Bundesnetzagentur

Market Analysis

Railway 2016

Railway Market Analysis 2016

December 2016

**Bundesnetzagentur für Elektrizität, Gas,
Telekommunikation, Post und Eisenbahnen**

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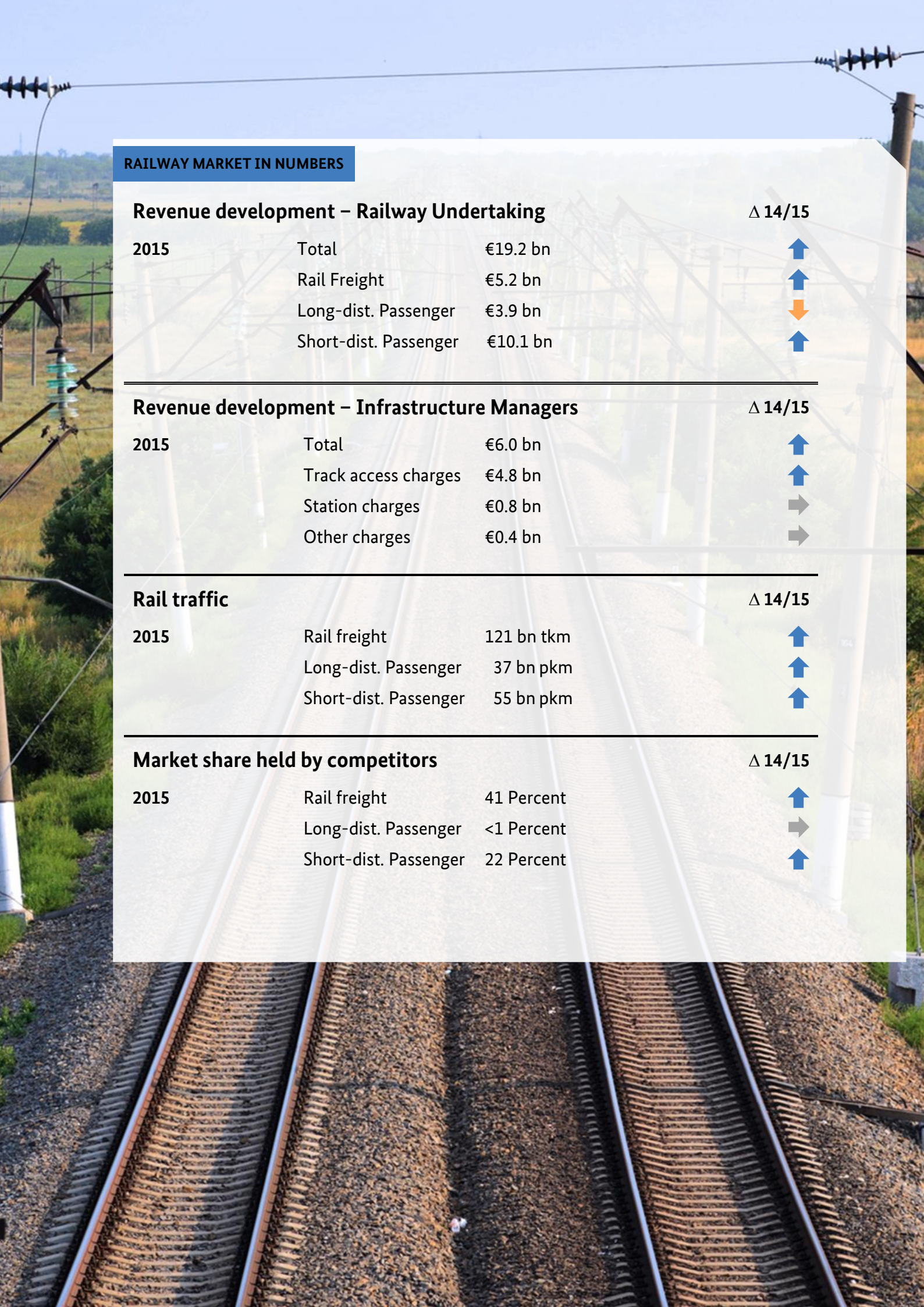

RAILWAY MARKET IN NUMBERS

Revenue development – Railway Undertaking

			Δ 14/15
2015	Total	€19.2 bn	↑
	Rail Freight	€5.2 bn	↑
	Long-dist. Passenger	€3.9 bn	↓
	Short-dist. Passenger	€10.1 bn	↑

Revenue development – Infrastructure Managers

			Δ 14/15
2015	Total	€6.0 bn	↑
	Track access charges	€4.8 bn	↑
	Station charges	€0.8 bn	→
	Other charges	€0.4 bn	→

Rail traffic

			Δ 14/15
2015	Rail freight	121 bn tkm	↑
	Long-dist. Passenger	37 bn pkm	↑
	Short-dist. Passenger	55 bn pkm	↑

Market share held by competitors

			Δ 14/15
2015	Rail freight	41 Percent	↑
	Long-dist. Passenger	<1 Percent	→
	Short-dist. Passenger	22 Percent	↑

INTRODUCTION

Background to the market analysis

The Bundesnetzagentur works to ensure effective competition in the railway market. To accomplish this, it needs up-to-date, reliable information about the railway market and the railway undertakings operating in it. For this reason, the Bundesnetzagentur gathers information each year and publishes its findings in its Railway Market Analysis.

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Introduction

By conducting the market survey and reporting on the market in its Railway Market Analysis, the Bundesnetzagentur helps identify potential for discrimination and, by doing so, fosters competition.

The Bundesnetzagentur's mandate in the railway sector

In its efforts to ensure effective competition in the railway sector, the Bundesnetzagentur monitors compliance with the legal provisions pertaining to non-discriminatory access to rail infrastructure (tracks and service facilities) and the charging of non-discriminatory prices.

The Bundesnetzagentur's specific duties and powers are set forth in the Railway Regulation Act (ERegG) and the General Railway Act (AEG). The Railway Regulation Act was passed on 8 July 2016 and entered into force on 2 September 2016. The provisions of the Rail Infrastructure Usage Regulations (EIBV) were incorporated into the Railway Regulation Act.

Background to the market analysis

To be able to fulfil these tasks, the Bundesnetzagentur needs valid, up-to-date information about the railway market in general and railway undertakings in particular.

For this purpose, it has conducted written surveys to collect market data ever since it took up its work in 2006. Every year in March or April, it sends questionnaires to railway undertakings and other parties with access entitlements such as regional transport authorities.

In 2015, the Bundesnetzagentur sent its questionnaire to more than 860 market participants.

The scope of the Bundesnetzagentur's market monitoring activities is regulated in Section 17 of the new Railway Regulation Act. In order to perform its duties, the Bundesnetzagentur can also conduct separate surveys for studies and market analyses in individual cases, with due regard to the costs and work this involves for the surveyed railways and parties with access entitlement.

The results of the survey are published not only in the "Railway Market Analysis" but also in the Bundesnetzagentur's "Annual Report" and in its "Activity Report – Railways". The focus of the latter two publications is on the regulatory aspects of the market, while the "Railway Market Analysis" contains current statistical data, enabling interested parties to gain insights into the railway sector's structure and development.

The Bundesnetzagentur strives to ensure continuity in its collection and analysis of this data. This continuity gives the surveyed enterprises and parties with access entitlements a sound basis for their planning activities. Moreover, it is the only way that useful time series can be generated.

The European Commission issued Implementing Regulation (EU) 2015/1100 in July 2015. This Regulation requires Member States to provide certain information regarding the development of the railway markets to the European Commission. This is done as part of the Rail Market Monitoring Scheme (RMMS). Consequently, when preparing the report for the year 2015, the Bundesnetzagentur expanded the questions regarding personnel structure and the

areas Operating Performance and Transport Services.

Other new data surveys for the RMMS pertain to short-distance passenger rail transport. A distinction is made between whether contracts for services in this segment are awarded directly or by tender. Other questions focus on the type of assistance granted for financing rolling stock in connection with the awarding of such contracts.

Based on these new surveys, the Railway Market Analysis 2016 was expanded to include the new chapter "Regional transport authorities and the short-distance passenger rail transport market". This chapter contains comments, advice and experience as well.

Market breakdown

The Railway Market Analysis 2016 examines the area of transport via railway infrastructure to which access must be granted. Railway infrastructure itself is also a focus of this analysis.

Depending on the type of infrastructure they operate, companies are referred to as infrastructure managers or service facility operators. Service facilities are further broken down into refuelling facilities, passenger stations, freight yards and freight terminals, marshalling yards, train formation facilities, storage sidings, maintenance facilities and ports.

Unless otherwise noted, the figures in the following text and diagrams refer to the 2015 reporting year.

An assessment of the infrastructure managers' services and charges was carried out as part of the market survey conducted in 2016.

The following diagram (Figure 1 on the next page) provides an overview of the market breakdown used in the Railway Market Analysis. It should be noted here that rolling stock manufacturers or, for instance, railway undertakings can also be rail infrastructure managers as a sub-function of their primary business.

