimized in the years ahead and coverage will be further enhanced. In addition, roll-out requirements will oblige network operators to provide complete coverage of ICE lines and federal motorways no later than 2020, alongside coverage of 98 % of all households. Moreover, with the forthcoming fifth generation of mobile communications (5G), a key technology of the gigabit society will be introduced by 2020 at the latest.**



© alphaspirt - Fotolia.com

The passage of the Bill to facilitate the Roll-Out of High-Speed Digital Networks in November 2016 was a major step along the road to market-driven deployment. It creates more transparency regarding construction projects and usable infrastructures. The key issues here are reducing the costs of network development by sharing other utilities' infrastructure for broadband deployment, ensuring that fibre-optic cables are also installed as demand requires when other cables are laid on public transport infrastructure, providing fibre optic at all new development sites and stepping up incentives to invest in the network roll-out.

### Objective of the measure

If we are to achieve the necessary interconnectivity in the freight transport and logistics sector, comprehensive digital infrastructure that enables logistics operators to share in the potential inherent in digitalization must be ensured. To this end, it is necessary to establish and evolve high-speed and intelligent data networks in Germany.

### Description of the measure

#### „Second Digital Dividend“

The frequencies no longer required by radio as a result of the use of the latest compression technologies (especially the 700 MHz band) can be used to support a high-quality mobile communications network providing universal coverage. **In Germany, these frequencies were awarded to mobile communications providers back in 2015. As of 2019, it will be possible to use them nationwide in the mobile communications networks. Much importance is attached to the 700 MHz frequencies, as the priority 5G band, for the successful introduction of 5G. The provision that has already taken place has thus created optimum conditions for a launch in Germany. In addition, the proceeds from the award of the frequencies are being used directly to fund broadband roll-out within the scope of the federal programme funding the roll-out of broadband.**

#### Federal programme for funding the roll-out of broadband

To give a targeted boost to the deployment of digital infrastructure, the Federal Government launched a broadband funding programme in the autumn of 2015. The programme provides support to local authorities in the establishment of sustainable and scalable digital infrastructure. With this financial assistance programme, the Federal Government is investing around €4.4 billion in the roll-out of broadband networks. The promotion of broadband deployment is guided by the Federal Government's objective and is designed to benefit, in particular, rural regions that are not provided with coverage by the market. Another aim of the financial assistance programme is to provide access in business parks. For this purpose, €350 million is being provided in a special „SME“ call for applications for funding. In addition, incentives are being provided for the establishment of digital infrastructures for intelligent mobility and similar digital applications.

#### Network Alliance for a Digital Germany

The Federal Government is implementing the market-driven roll-out in close collaboration with companies that are willing to invest and innovate. These companies have already, as they announced, invested €8 billion in the high-speed networks in both 2015 and 2016. As of 2017, they will

step up their investment as demand requires. This has been put on the record in the Network Alliance's benchmarks for a „Gigabit Germany Initiative for the Future“. This benchmark paper is the basis for a comprehensive gigabit strategy.

**The objective of the strategy, which was adopted in March 2017, is to invest €100 billion to create a gigabit-capable broadband network in Germany by 2025. Four steps have been defined for achieving this objective:**

- 1. By the end of 2018: connections with at least 50 Mbit/s for all households.**
- 2. By the end of 2019: fibre-optic connections for all business parks that currently still have poor coverage.**
- 3. By the end of 2020: creation of the conditions for the roll-out of 5G providing universal coverage.**
- 4. By the end of 2025: creation of a gigabit-capable convergent infrastructure.**

#### 5G as a key technology of the digital transformation – the 5G Strategy

The key technology of 5G is currently still in the development phase. It is expected to reach commercial maturity around 2020. The main features of 5G include, but are not limited to, a capacity enhanced by a factor of 100, a very short response time (latency) enabling real-time capability and the provision of support to a 10 to 100 times higher number of user devices. **As connectivity increases, there will be additional scope for wealth creation for the freight transport and logistics sector. In logistics, different demands are placed on the IT infrastructure, and thus especially on wireless communications, for different supply chain environments and modalities, such as intralogistics in the goods producing sector, logistics hubs, road, land and air transport, and the „last mile“ in urban areas. Goods and cargo carriers move from one country to another and require connectivity from one region to the next and across national borders. Seamless connectivity also means connectivity on the means of transport, be it an HGV, aircraft or ship. Logistics requires seamless, continuous and secure connectivity to be able to communicate end to end along the entire (worldwide) logistics chain, from the assembly line of a goods producing company right through to the individual final customer, for instance in rural areas. The spread and fleshing-out of 5G must be driven primarily by the applications industry.**

**To position Germany as a lead market for 5G applications and deliver the roll-out of 5G networks in Germany by 2025, the Federal Government adopted the 5G Strategy for Germany in July 2017. This strategy builds on the Federal Ministry of Transport and Digital Infrastructure's**



September 2016 5G Initiative and provides for measures in five action areas:

1. Expedite network roll-out by taking measures to promote investment:
  - the provision of fibre-optic links to base stations will be facilitated;
  - the shared use of passive carrier infrastructure for the deployment of 5G cells will be expedited;
  - the potential need for optimization in approval procedures will be examined.
2. Provide 5G frequencies at an early stage:
  - the harmonization of the 5G spectrum at global and European levels will be stepped up;
  - the provision of spectrum below 6 GHz will be encouraged;
  - planning certainty for spectrum in the 26 GHz band will be created at an early stage;
  - a sufficient number of test frequencies will be provided at an early stage.
3. Promote collaboration between the telecommunications and the applications industries:
  - continue the 5G Dialogue Forum;
  - provide active support to the process of standardization.
4. Provide funding in the field of applied 5G research:
  - provide targeted financial assistance to 5G research and support to the test beds;
  - link up and coordinate the research activities in Germany.
5. Launch 5G for towns and cities:
  - organize a 5G competition;
  - provide funding to towns' and cities' project planning with assistance from industry stakeholders.

**The measures outlined in the action areas will now be systematically implemented by the Federal Government by the department responsible in each case. Building on this, the Federal Government will intensively observe further developments and study the impact of the measures. If necessary, measures will be evolved and augmented to meet new requirements.**

In addition, and in parallel, the necessary conditions in the sphere of radio spectrum policy will be developed at international level. The 2015 World Radiocommunication Conference (WRC) laid the groundwork for the evolution of the next mobile communications standard, 5G (frequency ranges for 5G studies). Suitable frequency bands for

worldwide harmonization will be allocated at the next WRC in 2019 on the basis of the compatibility studies that are now starting.

Functionalities are currently being established and trialed on a digital test bed on the A 9 motorway. By doing so, the Federal Ministry of Transport and Digital Infrastructure and its partners – the Free State of Bavaria, the automotive industry and the ICT sector – are creating the conditions for industry and academia in a „laboratory with real-life conditions“. At the same time, innovative measures for intelligent infrastructure are being trialed and evolved. In the field of intelligent road furniture, sensor technologies are being tested for future deployment. Commercial vehicle manufacturers are using the test bed to trial digitally coupled HGVs (platoons).

#### **Time horizon**

This is a permanent task.

### **3 b. Develop a strategy for improving the interconnectivity and integration of the modes of transport**

#### **Current situation**

One important component of transport policy is to support intermodality. This is done, for instance, within the framework of funding combined transport terminals (cf. measure 3 d.) and by providing support to the federal states in their ports policy (cf. measure 1 a). Nevertheless, we believe that there is further scope for shifting traffic from the roads to the railways and, in particular, to the waterways.

To identify appropriate fields of activities for the promotion of intermodality, the Federal Ministry of Transport and Digital Infrastructure commissioned a „meta-study“, which was published in November 2016. A research monitoring committee established at the Federal Ministry of Transport and Digital Infrastructure and comprising experts from all modes of transport was involved in its preparation. The meta study evaluates existing studies to identify shortcomings in knowledge in the freight transport sector and illustrate the need for research in the future – not just for the Ministry. It includes a wide range of recommendations for action as to how intermodal transport operations can be boosted further while enhancing the efficiency of all modes of transport and, in the long term, achieving a capacity utilization of all modes of transport that is as even as possible.



© Volker Emersleben - Fotolia.com

### Objective of the measure

If the continuously rising volume of traffic is to be managed, the individual modes of transport must be able to deploy their inherent advantages in an optimum manner. To this end, they are to be interlinked and dovetailed even better in order to shift more traffic to the rail and waterway modes. Taking into account the meta study that has now been published, consideration is thus to be given as to how even better use can be made of the rail and waterway modes and, by improving the possibilities for intermodal transport operations, how they can be further strengthened so that their inherent advantages are deployed in an optimum manner. This also includes incorporating the opportunities offered by improved digitalization.

### Description of the measure

Regarding the transfer of freight traffic from the roads to waterways, the ShortSeaShipping Inland Waterway Promotion Center (SPC) will play a major role thanks to its practical experience of modal shift projects. The SPC provides advice that is competitively neutral and free of charge.

### Time horizon

The process of consideration is due to be completed by the autumn of 2017 at the latest. It is likely that further consultancy studies will be required.



© Gajus - Fotolia.com

## 3 c. Optimize the information structure in the road haulage sector

### Current situation

To further consolidate the various available online traffic data, the Federal Ministry of Transport and Digital Infrastructure's Mobility Data Marketplace (MDM) has been available since November 2012. This provides, for the first time, a central online portal comprising the collected information on available online traffic data, unlocking hitherto unharnessed potential and improving the data basis as a whole. The simplified and standardized exchange of data with third parties opens up new possibilities in the sphere of traffic management and traffic information services. The MDM is already being used by the Federal Cartel Office for the Market Transparency Unit for Fuel Prices.

### Objective of the measure

The objective is to establish a central portal that provides all the available online traffic data of the public authorities and service providers in near real time, in a standardized format and in high quality. New data sources are being continuously connected to the MDM.

### Description of the measure

The Federal Ministry of Transport and Digital Infrastructure hopes that this will make a key contribution towards improving information on the transport networks for road users and open up new possibilities for traffic management. In addition, the private sector service providers will also benefit from the simplified access to a large online database, because they will be able to deliver new services and improve the quality of existing services. The project costs totalling 6 million euros are being funded by the Federal Ministry of Transport and Digital Infrastructure, with the Federal Highway Research Institute exercising project control. The idea of a central point of access for traffic information has since also been seized on

by the European Commission, which has already obliged Member States to provide information on traffic via a single national access point.

#### **Time horizon**

The MDM has been in regular operation since the start of 2014 and will be operated by the Federal Highway Research Institute until further notice. The Federal Ministry of Transport and Digital Infrastructure is seeking to establish permanent operation of the MDM as the National Access Point in accordance with the delegated acts adopted under the European Directive for the deployment of Intelligent Transport Systems in the field of road transport (ITS Directive).

### **3 d. Ensure an adequately high level of funding for terminals operated by private combined transport undertakings**

#### **Current situation**

Under guidelines issued by the Federal Ministry of Transport and Digital Infrastructure on the funding of combined transport terminals operated by private undertakings, the Federal Government provides grants totalling up to 80 percent of the eligible capital expenditure to private sector investors for the upgrading and construction of high-capacity terminals. This is designed to support better linkages between the modes of transport and a shift of traffic to the railways and the waterways in order to manage the forecast rise in the volume of freight traffic. However, it is regularly the case that the funding provided in the federal budget is not completely drawn down by the investors.

In 2015/2016, the funding of combined transport underwent a spending review. This involved the Federal Ministry of Transport and Digital Infrastructure, together with the Federal Ministry of Finance, studying whether the financial assistance programme is appropriate, the extent to which its objectives have been met and whether this represents value for money. The spending review was also designed to help find ways to make funding more efficient in the future and improve the outflow of funds. The findings of the spending review were incorporated into new guidelines, which entered into force on 1 January 2017. The new guidelines reduce the burden on the beneficiaries as far as sureties are concerned. It is now normally possible for a first mortgage to suffice as collateral for the federal funding in place of sureties. In addition, customer and staff car parks and exit barriers have been added to the list of facilities eligible for funding. The funding of innovative cargo handling technologies has been given more emphasis

and further measures to reduce bureaucracy have been integrated into the guidelines. In addition, funding takes greater account of cross-border combined transport. The new Combined Transport Guidelines were approved by the European Commission on 4 January 2017

**At targeted events, the Federal Ministry of Transport and Digital Infrastructure, in collaboration with local chambers of industry and commerce, publicizes the Federal Government funding for private sector terminals and the Federal Government funding for private sidings.**

#### **Objective of the measure**

In the interests of boosting intermodal transport, an adequately high level of funding is to be provided for combined transport terminals in the federal budget. A prerequisite for this is the better drawdown of the available funds by private sector investors. In addition, publicity campaigns are to be stepped up with the aim of ensuring that the funds are exhausted.