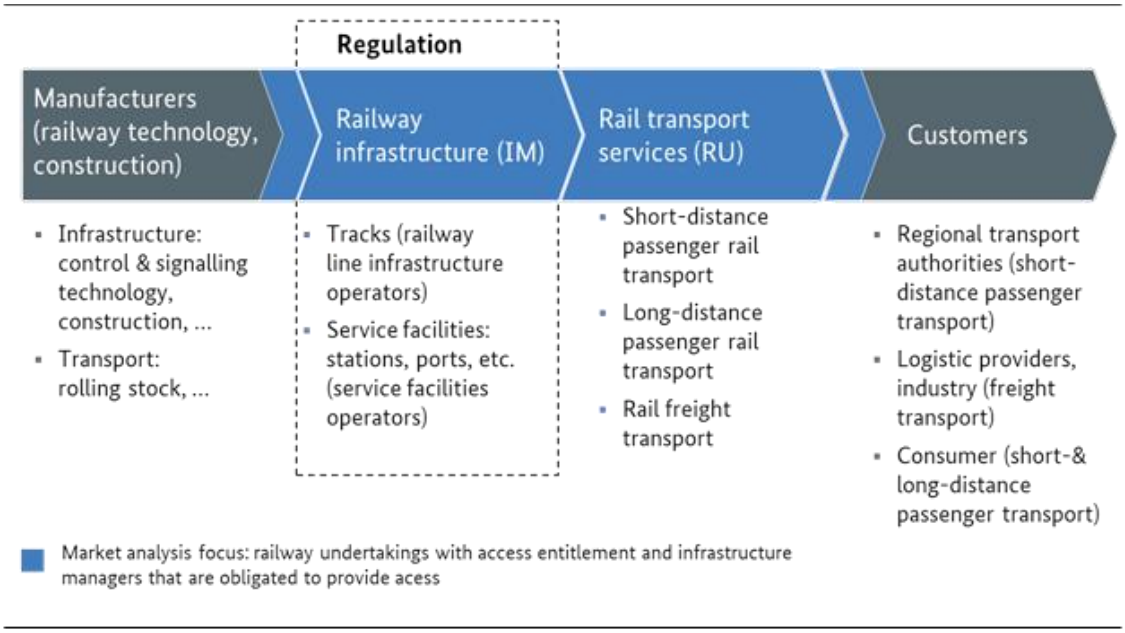
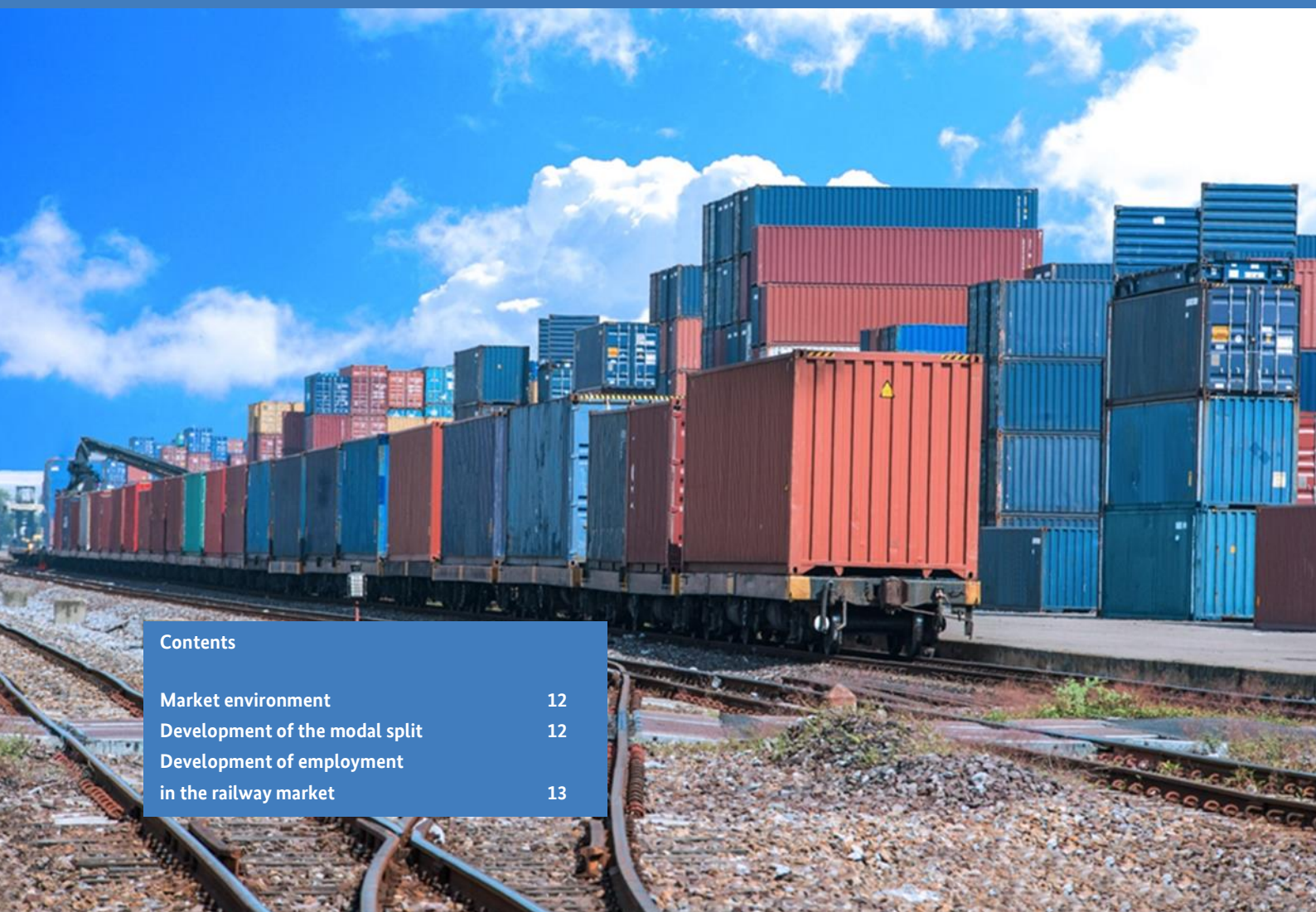


Figure 1: Market breakdown used in the Railway Market Analysis

RAILWAY MARKET

Economic environment

In addition to asking companies in the railway sector to provide information, the Bundesnetzagentur examines how the economic environment is developing. This allows it to observe and assess company-specific and railway-specific developments in a broader context.



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Railway market analysis

The share of rail transport in Germany's overall transport volume remained largely stable in a dynamic economic environment.

Market environment

The positive development that the German economy has seen since the crisis in 2009 continued through the year 2016. Based on current forecasts, Germany's real gross domestic product will grow by 1.9 percent compared to the previous year. This is higher than the rates seen in the last four years, which included relatively modest growth in 2012 and 2013.

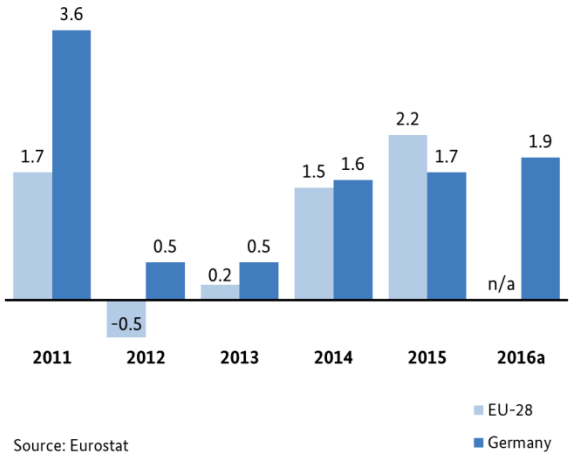


Figure 2: Development of GDP in real terms (2011-2016a; year-on-year increase in percent; "a" = anticipated values)

The overall picture at European level is somewhat different. The economy in the European Union's 28 Member States (EU-28) grew in 2010 and 2011 and subsequently softened in 2012. The gross domestic product for the EU-28 then resumed growing in 2013. Predictions for the year 2016 are not yet available for the European Union (EU-28).

Development of the modal split

In the freight transport segment, both road freight transport and rail freight transport increased their shares of the aggregate volume of transport services provided by 0.4 percent during the year 2015. By contrast, the share held by inland waterway transport fell to 8.5 percent, the lowest level since 2011. The changes observed during the reporting period did not however reveal any trends where the share held by an individual mode of transport steadily increased or decreased.

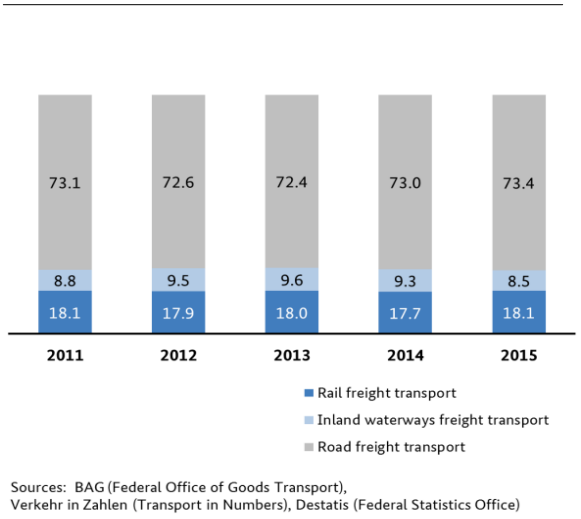
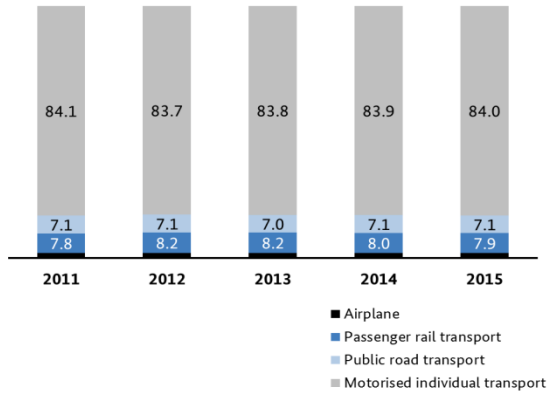


Figure 3: Development of the modal split in the freight transport market (2011-2015; shares in percent)

In the passenger transport segment, the share of motorised private transport grew slightly during the last year and has now reached 84 percent. By contrast, the share of passenger rail transport declined slightly to 7.9 percent. All in all, the changes in the shares held by the individual modes out of the combined rail transport services were very small during the period under review.



Sources: BAG (Federal Office of Goods Transport), Verkehr in Zahlen (Transport in Numbers), Destatis (Federal Statistics Office)

Figure 4: Development of the modal split in the passenger transport segment (2011-2015; shares in percent)

Development of employment in the railway market

After having steadily fallen until the year 2010, the number of workers employed in the railway sector (measured in terms of full-time equivalents; for this, part-time positions are calculated as partial full-time positions based on the number of working hours) has been on the rise again since 2012. The number of workers continued to increase through 2015 when the total number of full-time positions reached 147,000. At the same time, many companies in the railway market continue to search for personnel, particularly for technical positions. This is due not only to the age structure of the workforce (demographics), but also to the railway markets' competition-driven growth.

Availability of personnel

As part of the market survey, railway undertakings have the opportunity to rate the availability of personnel, using a scale from 1 ("good availability") to 5 ("places company's existence at risk") for the points outlined below.

More than 43 percent of the railway undertakings surveyed view the availability of engine drivers as "problematic". Somewhat more than 20 percent rate this point as "satisfactory".

More than one out of every four railway undertakings rated the availability of other specialised operational personnel as "satisfactory" or "problematic".

Nearly half of the railway undertakings surveyed said that the availability of other personnel was "satisfactory" while more than one-fifth viewed the availability of other personnel as "problematic".

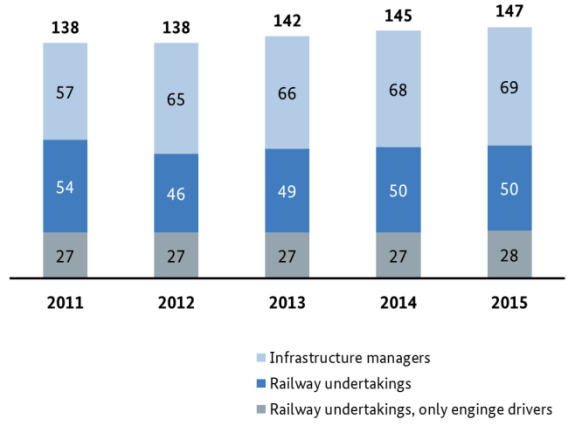
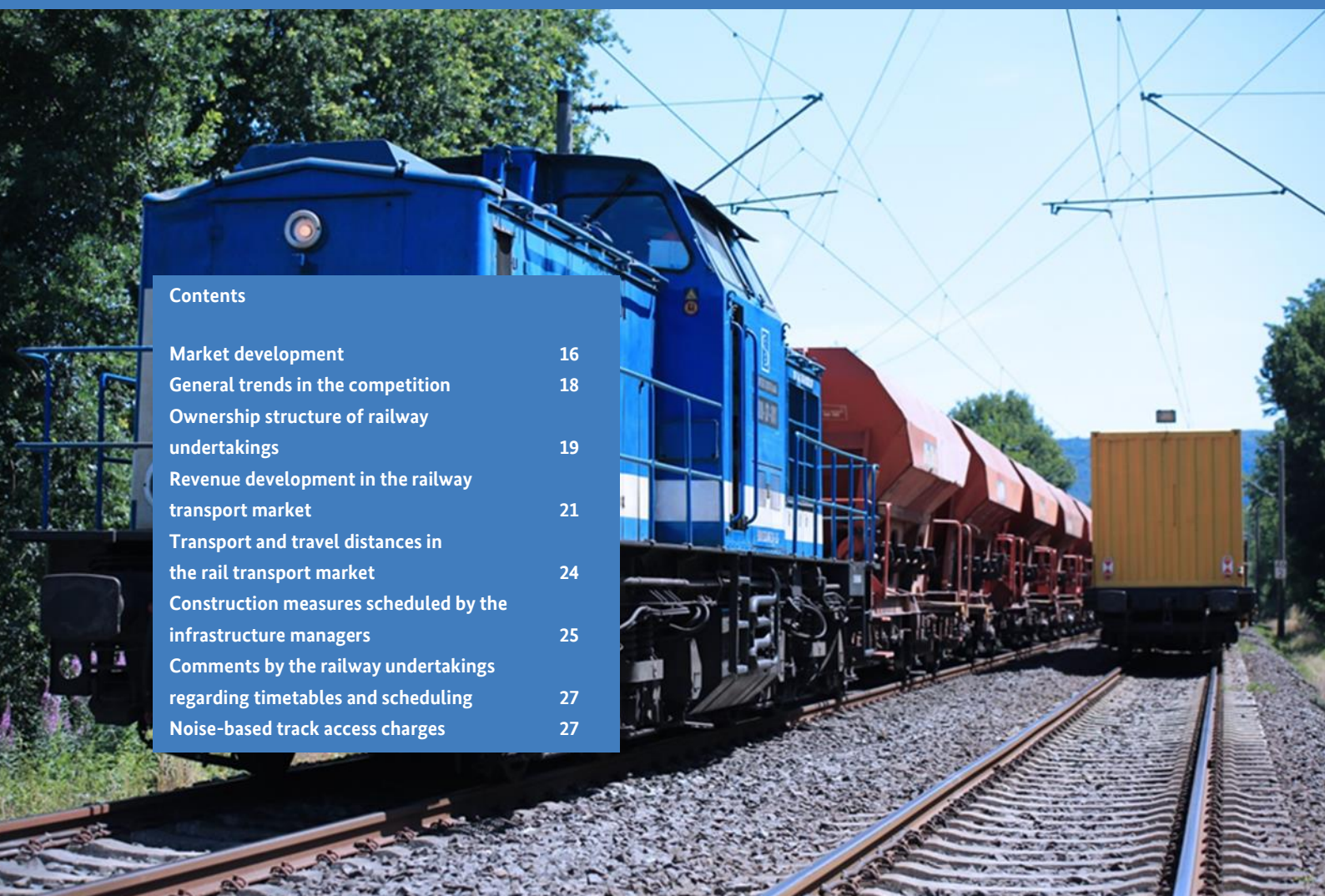


Figure 5: Development of employment in the railway market (2011-2015; thousands of full-time equivalents)

Railway transport

The railway market consists of the transport market and the infrastructure market.
Railway undertakings provide rail transport services.
The Bundesnetzagentur monitors the railway undertakings.
Based on this information, it determines how well the railway market functions and how efficient it is.



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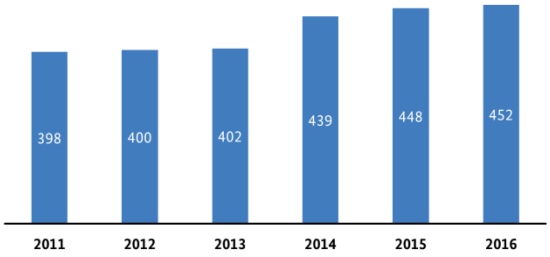
Railway transport market

The number of enterprises operating in the railway transport market is growing. The revenue generated in this market has increased moderately from year to year. The transport services provided (measured in passenger-kilometres, tonne-kilometres or train-path kilometres travelled) in 2015 increased.

Market development

Under Section 3 (1), no 1 of the General Railways Act (AEG) a public railway undertaking is a railway undertaking that is run on a commercial basis and may be used by anyone to convey persons or goods. The Federal Railway Authority's register of public railway undertakings indicates that their number increased in 2015 and 2016, after having previously remained virtually constant until the year 2013. As of October 2016, 452 railway undertakings were licensed to provide rail transport services for the public.

A total of 163 railway undertakings provided commercial rail freight services. One hundred and twenty-four railway undertakings provided short-distance passenger rail transport services.

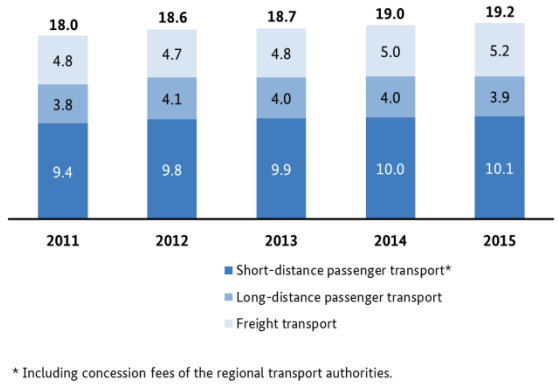


Source: EBA (Federal Railway Authority; as of 10/2016)

Figure 6: Licensed public railway undertakings (2011-2016; number of railway undertakings in Germany)

The number of railway undertakings operating in the long-distance passenger rail transport segment remained small. Approximately 20 - mostly smaller - railway undertakings provided transport services in this segment. The vast majority of these railway undertakings focus exclusively on providing special non-scheduled rail services and consequently do not compete with regular (interval) services. A number of railway undertakings provide transport services in the passenger rail transport segment and in the rail freight segment.

The growth seen in the cumulative revenues in the railway market in recent years continued through 2015. Revenue growth from 2014 to 2015 totalled slightly more than one percent. Total revenue generated by railway undertakings in 2015 reached €19.2 billion, with revenue in the rail freight transport segment growing from €5 billion to €5.2 billion year-on-year. Revenue in the short-distance passenger rail transport segment increased slightly, from €10 billion to €10.1 billion. By contrast, revenue in the long-distance passenger rail transport segment declined slightly, from €4.0 billion to €3.9 billion.



* Including concession fees of the regional transport authorities.

Figure 7: Revenues in the railway market (2011-2015, € billion)

Transport volume rose to new highs in both the rail freight transport and the passenger rail transport segments in 2015.

The short-distance passenger rail transport segment transported 2.59 billion passengers, a total of 20 million more passengers than in 2014. This represents an increase of approximately 0.8 percent.

Although the transport volume in the long-distance passenger rail transport segment declined from 2013 to 2014, it rose by more than 2.3 percent in 2015, from 129 million passengers to 132 million passengers.

The volume of rail freight transported during the reporting period increased by 5.7 percent, from 386 million tonnes to 408 million tonnes, a new record. This marks the return of positive growth for this segment after the declines reported in 2012 and 2013.