#### **Description of the measure**

**The aforementioned targeted information events will be continued.**

#### **Time horizon**

**This is a permanent task.**



© Jan Bergrath



### 3 e. Improve interoperability on the railways

#### Current situation

Directive (EU) 2016/797 and its related technical specifications for interoperability (TSIs) create a uniform framework for meeting the essential requirements in the fields of safety, reliability and availability, health, environmental protection and technical compatibility for the uninterrupted movement of trains in Europe with the aim of harmonizing the European rail market. There are TSIs for:

- locomotives and passenger rolling stock;
- freight wagons;
- rolling stock noise;
- energy;
- infrastructure;
- safety in railway tunnels;
- accessibility for persons with disabilities and persons with reduced mobility;
- operation and traffic management;
- control-command and signalling.

The greatest obstacle to interoperability is the large number of incompatible train protection systems, which prevent railway undertakings with their own rolling stock from offering and providing transport services throughout the EU. The TSI for control-command and signalling thus defines equipment and functions for a European Rail Traffic Management System (ERTMS) which, in the long term, is to replace the over 20 different national train protection systems.

It was originally planned to completely equip four German sections of international corridors with ERTMS by 2020. However, this would only have been possible in conjunction with many expensive and time-consuming renewals of signal boxes. In the meantime, the European Commission has introduced a new operating mode, which largely obviates the need to renew signal boxes. However, as a result of frequent amendments to the specification by the European Commission, no signalling equipment approved for use in Germany was available for this new mode for a long time. **For this reason, the Federal Ministry of Transport and Digital Infrastructure negotiated with the European Commission and Deutsche Bahn to produce a new deployment plan (Implementing Regulation 2017/6) for ERTMS, which defines more realistic dates and stretches of line for the provision of ERTMS equipment.** For the railway undertakings, it will be a great challenge to optimize the rosters of their motive power – adapted to the ongoing activities to provide the infrastructure with equipment – in such a way that they require only a few



© Uwe Miethe - Deutsche Bahn AG

units that are fitted with both ERTMS and the German PZB and LZB train protection systems.

#### Objective of the measure

With the introduction of standardized requirements to be met by motive power and infrastructure, the European rail sector is to be harmonized and interoperability improved. This also entails a digitalization of signal boxes and command-control and signalling equipment, as is the case, for instance, in Belgium, Denmark and Switzerland. This will enhance the competitiveness of the railways as an ecologically beneficial mode of transport and a necessary building block in a modern mobility chain.

The introduction of ERTMS is designed to achieve the following objectives, in particular:

- reduce investment costs for motive power – traction units will no longer have to be equipped with several different systems, as has been the case so far;
- simplify the authorization of vehicle rolling stock for international traffic;
- minimize the costs for the construction, maintenance and operation of infrastructure;
- standardize signalling equipment (interoperability components) with Europe-wide authorization.

#### Description of the measure

The new ERTMS deployment plan, which has been in force since early 2017, provides for deployment on the most important international corridor, namely the Rhine-Alpine corridor from Rotterdam via Cologne and Basle to Genoa. The German section of this corridor is scheduled to be equipped with ERTMS from end to end by 2023. In addition, seven border-crossing points are to be equipped, from which the European Rail Traffic Management System can be extended further into the interior of the country. A corresponding funding agreement between DB Netz AG and the Federal Government was concluded in 2016.

In addition, the European Commission's plans envisage equipping a total of nine corridors of a trans-European network with ERTMS by 2030, six of which pass through Germany.

To improve interoperability, the Federal Ministry of Transport and Digital Infrastructure will perform the following functions, among others:

- transpose the European requirements into national legislation;
- develop migration strategies to implement the European requirements;
- negotiate with the European Commission on a deployment scope and deployment timeline that are fundable and will not impose too heavy a burden on the undertakings affected;
- call for and conduct research projects to optimize the migration strategies and approval processes;
- issue guidelines relating to interoperability to its executive agencies.

#### Time horizon

The harmonization of the European rail sector and the introduction of ERTMS to give blanket coverage are tasks that are to be progressed quickly and continuously.

### 3 f. Provide open data for the development of cross-modal applications (mFUND/mCLOUD)

#### Current situation

For the development of digital services in the transport sector and new data linkages, comprehensive datasets are already available, but they have not yet been exploited and provided in an optimum manner. This relates to a very diverse range of spatial datasets at public authorities on the infrastructure of the individual modes of transport, traffic information made available centrally via the Mobility Data

Marketplace (MDM, cf. measure 3 c) and datasets on the weather and climate. These datasets contain information on, for instance, the traffic situation, current or likely disruption, the situation, condition and serviceability of the infrastructure, plus navigation data and weather information. In the future, European satellite programmes (Copernicus, Galileo) will exploit further large datasets.

The Funding Guidelines on the Modernity Fund (mFUND), which were published in June 2016 and will remain in force until 2020, make it possible to provide financial assistance to projects for the development of new data-based solution and the exploitation of existing data. Around 20 such projects are already being funded. A list can be found at [www.mfund.de](http://www.mfund.de). On the mCLOUD, data from the thematic areas of road transport, rail transport, aviation and aerospace, climate and weather plus bodies of water and waterways can be found. The data can be searched using headwords and directly linked for downloading or for dynamic integration into the user's own applications.

#### Objective of the measure

A key prerequisite for the development of the mobility of the future is the use of information in the traffic context that is available at all times and in all places and is highly accurate. In particular, the intelligent combination of highly available spatial data with real-time information on traffic trends and environmental data (for instance weather information) and their interlinking to form innovative practical applications offers significant potential for sustainable and economical traffic control. This can provide a major impetus for the development and implementation of future mobility options. In the freight transport and logistics sector, in particular, there is a wide range of potential resulting from new digital applications for cross-modal control and for the creation of intermodally linked digital transport networks.

The mFUND research programme promotes and develops this potential in a targeted manner. To create central access to the heterogeneous datasets, the mCLOUD data portal is being developed at the same time.

#### Description of the measure

The mFUND is a major research and development priority of the Federal Ministry of Transport and Digital Infrastructure and an important instrument for boosting the digital evolution of the transport system in Germany. One of the major guiding principles of the project is to give the public broad access to available data of the Ministry, thereby making it possible to use these data to produce



© zhu difeng - Fotolia.com

innovations and applications that are almost ready for implementation.

Within the scope of the initiative, targeted support is provided to the development of innovative solutions that address the exploitation of existing and future digital datasets and the development of digital services for transport applications.

Another focus is the development of services that support the efficient control of traffic and detect critical changes in the transport infrastructure (subsidence, instabilities) at an early stage.

**Time horizon**

The mFUND funding initiative is scheduled to run from 2016 to 2020. The contents and technology of the mCLOUD will be continuously evolved over the period to 2020.





**4.**

**Promote environmentally friendly and energy-efficient freight transport**



For Germany, as one of the world's leading exporting nations, properly functioning freight transport is indispensable. However, freight traffic has in the past also been one of the greatest consumers of fossil fuels. In addition, it contributes to the public's exposure to noise and emits large quantities of environmentally harmful and climate-damaging substances such as CO<sub>2</sub> and NO<sub>x</sub>. However, Germany has undertaken, on the international stage, to take measures that significantly reduce environmental pollution and that make a contribution towards slowing down climate change. At the recent Climate Change Conference in Paris, an agreement, binding under international law, was adopted on 12 December 2015 setting out the objective of limiting global warming to a maximum of 2 degrees Celsius compared with the pre-industrial era with the additional requirement that efforts be made to limit global warming to 1.5 degrees Celsius. In this context, Germany is setting an example of good practice. On the other hand, it benefits from developing innovative and environmentally friendly technologies at an early stage, thereby achieving a technological edge on the global market in the long term.

The activities necessary for this relate to all transport modes and benefit both the public, who not only profit directly from environmental protection measures but are more willing to accept freight transport and logistics, and all regional and local authorities in Germany and beyond. As the increasing use of greener vehicles by the delivery services in our towns and cities shows, it is also quite possible, by taking appropriate measures, to achieve economic advantages. In addition, it is likely that the public's environmental awareness will continue to rise and that consumers will in the future, even more than in the past, expect transport operations to be environmentally and climate-friendly.

#### 4 a. Improve the protection of the public against traffic noise

##### Current situation

Protection against traffic noise remains a core element of sustainable transport policy. In recent years, the Federal Ministry of Transport and Digital Infrastructure has established milestones for reducing exposure to road and railway noise. In the road sector, by:

- lowering the thresholds for noise mitigation on federal trunk roads by 3 dB(A);
- lowering the noise limits for motor vehicles in three phases, for instance for goods vehicles by around 4 dB(A), which is clearly audible compared with present-day values;

- in the rail sector, by means of the „Quiet Railways“ strategy, which includes, but is not limited to, the following elements:
- abolishing the „rail bonus“ in the calculation of noise, i.e. a reduction of 5 dB(A) is no longer granted;
- lowering the thresholds for noise mitigation on railway lines by 3 dB(A);
- prohibiting the operation of noisy freight wagons on the German rail network as of the 2020/2021 timetable change;
- providing funding of up to €152 million over the period to 2020 for retrofitting freight wagons with composite brake blocks;
- funding noise mitigation on existing railway lines, for instance by installing noise barriers and soundproof windows, totalling €150 million per annum;
- trialling innovative rail noise mitigation technologies in the I-LENA programme;
- funding the procurement of especially quiet freight wagons with the TSI Noise+ innovation bonus;
- funding the development of a prototype quiet, energy-efficient and low-cost freight wagon;
- calculating railway noise more accurately using the revised „Schall 03“ noise calculation provision.

The Federal Ministry of Transport and Digital Infrastructure is promoting the changeover to quiet braking systems. Since 2013, noisy trains have had to pay more than quiet ones. The status of retrofitting noisy freight wagons with quiet brake blocks has been evaluated in keeping with the stipulations of the Coalition Agreement. By the end of May 2017, 47.3 percent of freight wagons had already been fitted with quiet brake blocks. A retrofit rate of 50 percent will be exceeded before the end of summer 2017. In addition, the Federal Railway Authority has received more than 100,000 notifications of retrofits to be carried out in the period from 2017 to 2020. This successful development is not least the outcome of the noise-differentiated track access charges, which the Federal Ministry of Transport and Digital Infrastructure introduced in 2012.

With the revised „Schall 03“ noise calculation provision, the Federal Ministry of Transport and Digital Infrastructure is committed to a more accurate calculation of railway noise. The rail bonus was abolished on 1 January 2015, i.e. an reduction of five decibels is no longer granted. In addition, on 1 January 2016, the thresholds for noise mitigation were lowered by three decibels. Thus, for the first time, the same limits and thresholds apply to railway and road noise.

### Objective of the measure

Noise mitigation on transport infrastructure makes a major contribution towards improving people's quality of life. It will not be possible to shift traffic to the climate-friendly railways unless the population is willing to accept the rail mode and thus also new and upgraded lines.

### Description of the measure

Noise mitigation is at its most effective if noise can be avoided at source. This requires quiet vehicles. In the case of goods vehicles, noise-reducing technical measures taken in the past have significantly reduced engine-out emissions. This has an impact in built-up areas, in particular, and is taken into account in the draft updated method of calculating road noise. **The focus of the Federal Ministry of Transport and Digital Infrastructure's Strategy for Quiet Railways is the reduction of noise at source by retrofitting existing freight wagons with low-noise braking systems. The Federal Government will halve train noise by 2020 against 2008 levels. The human ear perceives a reduction of 10 dB(A) as a halving of the noise.**

The Federal Ministry of Transport and Digital Infrastructure is providing €150 million per annum for, inter alia, voluntary noise mitigation on existing railway lines. The Federal Government's Investing in the Future Programme for the period from 2016 to 2018 provides for additional investment for noise mitigation. This money is

to be used in particular to reduce noise at hotspots and to develop innovative technologies.

With the „New and Application-Oriented Noise Mitigation Trialling“ initiative, funding totalling over €5 million will be provided over the period to 2025 for the trialling of new noise mitigation technologies on the infrastructure on dedicated DB AG test beds. Developers and manufacturers can have their ideas, technologies and products trialled and sonically evaluated directly on the tracks.

For especially quiet freight wagons whose emission values are below those of the Technical Specifications for Interoperability (TSI) Noise, new funding options are to be created in the form of the TSI Noise+ innovation bonus.

The objective of the „Innovative Freight Wagon“ programme is to develop new prototype freight wagons. €30 million from the programme of investments for the future is available for the project over the period to 2018. As early as 2018, prototypes are to be constructed and tested whose deployment is also operationally feasible.

As of the 2020/21 timetable change, no noisy freight wagons are to be allowed to operate on the German rail network. The Railway Noise Mitigation Act was passed by the German Bundestag on 30 March 2017.