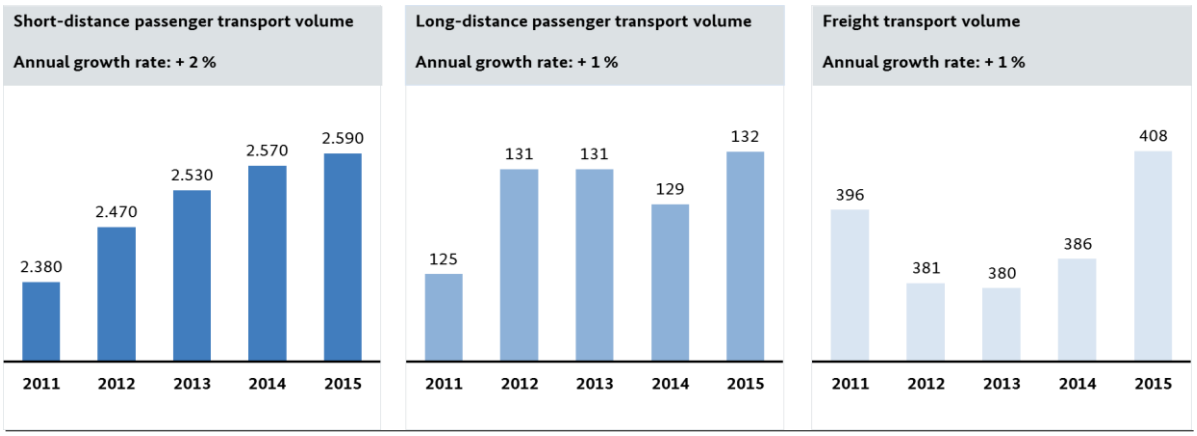


Figure 8: Development of transport volumes broken down by type of transport service (2011-2015, in million passengers/in million tonnes of freight)

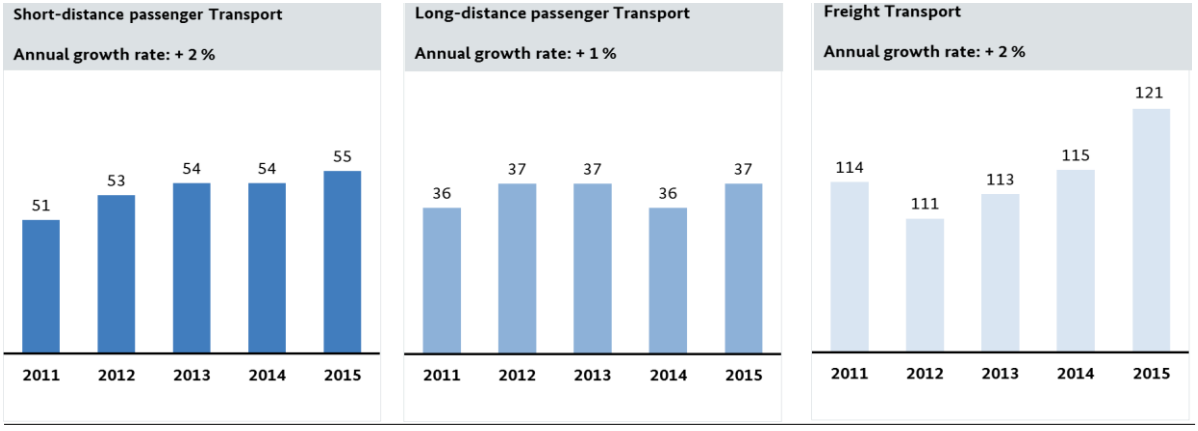


Figure 9: Development of traffic broken down by type of transport service (2011-2015, in billion passenger/tonne kilometres)

In contrast to transport volume (freight volumes or number of passengers), transport performance additionally takes average transport or travel distances into account.

Compared to the previous year, the transport performance of each of the different transport services improved. Transport performance in the long-distance passenger rail transport segment improved slightly, increasing from 36 billion to 37 billion passenger-kilometres. Performance in the short-distance passenger rail transport segment also increased slightly, from 54 billion to 55 billion passenger-kilometres. The largest increase was reported by the rail freight transport segment, with transport performance rising to 121 billion tonne-kilometres, a new high.

This is partly due to the fact that the Bundesnetzagentur gathered information on the transport performance of new enterprises as well in connection with its market monitoring activities. The increase recorded for undertakings which had reported figures on their transport performance in 2014 and 2015 was about four billion tonne kilometres.

General trends in the competition

Looking at the rail freight transport segment, the positive trend for the competition seen in the previous years continued through 2015. Competitors gained further market share and now hold 41 percent of the rail freight transport market.

Competitors were able to grow their market share in the passenger rail transport segment in 2015.

The market share held by the competitors in the short-distance passenger rail transport segment increased to 22 percent. The Bundesnetzagentur expects this share to continue to grow in 2016 because DB Regio lost several major transport contracts to competitors when the changeover from the 2015 to the 2016 timetable was made.

As in previous years, the share held by competitors in the long-distance passenger rail transport segment is significantly less than one percent. As a result, the market leader continued to dominate the long-distance passenger rail transport segment, with the exception of a few connections which are offered by Thalys, HKX and other providers. The rudimentary competition in this sector can be attributed to the sizable investments that must be made in suitable rolling stock in combination with the reliability of infrastructure access.

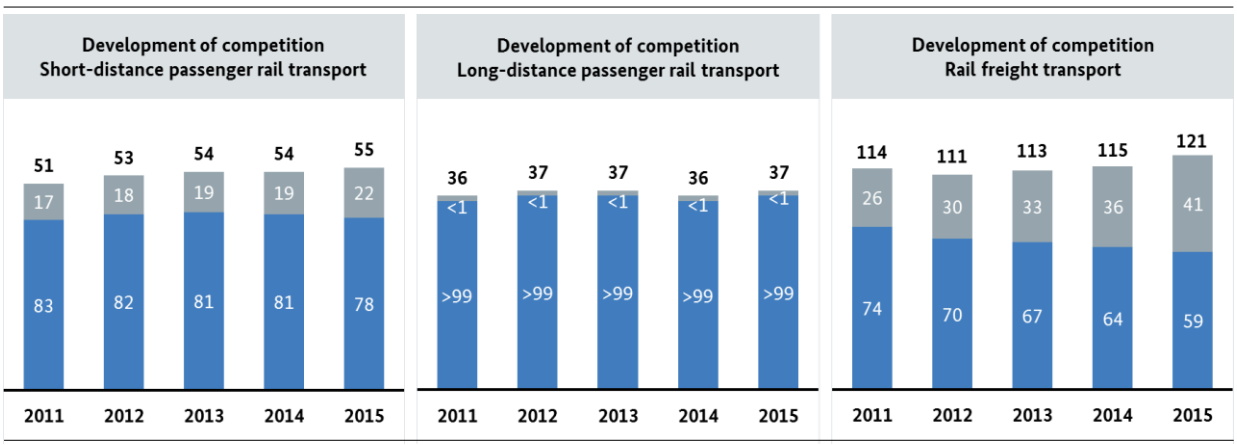


Figure 10: Development of competition broken down by type of transport service
(2011-2015, Traffic handled in billion passenger/tonne km and percentages based on passenger/tonne km)

For operators, the availability of line capacity that can be used on a medium or long-term basis on attractive routes during suitable time slots is very important for being able to provide economically viable long-distance passenger rail transport service.

Lastly, long-distance passenger rail transport has on average the highest track access charges compared to the other modes of transport. This is one reason why long-distance passenger rail transport operates on a deficit basis on certain track sections and why, from an economic standpoint, service in many cases cannot be offered for connections with weak demand.

Ownership structure of railway undertakings

In the wake of the liberalisation of the German railway market which was part of the 1994 Railway Reform, DB AG railway undertakings faced ever-growing competition from other railway undertakings in the following years.

Moreover, the German railway market is attractive for foreign railway undertakings as well. In addition to privately run railway undertakings, state-owned railways of other European countries operate in the German railway market and compete with state-owned and privately owned companies.

Railway undertakings belonging to Deutsche Bahn AG continue to be the dominant force, measured in terms of the volume of the transport services they provide. When however the market is viewed separately from federally owned railway undertakings, it is apparent that the remaining competition in the short-distance passenger rail transport segment is divided between three groups of owners: Germany's federal states and local authorities (27 %), privately owned companies (29 %) and subsidiaries of foreign state-owned railways (44 %).

In the rail freight market, railway undertakings owned by Germany's federal states or local authorities play a less important role, accounting for only 14 percent of the transport services provided by non-federally owned railways. State-owned railways of other countries provide 39 percent of the total transport services, while privately operated railway undertakings with registered offices in Germany account for 38 percent. Railway undertakings with registered offices in other countries (not including state-owned railways) accounted for nine percent of the transport performance among the competitors.

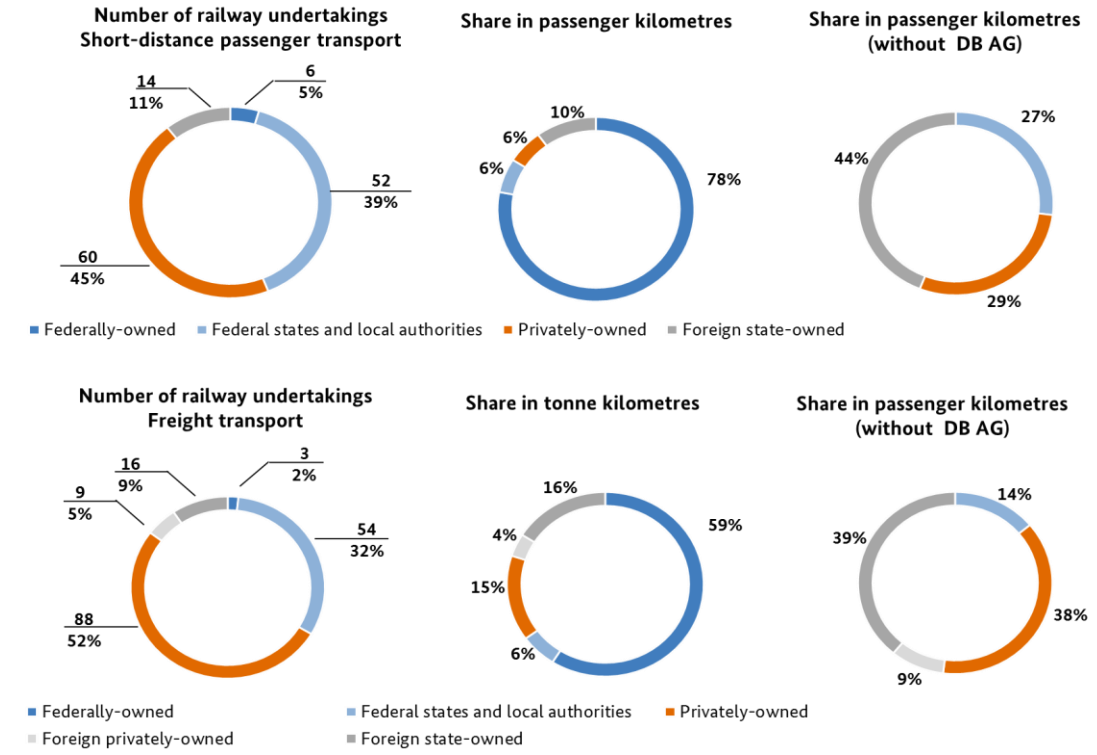


Figure 11: Ownership structures of railway undertakings (2015, number/share of traffic handled in percent)

Revenue development in the rail transport market

As shown in Figure 12, the revenue generated per train-path kilometre travelled fell slightly year-on-year to a total of €15.00 per train-path kilometre. The revenue generated per passenger-kilometre in the short-distance passenger rail transport segment has remained more or less constant since 2011.

In 2015, railway undertakings generated revenue of 18.4 cents per passenger-kilometre in the short-distance passenger rail transport segment.

In contrast to the trend, average train occupancy stagnated in 2015 after having increased noticeably in the previous few years.

The figures for non-federally owned railways are shown in Figure 13.

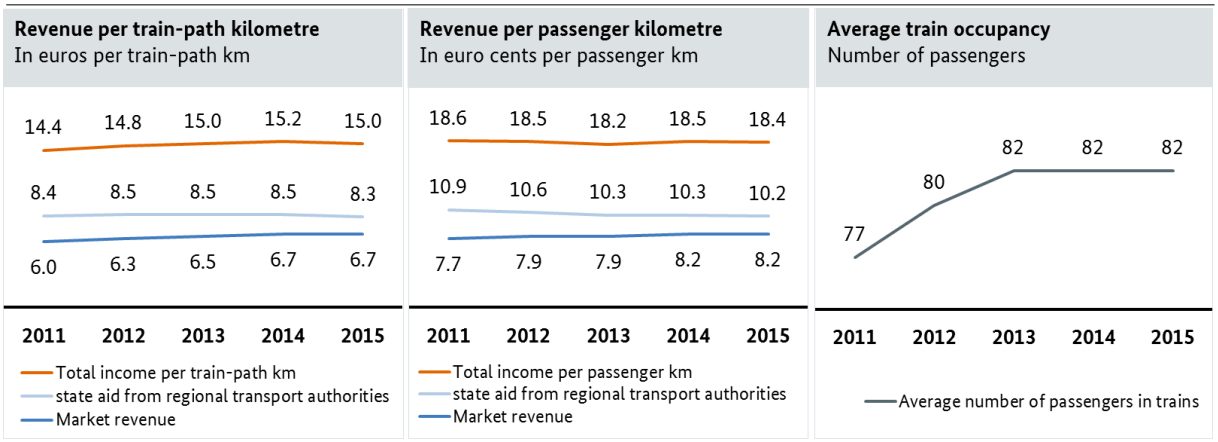


Figure 12: Development of revenues and average train occupancy in short-distance passenger rail transport (2011-2015)

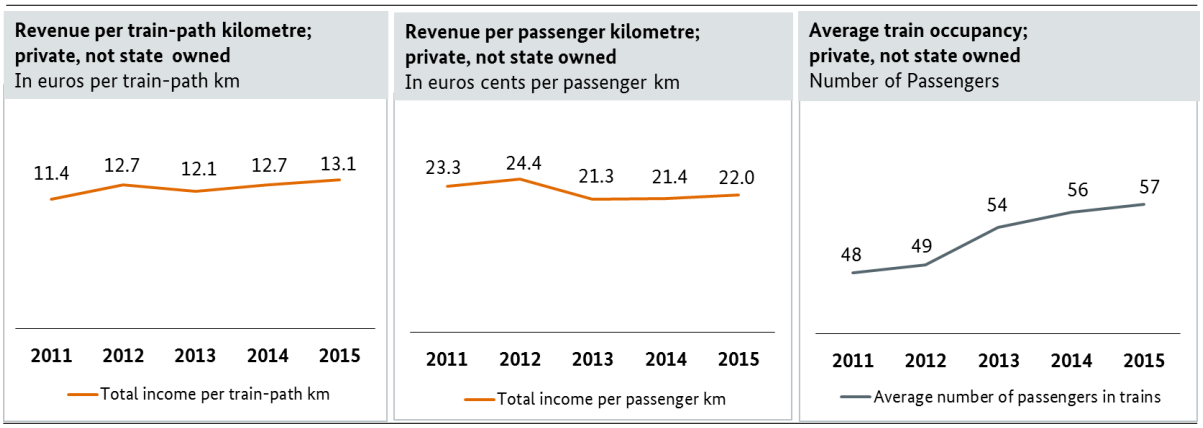


Figure 13: Development of revenues and average train occupancy in short-distance passenger rail transport for non state owned (2011-2015)

Since average train occupancy is much higher in the long-distance passenger transport segment than in the short-distance transport segment, revenue per train-path kilometre here is approximately twice as high in the short-distance passenger transport segment. However since subsidies are generally not paid in the long-distance passenger transport segment, revenue per passenger-kilometre - approximately €0.11 - is significantly lower than it is in the short-distance segment. The average number of passengers per train in the long-distance passenger rail transport segment rose sharply from 254 to 268. As a result, revenue per train-kilometre increased even though revenue per passenger-kilometre fell.

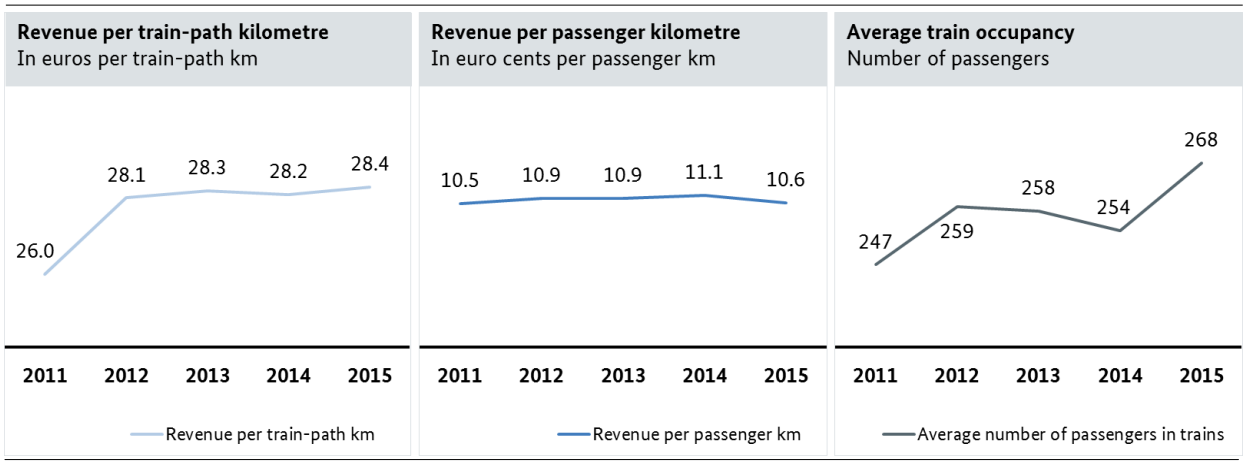


Figure 14: Development of revenues and average train occupancy in long-distance passenger rail transport (2011-2015)

In the rail freight segment, revenue generated per train-path kilometre rose slightly in 2015, to €19.90. Revenue per tonne-kilometre fell slightly to 4.2 cents. Freight tonnage per train rose from 459 in 2014 to 470 tonnes of freight per train, representing an increase of almost 2.4 percent (Figure 15).

Figure 16 shows the figures for rail freight transport volumes for non-federally owned railways.

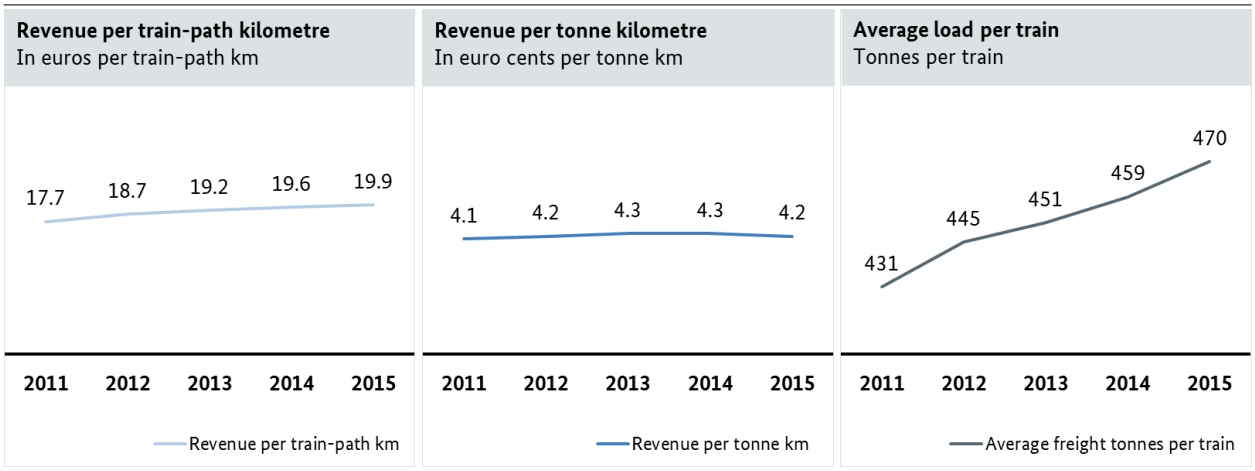


Figure 15: Development of revenue and average freight tonnage in the rail freight market (2011-2015)

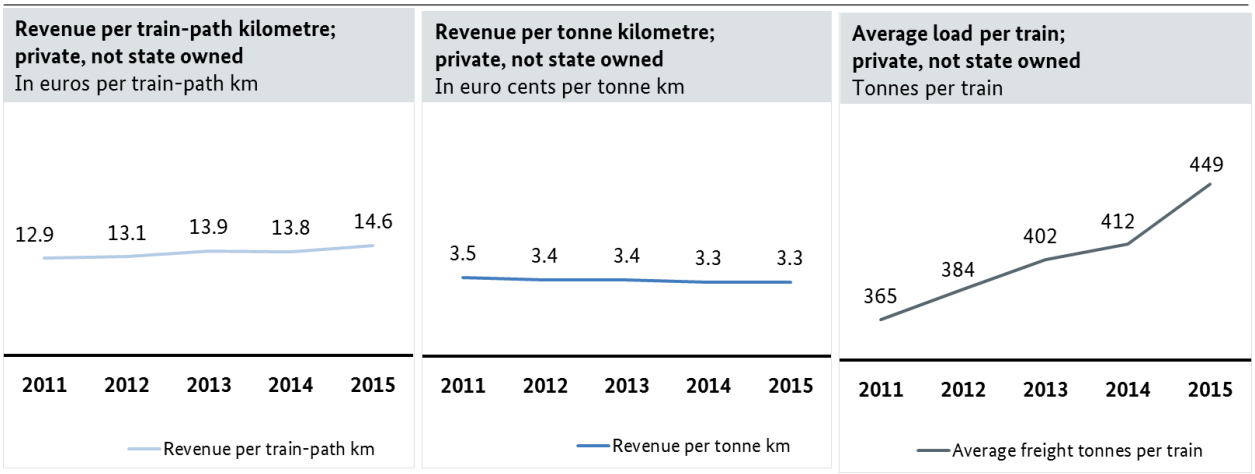


Figure 16: Development of revenues and average freight tonnage in the rail freight market for not state owned railways (2011-2015)

Transport and travel distances in the rail transport market

Figure 17 shows the average transport and travel distances calculated on the basis of the respective quotient of traffic volume and transport volume.