© Frank Kniestedt - Deutsche Bahn AG



The Federal Government is lobbying the European Commission for a uniform European regime, especially for standard threshold values for new and existing freight wagons.

In addition, to combat noise at noise hotspots, in particular, the Federal Ministry of Transport and Digital Infrastructure is seeking to find solutions appropriate to the situation in areas where there is a concentration of roads and railways.

#### Time horizon

The Federal Ministry of Transport and Digital Infrastructure will implement this measure progressively. Public funding for noise mitigation on existing federal trunk roads and federal railway infrastructure has already been increased so that the need for noise mitigation can be reduced more quickly. Traffic noise mitigation remains a permanent task of transport policy.

### 4 b. Promote alternative drivetrain technologies

#### Current situation

Between 2000 and 2014, it was possible to reduce CO<sub>2</sub> emissions in the transport sector by 13 %. They thus accounted for around 17 % of all CO<sub>2</sub> emissions throughout Germany. In 2013, the Federal Ministry of Transport and Digital Infrastructure presented „The Federal Government’s Mobility and Fuel Strategy“. This document is a comprehensive approach designed to ensure the supply of energy for road, rail and waterborne freight transport while also taking environmental

protection and climate change mitigation into account. In this context, alternative energy/fuel options and innovative drivetrain technologies play a key role. In December 2014, the Federal Government adopted the 2020 Climate Action Programme and the National Energy Efficiency Action Plan. Both programmes contain a package of measures for the transport sector that are designed to result in further CO<sub>2</sub> savings and efficiency enhancements, for instance a short-term financial assistance programme for the roll-out of energy-efficient commercial vehicles. As part of its transposition of EU Directive 2014/94 on the deployment of alternative fuels infrastructure, the Federal Government adopted a national policy framework for the commercialization of alternative transport fuels and the deployment of the corresponding infrastructure on 9 November 2016. The road haulage sector is affected in particular with regard to the deployment of infrastructure for liquefied natural gas (LNG) for heavy goods vehicles. In November 2016, the Federal Government adopted the 2050 Climate Action Plan. It contains strategic measures, including in the transport sector. To implement the plan, the Federal Government will develop strategies on climate-friendly road transport, rail transport, the modal split and the introduction of electricity-based fuels for air and maritime transport plus a digitalization strategy.

#### Objective of the measure

Alternative fuel options and innovative drivetrain technologies are to be used on a large scale in the freight transport of the future. In addition, as in the passenger transport sector, it is likely that the evolution of the currently used conventional drivetrain technologies will result in further fuel conservation. As the changeover to



© TEDI GmbH & Co. KG

alternative fuels and drivetrains takes place, care must be taken to ensure that an appropriate energy and fuel infrastructure is in place.

In the road haulage sector, the further electrification or hybridization of light commercial vehicles is to be progressed first. In a second phase, the commercial vehicle sector can also benefit from the lessons learned from technological developments in the passenger car sector.

Broadening the supply of fuel will play an important role for the road haulage sector in the short and medium term (introduction of gas propulsion, dual-fuel vehicles, i.e. designed to run on diesel and natural gas, admixture of biomethane **plus, in the long term, possibly also sustainably manufactured synthetic fuels**). **The fiscal incentivization of the use of natural gas and liquefied petroleum gas will be continued beyond 2018 to 2026 and 2022 respectively on the basis of an amendment to the Energy Tax Act.** The Mobility and Fuel Strategy will also determine whether, and if so to what extent, sustainable biofuels are available for road haulage, aviation and maritime transport. In the long term, battery powered vehicles plus hydrogen and fuel cell technology will present options for heavy goods vehicles to use renewable electricity.

Alternative drivetrains are also playing an increasingly important role in logistics in urban areas (cf. measure 4 c).

Because of European and international requirements, shipping is already subject to comprehensive changes. Here, the fuel supply is to be changed from heavy fuel oil to marine diesel and, as an additional, parallel development path, the use of liquefied natural gas (LNG) is to be progressed. In the absence of technical alternatives, the internal combustion engine will remain the predominant type of propulsion for the foreseeable future. The Mobility and Fuel Strategy pays particular attention to a further reduction of emissions, for instance through a market entry strategy for LNG in waterborne transport. A short-term financial assistance programme for the equipment and conversion of sea-going ships to enable them to use LNG as a marine fuel will be published shortly. The use of fuel cells to meet on-board power requirements is also to be tested as an efficiency measure. In addition, further technical measures for efficiency enhancement in maritime shipping, such as the use of alternative energy, improvements in ship geometry plus management and operation, are to be progressed.

As far as inland waterway transport is concerned, additional public funding has been mobilized in order

to raise the modernization rates of inland waterway vessels. Funding for the financial assistance programme entitled „Sustainable Modernization of Inland Waterway Vessels“ (previously „Financial Assistance Programme for Cleaner Engines in Inland Waterway Transport“) has been increased to €4 million for financial year 2017. This financial assistance programme makes a contribution towards ensuring that inland waterway vessels are fitted with modern equipment and environmentally friendly propulsion systems.

**Rail transport is extremely energy efficient in its operations, thanks to the low rolling resistance in the wheel-on-rail contact. Further efficiency enhancements are possible by making greater use of regenerative braking, which can be achieved by modernizing the motive power and appropriately equipping new rolling stock. For non-electrified lines, hybrid technology appears likely to achieve results, especially in the rail freight sector. Great importance will also attach to the environmental friendliness and low climate change impact of rail transport in the development of the strategies for fleshing out the 2050 Climate Action Plan. The Federal Government is committed to ensuring that rail transport remains in the vanguard of climate-friendly mobility. Deutsche Bahn has set itself the goal of increasing the share of energy from renewable sources to 45 percent by 2020. DB Energie's aim is to completely decarbonize, by 2050, all services operated by railway undertakings that are supplied by DB Energie. For this reason, the Federal Government welcomes any commitment by Deutsche Bahn to progressively increase the share of energy from renewable sources in traction current and thereby make a contribution to Germany's new energy strategy. The main thing here is that the total energy mix will as a result exhibit a higher share of energy from renewable sources.**

#### **Description of the measure**

The Mobility and Fuel Strategy will be evolved and fleshed out. The key measures (see also Federal Government decision of 12 June 2013) are:

- the preparation of studies for a technological assessment of goods vehicles, with technical, economic, ecological and infrastructure-related analyses of, inter alia, the use of natural gas and dual-fuel vehicles, plus a description of long-term options for electrification/hydrogen/power-to-gas/liquid and an appraisal of the bio potential;
- the „LNG for Heavy Goods Vehicles Task Force“ and the National Maritime LNG Platform (maritime and inland waterway) will provide advice to the Federal Ministry of Transport and Digital Infrastructure in the development of measures in the field of LNG;

- the use of rolling stock as power stations, stepping up the procurement of rolling stock with regenerative braking and fair offsetting of energy fed back into the grid; consistent consideration of energy efficiency criteria in procurement (life cycle costing – LCC);
- the expansion of the innovation and research activities of the railway industry and, wherever possible, interlinking them with similar Federal Government activities; and
- the launching of pilot projects by the Federal Ministry of Transport and Digital Infrastructure to give alternative fuels and drivetrains a chance on the market.