The average travel distance in the short-distance passenger rail transport segment remained unchanged at 21 kilometres in 2015. At 280 kilometres, the average travel distance in the long-distance passenger rail transport segment remained unchanged over the previous year. By contrast, the average transport distance in the rail freight segment decreased slightly from 298 to 296 kilometres.

When looking at average travel and transport distances, it should be remembered that in its market analysis the Bundesnetzagentur only takes inland transport services into account. As a result, only those passenger-kilometres, tonne-kilometres, train-path kilometres from cross-border services that were provided within Germany's borders are included in the survey data.

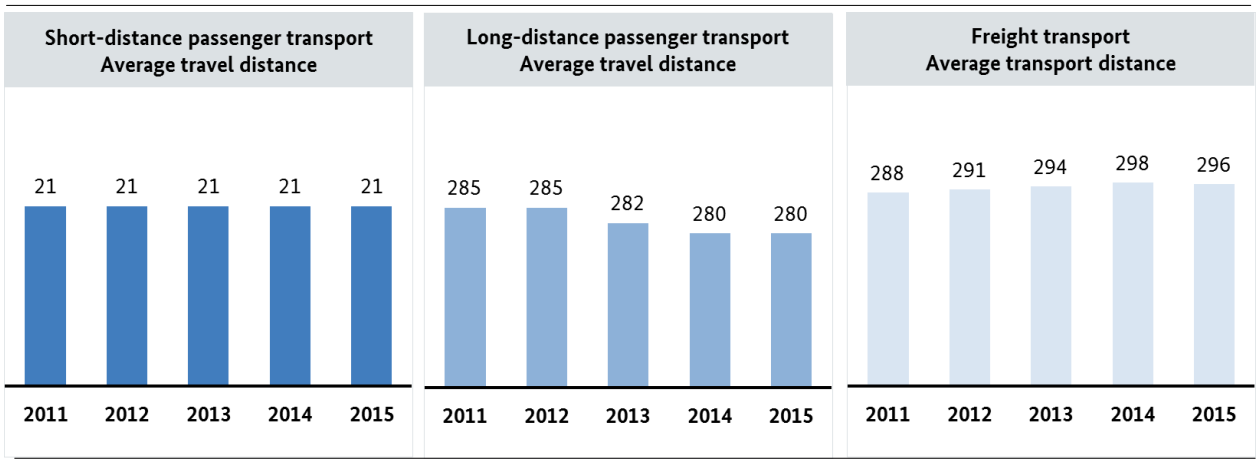


Figure 17: Development of transport and travel distances (2011-2015, in km)

Construction measures scheduled by the infrastructure managers

As part of the market survey, infrastructure managers have the opportunity to draw attention to issues or problems that are important to them. In addition to rating general influencing factors (cf. the section "Ratings for access to railway infrastructure") railway undertakings can voice their concerns about specific issues. The comments received during the survey carried out in 2016 revolved particularly around the issues: construction measures scheduled by the infrastructure managers, timetables, scheduling and communication. Although the ratings given the influencing factors "timetable quality" and "management of and arrangements during disruptions" tended to be positive, numerous railway undertakings submitted more detailed comments about these specific issues.

Looking at the subject of scheduled construction measures to be undertaken by the infrastructure managers, railway undertakings have the opportunity to provide their own assessment, based on a scale from “applies completely / very often" to "average" all the way to "does not apply/applies only seldomly". Figures 18 and 19 illustrate the evaluation of this set of topics.

Somewhat more than three out of every four railway undertakings indicated that they had been informed on a timely basis of construction measures scheduled in the working timetable. Two-thirds (66 %) of the railway undertakings surveyed stated that they had received timely information regarding construction measures to be conducted during the course of the year.

Nearly half of the railway undertakings were often involved in the planning and coordination of construction measures. The greatest dissatisfaction continued to be reported in connection with the degree to which this involvement has an effect. Here, nearly half of the railway undertakings reported that they were seldom able to exert any influence on the planning of the construction sites. In their supplemental comments the railway undertakings particularly criticised their lack of influence on construction measures.

Half of the railway undertakings noted that it was necessary to use diversionary routes during scheduled construction measures undertaken by the infrastructure managers. Nearly one-third of the railway undertakings frequently found it necessary to provide replacement bus service during construction measures.

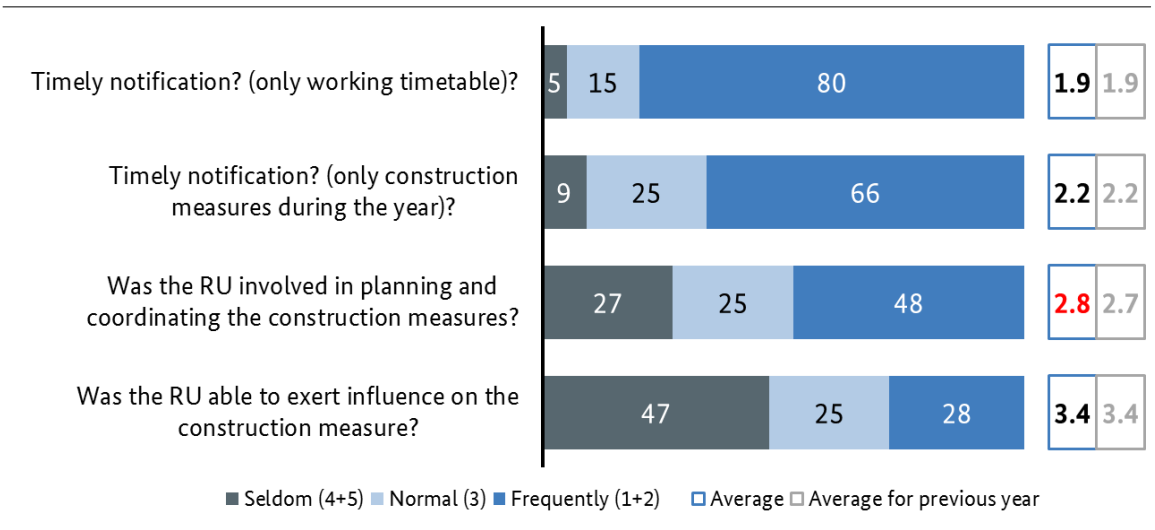


Figure 18: Ratings of the construction measures scheduled by infrastructure managers (2016; ratings in percent and average marks)

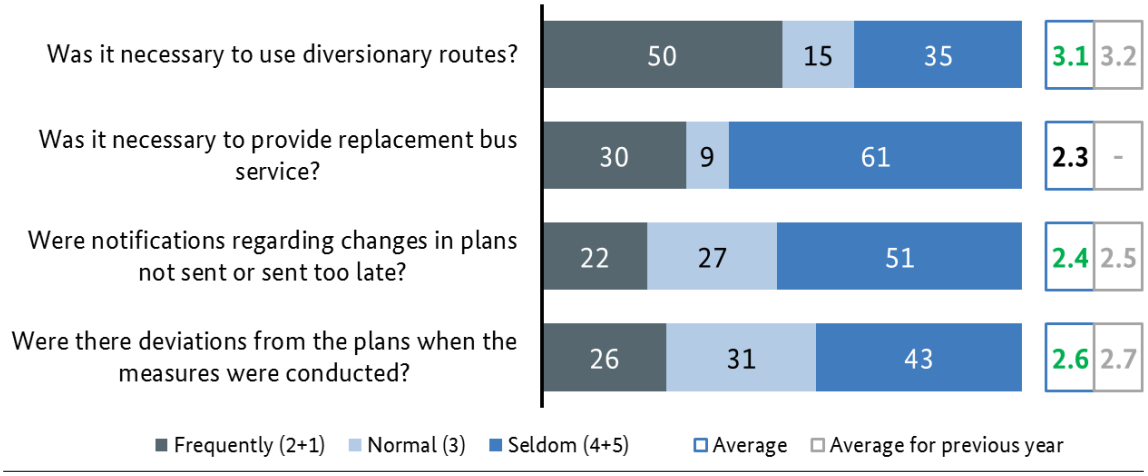


Figure 19: Evaluation of the construction measures scheduled by infrastructure managers (2016; ratings in percent and average marks)

Approximately one-fourth of all railway undertakings were affected relatively frequently by late notifications of changes in plans or deviations from the original plans for construction measures. This figure had improved slightly over the previous year.

In their supplemental comments, the participating railway undertakings went into these subjects in greater detail. The removal of construction switches, storage sidings, railway sidings and side tracks was criticised since this has led to a lack of reserve infrastructure that could be used when construction measures are being carried out. The lack of diversionary routes or the provision of a diversionary route with insufficient capacity resulted in a situation where it was not possible in some cases to reach unloading points or destination terminals. The respondents noted a lack of intelligent re-routing concepts and pointed out that diversionary routes could be very long due to congestion in the railway network.

All in all, they said the volume of the construction sites had reached the absolute limit and caused significant problems for "just in time" transport services. Currently, construction sites do not have enough capacity for non-scheduled services.

Planning problems pointed out by the respondents included being sent notifications of construction measures without sufficient lead time, even though the measures were part of a multi-year plan; construction measures not being coordinated across network boundaries; and a lack of satisfactory arrangements for shunting operations when construction work is being done at train stations. Respondents reported that they are not always informed in advance of construction measures which are carried out at passenger stations at short notice. Passenger information systems are reportedly turned off during construction measures - in other words, at times when they are particularly needed.