In addition, a short-term financial assistance programme for energy-efficient or low-carbon HGV drivetrains will be developed.

#### Time horizon

This is a permanent task.

**A financial assistance programme for energy-efficient and low-carbon HGV drivetrains is currently being prepared.**

### 4 c. Develop measures to strengthen logistics in urban areas

#### Current situation

The expansion of eCommerce, which has been noticeable for some years now, is also resulting in a disproportionately high rise in levels of distribution operations by courier, express and parcel services (CEP services). This is increasingly being considered a nuisance by the public, especially in urban areas. On the other hand, there is potential in eCommerce to reduce the number of shopping trips made by private passenger vehicles. In addition, the CEP services are already increasingly using alternative and environmentally sound means of transport.

The Federal Government can only exert an indirect influence on this trend, because responsibility for urban traffic lies almost entirely with the federal states and regional/local authorities, which are thus also responsible for developing regional and local logistics strategies. Here, the Federal Ministry of Transport and Digital Infrastructure can thus normally only act in a supporting capacity. It does this by means of targeted research, such as the study prepared for the Federal Ministry of Transport and Digital Infrastructure on the impact of freight villages, or the research projects on electric commercial transport and logistics in urban areas conducted as part of the provision

of financial assistance to electric mobility in the „pilot regions“ and „showcases“.

In the Electric Mobility Pilot Regions, around 250 commercial vehicles with all-electric and hybrid drivetrains have been tested since as long ago as 2009. At low speeds, in particular, the drivetrain, which is considerably quieter than conventionally powered vehicles, and the absence of emissions at the point of use come into their own. In urban commercial traffic, electric vehicles are now fit for everyday use to a very large extent. Today, there are already commercial applications for electrically operated commercial vehicles. Under the Federal Ministry of Transport and Digital Infrastructure’s Battery-Electric Mobility Funding Guidelines of 9 June 2015, assistance is provided to the commercial procurement of electric commercial vehicles and electric HGVs together with the appropriate charging infrastructure. The focus is on supporting the market ramp-up of electric vehicles in Germany for all modes of transport. In addition, the Federal Ministry of Transport and Digital Infrastructure is supporting local authorities in the establishment of publicly accessible charging infrastructure in conjunction with vehicle procurements. Following on from the „electric mobility starter set“, the Federal Ministry of Transport and Digital Infrastructure is also funding the development of implementation-oriented local authority electric mobility strategies. In addition, it is assisting applied research and demonstration projects to provide strategic support to the market ramp-up of electric vehicles. One of the main areas on which these projects are focusing is connected mobility and electric HGVs in the context of innovative mobility and logistics strategies.

In 2016, the Federal Government adopted a comprehensive package of measures for the provision of additional support to electric mobility and provided additional funding totalling €1 billion for this purpose. With its financial assistance programme entitled „Electric Vehicle Charging Infrastructure in Germany“, the Federal Ministry of Transport and Digital Infrastructure is launching the deployment of a nationwide network of charging infrastructure. For this purpose, funding totalling €300 million is available for the period from 2017 to 2030. The funding will focus primarily on the deployment of high power charging posts but will also be used for normal power charging infrastructure. This comprehensive infrastructure deployment will provide crucial support to the spread of electric delivery vehicles.

**In addition, with its National Hydrogen and Fuel Cell Technology Innovation Programme (NIP), the Federal Government is funding research into and the market launch of fuel cell powered vehicles and the related infrastructure. In commercial transport, in particular, fuel cells are a promising technology for reducing**



**harmful environmental effects. At the same time, long ranges and rapid refuelling are possible. The Federal Ministry of Transport and Digital Infrastructure is providing up to €250 million to fund this technology in the period from 2016 to 2019.**

New innovations, such as cargo bikes, are increasingly being used in last-mile distribution. Additional potential will be created by the digitalization of logistics and the resultant improvement in the linkages between the different modes of transport.

In driver licensing legislation, an exception has been created for electrically powered category N2 vehicles. Because of the higher weight of battery powered vehicles, they may be operated by holders of a category B driving licence (passenger car licence) up to a maximum weight of 4.25 tonnes. In addition, these vehicles now also enjoy the preferential treatment set out in the Electric Mobility Act, which entered into force on 12 June 2015 and is already being implemented by many local authorities in the field of road traffic law. The Electric Mobility Act grants road traffic law privileges to electric vehicles. In the future, federal states and local authorities will be able to decide, with legal certainty, how they wish to progress electric mobility, for instance by reserving parking areas, reducing or abolishing parking charges, allowing electric vehicles to use dedicated lanes or exempting them from certain access restrictions, e.g. for the purposes of air quality management.

In May 2016, the Federal Ministry of Transport and Digital Infrastructure was presented with a study it had commissioned on the use of cargo cycles. This study involved conducting a detailed stock-taking exercise regarding the use of pedal cycles in commercial transport and distribution operations. It derived, in a structured manner, the results from those market segments in which pedal cycles and cargo bikes are already used for commercial purposes in order to make it easier for other sectors to access an economical and ecological vehicle alternative. At a meeting with relevant trade associations and organizations, options for implementing such a scheme were presented to the participants. The study has been published on the Federal Ministry of Transport and Digital Infrastructure's website.

#### **Objective of the measure**

The Federal Ministry of Transport and Digital Infrastructure will continue to support the federal states and local authorities in finding examples of good practice for the development of innovative logistics strategies and solutions for „last mile“ freight traffic. In addition, a more widespread use of electric delivery vehicles and cargo bikes, **the development of innovative fuel cell drivetrains** plus a corresponding adaptation of urban logistics strategies



© Bundesverband Paket & Expresslogistik e. V.

are to be supported by improved local authority transport planning.