Asked about costs, the railway undertakings surveyed recommended that provisions be made whereby DB Netz assumes the additional costs for construction or maintenance work.

Lastly, a number of railway undertakings pointed out that completion dates for construction measures are very seldom met. In the case of major construction measures, completion delays could exceed one year, they reported.

Comments by the railway undertakings regarding timetables and scheduling

Railway undertakings particularly focused on difficulties arising in connection with the provision of timetables for non-scheduled rail services. Such timetables, they noted, were provided at the last minute because they are processed too late or very slowly. Special factors are not given sufficient consideration when developing timetables, they said. Further, special train movements can be contracted only via the DB Train Path Portal. This involves considerably more time and work, they reported.

The preferential treatment given to passenger rail service, the respondents pointed out, leads to discrimination against freight transport and other non-scheduled rail service when there is too much regular interval service. As a result, some scheduled travel times are very long, such as 24 hours for a distance of 300 km.

Self-imposed restrictions exist, such as in the form of across-the-board arrangements for conducting special train movements. For example, "secure passage" for trains exceeding the maximum load across several sections of the infrastructure is no longer permitted as a rule, they noted. All maximum loads were recalculated parallel to this, reducing transport capacity and causing additional restrictions. The railway undertakings maintain that secure passage could be provided for these trains, when efficient scheduling and the necessary flexibility are given.

In the area of scheduling, the respondents particularly focused on heavy route utilisation and the need for better communication.

Heavy route utilisation leads to regular delays (headway). Too much regular passenger interval service leads to poor operational quality in non-scheduled rail service, they noted, adding that short-distance passenger rail transport service on the other hand was put at a disadvantage in favour of delayed long-distance passenger rail transport service and long-haul freight trains.

A number of railway undertakings described scheduling as inadequate. This is particularly the case on heavily used routes and in hubs as well as on single-track routes.

They reported that they often received information too late for their own scheduling needs, that scheduling is not reliable, or that non-DB undertakings are put at a disadvantage. In the case of larger disruptions, the coordination with all affected railway undertakings tends to be poor, it was noted.

Noise-based track access charges

The Bundesnetzagentur asked the railway undertakings in its annual market survey about their use of "low-noise freight trains". This set of questions was included in connection with DB Netz AG's introduction of the noise-based track access charging system when the changeover from the 2013 timetable to the 2014 timetable was made. The objective of the noise-based infrastructure charging system was to promote the use of "lower-noise freight cars" and "lower-noise freight trains". When at least 90 percent of the freight cars of a freight train have been retrofitted with noise-reducing brakes, the respective railway undertaking received a refund (bonus) in 2015 on the track access charges paid for the freight train.

According to DB Netz AG, "low-noise trains" accounted for 16.3 percent of all train-path kilometres travelled by all railway undertakings in 2015. Based on the market survey conducted by the Bundesnetzagentur, the share of train-path kilometres travelled by "low-noise trains" of non-federally owned railways exceeded this value and reached approximately 21 percent.

Financing short-distance passenger rail transport service

Germany's federal states are entitled to receive regionalisation funds from federal tax revenue in order to provide local public transport. The federal states use regionalisation funds to finance short-distance passenger rail transport service.

Contents

Regional transport authorities and the short-distance passenger rail transport market

The share of the railway undertakings' revenue represented by the subsidies received from the regional transport authorities declined slightly over the previous year. The regional transport authorities contracted more transport services from non-federally owned railway undertakings. The regional transport authorities' rating of the railways improved once again last year.

Revenue development in the short-distance passenger rail transport segment

The most important sources of revenue for the railway undertakings operating in the short-distance passenger rail transport segment - in addition to market profits - are public subsidies which bodies (regional transport authorities) contracting short-distance passenger transport services pay to the railway undertakings that have been contracted to provide transport. These subsidies come largely from funds made available by the federal government to Germany's federal states under the Regionalisation Act from 27 December 1993 as amended by the Third Act to amend the Regionalisation Act from 15 December 2015. The total was set at €8.2 billion for the year 2016. Starting 2017, this amount will be increased by 1.8 percent a year until the year 2031.

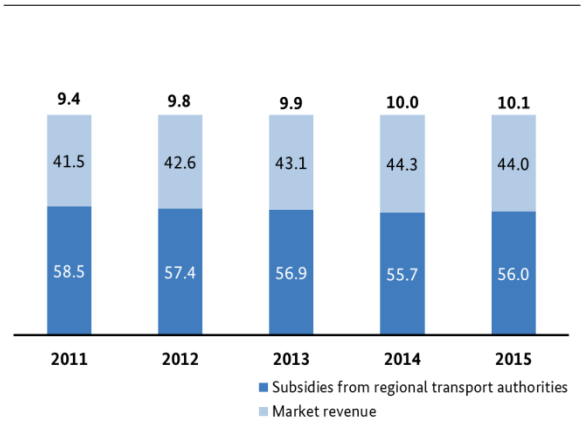


Figure 20: Share of subsidies from regional transport authorities in revenue generated in the short-distance passenger rail transport segment (2011-2015; revenue in € billion, shares in percent)

Using a breakdown of the revenue components, Figure 20 shows the importance of public subsidies for the short-distance passenger rail transport segment. The share of public subsidies remained constant at 60 percent through the year 2010. Starting in 2011, the share of the market revenue began to increase and, as a result, the size of the share of public subsidies declined.

Market revenue (primarily from the sale of tickets) covered an average of only 44 percent of the costs of short-distance passenger rail service in 2015.

Development of contracted transport services

Over a five-year period, the amount of transport services contracted by regional transport authorities from non-federally owned railway undertakings increased by five percentage points, as shown by the following chart.

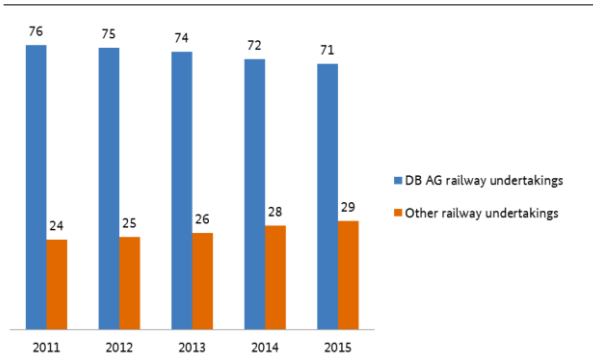


Figure 21: Development of market shares for contracted transport services in the short-distance passenger rail transport segment (2011-2015; shares in percent)

Conclusion of transport contracts

Regional transport authorities contract railway undertakings to provide short-distance passenger rail transport services. These contracts are largely awarded through tendering. Under certain conditions, tendering was not used as the basis for awarding contracts. The regional transport authorities are responsible for awarding transport contracts and for their operative implementation. They concluded 18 transport contracts in 2014 and 45 in 2015. According to the regional transport authorities, the number of transport contracts is expected to increase slightly to 46 in 2016 (Figure 22).

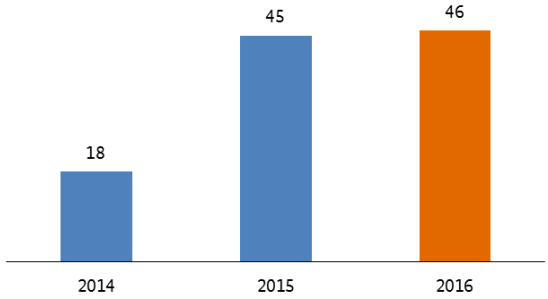


Figure 22: Number of concluded transport contracts and anticipated number of concluded transport contracts (2014-2016)

Approximately 41 percent of all train-path kilometres provided in 2015 were contracted directly and slightly more than 59 percent were awarded by tender.

Of the 45 transport contracts awarded by regional transport authorities in 2015, 34 were awarded by tender and 11 were awarded without the use of the tendering process.

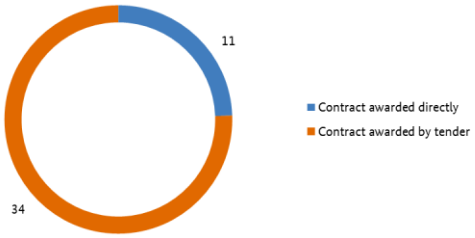


Figure 23: Award of transport contracts by regional transport authorities, by tender and without tendering (2015; number)

In the case of eight transport contracts concluded in 2015, railway undertakings accepted offers by the regional transport authorities to provide assistance with financing rolling stock.

The variants of the rolling stock financing offered in these contracts included the re-deployment guarantee and residual value guarantee for the rolling stock and the provision of rolling stock through the regional transport authorities by means of a rolling stock pool. Special financing models (the RRS-NRW model, VRR model and BW model) were offered for five transport contracts.

Factors influencing the regional transport market

As in past years, the Bundesnetzagentur gave all regional transport authorities participating in its annual survey the opportunity to evaluate and rate market-related aspects on a scale of 1 (very good) to 5 (unsatisfactory).

The regional transport authorities' assessment of short-distance passenger rail transport in 2016 changed only slightly over the previous year. Approximately half of the regional transport authorities rated the level of modernisation of the infrastructure as average. The average improved slightly compared to the previous reporting period. On average, regional transport authorities gave a rating of 3.3 for the level of modernisation of the railway network infrastructure and 3.1 for its condition. This represents a decline over the previous reporting period (Figure 24 on the next page).

The regional transport authorities for short-distance passenger rail transport gave the condition of passenger stations an average rating of 3.1 in 2016, somewhat better than the rating given in the previous year (3.2). Their rating of the level of modernisation of passenger stations averaged 2.9. This figure also improved slightly over the previous year when the regional transport authorities' assigned an average of 3.0 (Figure 25 on the next page).