#### **Description of the measure**

In the current activities to promote electric mobility, the greater use of electric delivery vehicles in local authority or private sector fleets and the integration of appropriate logistics strategies into local authority transport planning take centre stage.

The provision of financial assistance for the procurement of electric vehicles and charging infrastructure in the local authority context by means of the Electric Mobility Funding Guidelines is being continued in 2017 with appropriate calls to submit applications for funding. **The provision of financial assistance for demonstration projects and the procurement of fuel cell powered vehicles is also being continued within the scope of the National Hydrogen and Fuel Cell Technology Innovation Programme (NIP2).**

The Federal Ministry of Transport and Digital Infrastructure is also supporting the endeavours being made by the federal states and local authorities on the one hand and the efforts being undertaken by the CEP service providers and their trade associations on the other hand to find examples of good practice of innovative logistics strategies and to draw up suitable strategies.

#### **Time horizon**

The ongoing support measures of the Federal Ministry of Transport and Digital Infrastructure to promote electric mobility **and fuel cell technology** in commercial transport will run until 2019.

The financial assistance programme entitled “Electric Vehicle Charging Infrastructure in Germany“ will run from 2017 to 2020.

The study of urban logistics is due to be completed by 2019.





**5.**

**Ensure recruitment  
and support  
good working conditions**



Three million persons work in the freight transport and logistics sector. This sector has thus developed into one of the most important areas of employment in Germany. At the same time, however, the consequences of demographic change are becoming visible here, too. The average age of the workforce in the freight transport and logistics sector is constantly rising, and many employees will be retiring in the next few years. At the same time, young people's inclination to work in one of the relevant occupations appears to be increasingly declining. German logistics operators thus already have problems today in attracting skilled recruits. Since the demand for logistics services and the need for workers is simultaneously increasing, it is quite likely that the skilled labour shortage that exists in some areas will get worse unless effective countermeasures are taken.

In a free market economic system, government can only exert limited influence on the aforementioned trend. And so it is first and foremost the two sides of industry that are called on to take action. Nevertheless, it is possible to undertake activities to support employers and unions in their endeavours to create attractive jobs and thus to attract skilled recruits. Another reason why intensified cooperation between the industry and transport policymakers is imperative is that the freight transport and logistics sector is of elementary importance for German competitiveness in the global economy.

## 5 a. Support efforts to improve the image of jobs in the freight transport and logistics sector

### Current situation

There is a great need for skilled personnel throughout the freight transport and logistics sector. And the requirements are becoming ever more demanding as a result of the increasing internationalization and the new technical possibilities, for instance the increasing use of information and communications technologies, which require a sound knowledge of software. In some logistics occupations, there is already an alarming shortage of skilled labour. The number of apprenticeship contracts concluded in the freight transport and logistics sector was on the rise until around 2013 but has since started to decrease. It is foreseeable that this will not be adequate to meet the growing needs.

The causes of this trend are many and varied. Alongside the more demanding requirements, they include the unfavourable working conditions compared with similar occupations and demographic change. Not least, the comparatively poor image of logistics occupations also contributes to this trend

### Objective of the measure

Support is to be provided to the freight transport and logistics industry in improving the image of occupations in the freight transport and logistics sector and in ensuring an adequate number of skilled workers in the long term.



© industrieblick - Fotolia.com



### Description of the measure

Trade associations and the logistics industry will be responsible themselves for taking measures to improve the attractiveness of occupations in the logistics sector and to promote social recognition of such occupational fields. Such measures can be supported and augmented by the activities and events of the ShortSeaShipping Inland Waterway Promotion Center (SPC). The Federal Ministry of Transport and Digital Infrastructure will continue its close cooperation with the industry, trade associations and unions in order to contribute towards the sustained and long-term removal of the skilled labour shortage in the logistics sector and to better publicize the wide range of training opportunities in this sector. This will be done in particular by adopting patronages and by the Minister and state secretaries attending events staged by the trade associations and companies to attract and retain recruits.

In addition, the Federal Ministry of Transport and Digital Infrastructure will collaborate with the LAG funding association to explore how they can join forces to promote a more positive image of the industry among the German public (cf. measure 1 e). Enhancing the attractiveness of freight transport and logistics will also have a positive impact on the relevant occupations.

To support the recruitment of graduates to the logistics sector, the Federal Ministry of Transport and Digital Infrastructure will continue to award the annual Freight Transport and Logistics Higher Education Prize.

### Time horizon

This is a permanent task.

## 5 b. Counter the shortage of new recruits to the occupation of professional driver

### Current situation

In Germany in 2015, over 546,000 professional drivers were employed in jobs subject to social security contributions. Because of demographic change, the proportion of goods vehicle drivers aged 45 or older is rising. To make up for the loss of older drivers as they reach retirement age, over 20,000 new drivers would have to be taken on every year. Given that road haulage traffic is forecast to rise by 38 percent by 2030, this need is likely to increase even further. The working conditions in the road haulage sector, especially in international transport, make the occupation of driver less attractive than other occupational groups, with the result that not enough young people decide to train as drivers and road haulage companies can frequently not fill their apprenticeship places.

In consultation with the transport industry and the Federal Employment Agency, the Federal Ministry of Transport and Digital Infrastructure has developed a programme of work containing measures for supporting the road haulage industry in attracting new recruits to the occupation of professional driver. Alongside measures for recruitment campaigns, skills development and the provision of support to haulage companies, the programme of work also contains measures addressed to the industry.

### Objective of the measure

Since goods vehicles are indispensable for the supply of the population and for trade and industry, the Federal Ministry of Transport and Digital Infrastructure will join forces with the transport industry and the Federal Employment Agency and establish a working group to develop and implement measures to counter the impending shortage of skilled professional drivers.



© DDRockstar - Fotolia.com

### Description of the measure

**The aforementioned working group started its work in spring 2017. It has developed strategies for information events for various groups of addressees, which are currently being piloted jointly by the associations involved and the Federal Employment Agency in representative regions. In addition, advertising campaigns addressed specifically to young people are designed to arouse their interest in training to become a professional driver. The Federal Office for Goods Transport will evaluate the aforementioned pilot events in the second half of 2017.**

### Time horizon

**On the basis of the findings of the evaluation, a decision will be taken as to whether measures will be continued.**



© Jan Bergrath

### 5 c. Improve welfare conditions for professional drivers

#### Current situation

Professional drivers are increasingly criticizing the circumstances of their working lives, which are directly and negatively linked to the attractiveness of the occupation of professional driver and likewise have an adverse impact on recruitment and the economic stability and development of the road haulage industry. **The European Commission has responded to this criticism. On 31 May 2017, it presented the first package of its often deferred „Road Initiative“ under the new name of „Mobility Package“. It contains legislative proposals on completion of the Single Road Transport Market (cabotage, access to the market and to the profession), on making the user pays principle (tolling) mandatory and on social aspects in road haulage (driving and rest times, working time and the Posting of Workers Directive).**

#### Objective of the measure

The Federal Ministry of Transport and Digital Infrastructure will emphatically champion an improvement in the social and job-related conditions of professional drivers. This is designed to support the efforts being made by the industry to reduce the shortage of drivers and to make a contribution to general road safety.

At the same time, compliance with the social legislation in the freight transport industry (for instance driving times and rest periods) is to be enforced and protection of mobile workers at their place of work is to be improved.

#### Description of the measure

To find out more about how professional drivers perceive their place of work, about their overall occupational situation and satisfaction and what specific improvements they would like to see, mobile workers are to be directly questioned about their occupational situation by the employees of the Federal Office for Goods Transport's enforcement service when carrying out their routine roadside checks. Participation in this survey will be voluntary, anonymous and must not be linked to any irregularities detected during the check. The Federal Ministry of Transport and Digital Infrastructure will make the evaluation of the results available to interested parties. The evidence to be gathered in this way is designed to identify the need for additional surveys, to prepare any policy decisions that may be necessary and to estimate the need for any legislative action. In addition, the results are to be discussed with the two sides of industry, trade associations and the federal states.

The first driver survey was very successful because of the high level of participation. Its evaluation produced a

number of clear starting points for measures, especially for improving the working conditions of drivers. Talks on this issue with the trade associations and federal states are already taking place.

**The Federal Ministry of Transport and Digital Infrastructure wholeheartedly welcomes the presentation of the Mobility Package, which contains several ideas tabled by Germany prior to its adoption, and will thus address it critically in the negotiations at European level.** Germany's objectives are to clarify unresolved legal issues, curtail social dumping in the road haulage sector and put an end to the „nomadic existence“ led by drivers on roads and parking areas who are absent from their private living environment for weeks on end.

#### Time horizon

This is a permanent task.

### 5 d. Improve operations at loading ramps

#### Current situation

In recent years, the situation at numerous loading ramps has deteriorated. Conflicting interests of trade and industry on the one hand and the freight transport and logistics sector with its mobile workers on the other hand have, in some cases, resulted in an impairment of operations at the ramps. Bottlenecks at loading ramps and associated delays

for mobile workers under conditions that are sometimes difficult frequently result in not only dissatisfaction among those affected but also economic disadvantages among all stakeholders and adverse effects on the entire supply chain. At the beginning of 2014, the Federal Ministry of Transport and Digital Infrastructure published a manual entitled „The Ramp as an Interface – Examples of Good Practice“. This is a toolkit containing numerous examples from everyday practice and is designed to provide assistance to the companies affected in removing, or at least lessening, existing bottlenecks and other causes of problems.

In addition, the time drivers spend at the ramps is to be made more pleasant. However, the Workplace Regulations do not exclude drivers from using toilet and shower facilities and mess rooms. Accordingly, widening the Workplace Regulations would be unlikely to achieve the desired results and is not currently planned.

In 2015, the Federal Office for Goods Transport developed a report on the implementation of improvements at ramps on the basis of a broad survey. According to this report, there have not yet been crucial improvements at ramps across the country.

#### Objective of the measure

The Federal Ministry of Transport and Digital Infrastructure, with the support of the Federal Office for Goods Transport and the trade associations affected, will



© Jan Bergrath



observe the continuing developments at the loading ramps in the „Ramp Working Party“. The focus is to be on how the situation has changed in recent years and whether companies – possibly with the support of the manual – have been able to undertake improvements at their loading ramps or are planning appropriate measures. Depending on the findings of the working party, further measures are to be jointly developed – with the Federal Ministry of Transport and Digital Infrastructure acting as a facilitator – that can help reduce the problems.

#### **Description of the measure**

To observe continuing developments, the Federal Office for Goods Transport will prepare a further market observation report on ramp-related issues in 2017. This report is to describe, inter alia, new technological possibilities that can result in an improvement in operations without requiring excessive effort and expenditure. Upon completion in the autumn of 2017, the report will be discussed in the Ramp Working Party, which meets once a year and is hosted by the Federal Ministry of Transport and Digital Infrastructure.

#### **Time horizon**

The measure will be implemented over the course of the 18th parliamentary term.

### **5 e. Regularly survey the working conditions in the freight transport and logistics sector**

#### **Current situation**

There is a great need for skilled personnel throughout the freight transport and logistics sector. However, it has become apparent that companies are finding it increasingly difficult to recruit sufficient numbers of skilled workers. The working conditions specific to these occupational fields, such as shift and weekend working plus relatively low earnings, are a contributory factor to this.

#### **Objective of the measure**

An annual evaluation of the working conditions in the freight transport and logistics sector as part of the market observation by the Federal Office for Goods Transport is designed to provide the two sides of industry with a resilient information basis that they can use to improve working conditions and ensure that they are socially balanced. In this way, knowledge of the working conditions

in the freight transport and logistics sector will be continuously updated.

#### **Description of the measure**

In the autumn of each year, the Federal Office for Goods Transport will draw up a market observation report on the working conditions of the vehicle operators in the road, rail and inland waterway modes. The report will also contain social aspects, such as drivers spending their weekend rest periods in their vehicles and rest periods in other countries. In addition, the Federal Office for Goods Transport will write a special report – alternating every two years – on the commercial occupations and the occupations in the warehousing sector.

#### **Time horizon**

This is a permanent task.



© Michael Neuhaus - Deutsche Bahn AG

## **Publication data**

### **Published by:**

Federal Ministry of Transport and Digital Infrastructure  
Invalidenstr. 44  
10115 Berlin

### **Editorial team**

Federal Ministry of Transport and Digital Infrastructure  
Division G 22  
Invalidenstr. 44  
10115 Berlin

### **As at:**

Third update, September 2017

### **Layout/print**

Federal Ministry of Transport and Digital Infrastructure  
Division Z 32

### **Picture credits**

Cover picture: © Hans Blossey - euroluftbild.de  
Page 1: Tobias Koch

This brochure is part of the Federal Government's public relations work.  
It is issued free of charge and may not be sold.