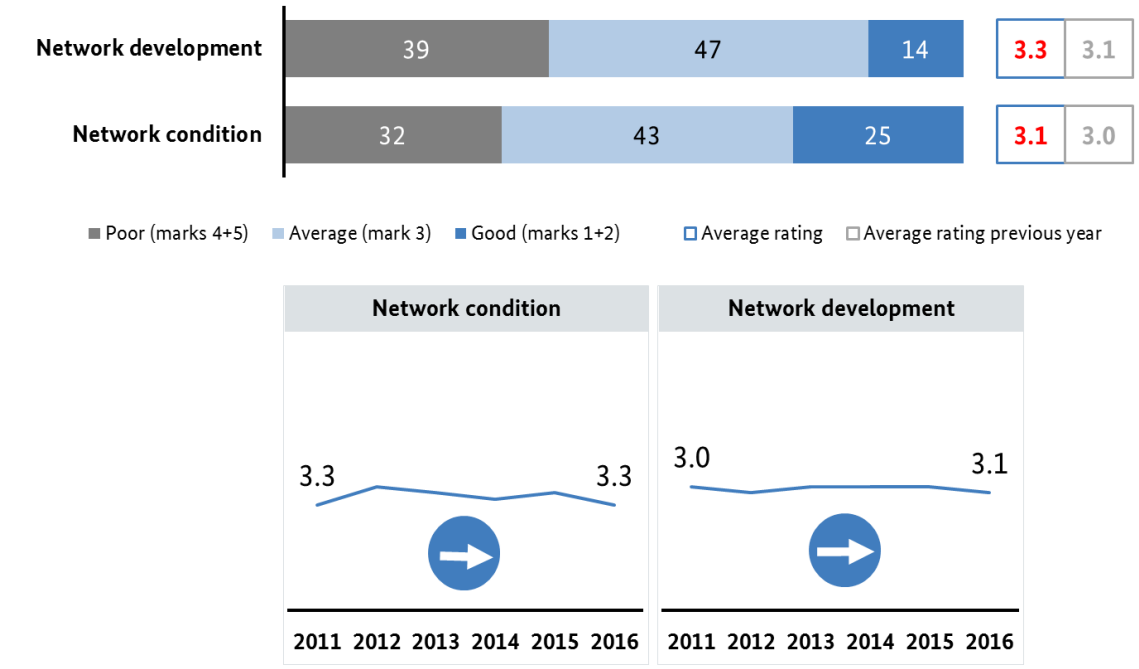


Figure 24: Regional transport authorities' ratings for train path condition and development (2011-2016)

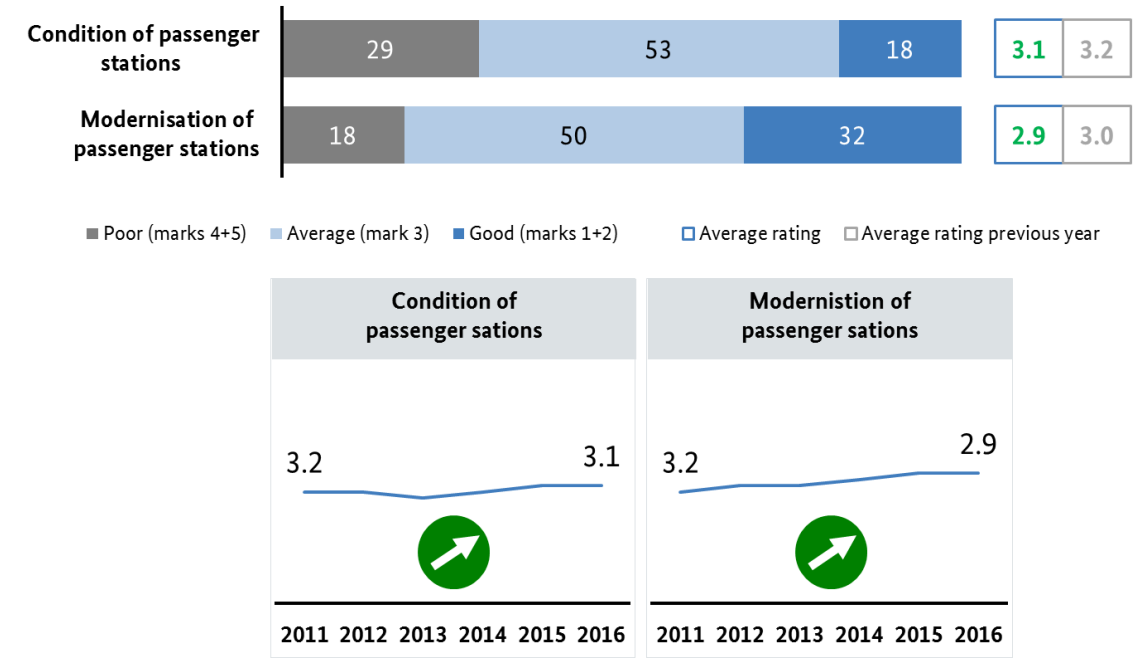


Figure 25: Ratings given by regional transport authorities for the condition and development of passenger stations and stopping points (2011-2016)

The regional transport authorities gave a rating of 2.8 to issues pertaining to the level of non-discrimination in the railway undertakings' pricing systems for stations. This rating was better than in the previous year. These authorities rated the level of non-discrimination in track access charge systems with an average of 2.7, after 2.8 in the previous year (Figure 26).

Looking at stations, the regional transport authorities rated the infrastructure managers' price-performance ratio as 3.7. They assigned a 3.9 just the year before. The infrastructure managers' price-performance ratio for train paths received a rating of 3.7, slightly better than in the previous year (3.8) (Figure 27).

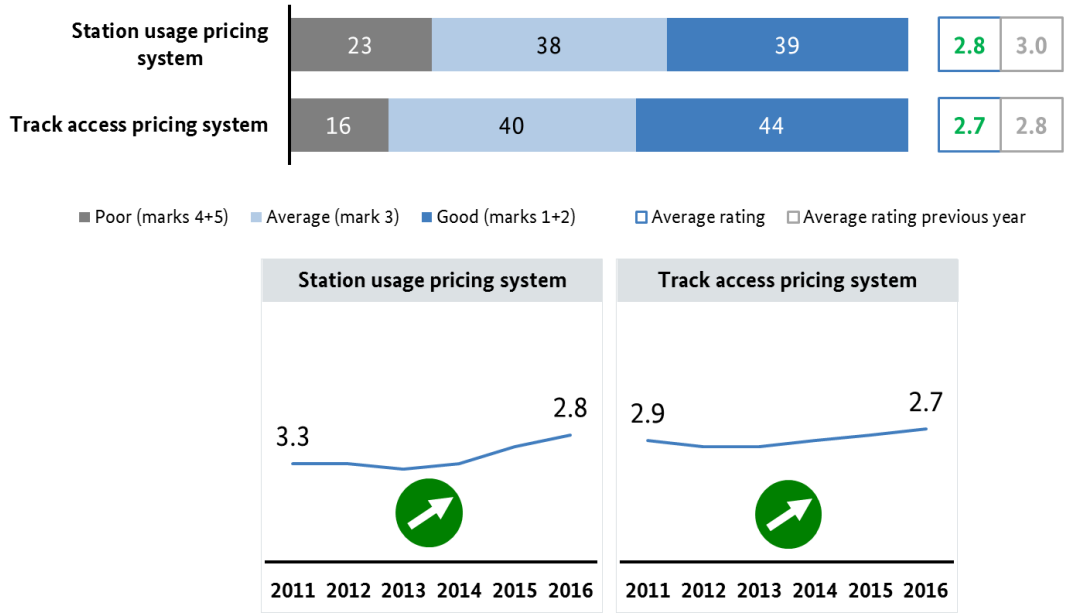


Figure 26: Regional transport authorities' ratings for the level of non-discrimination in pricing systems (2011-2016)

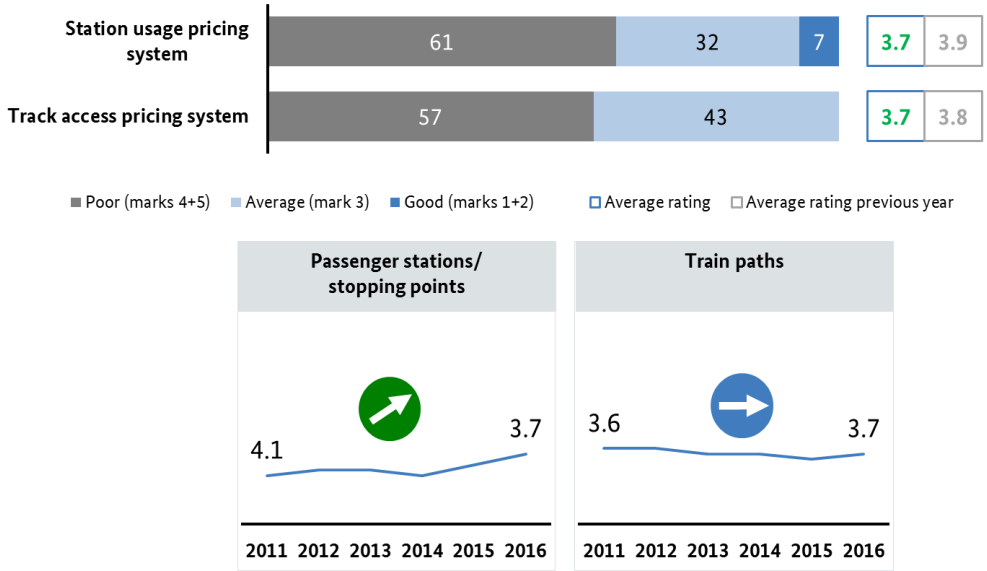


Figure 27: Regional transport authorities' rating of the infrastructure managers' pricing systems (2011-2016)

Comments of the regional transport authorities

As part of the annual market survey, regional transport authorities have the opportunity to make recommendations, provide tips and submit their wishes for future regulatory work to the Bundesnetzagentur. They can also provide comments, tips and information about their own experience relating to access to the railway infrastructure market.

Train paths

Looking at the subject of train paths, the regional transport authorities would like to see better regulation of train paths, the strengthening of interval and system train paths and a comprehensive interval schedule vs individual trains that are not part of interval service. Furthermore, the railway network infrastructure should be organised for greater robustness, in other words, more crossovers, overtaking tracks and through stations should be set up.

Stations

In the area of stations, the regional transport authorities expect the implementation of appropriate service propositions in the station usage charge system. The potential offered by digitalisation should be put to use to provide more flexible passenger information. The respondents noted that some of the existing systems are outdated and expensive. They also felt that DB Station&Service and DB Immobilien should be more service-oriented vis-à-vis local authorities when local measures in the vicinity of the train station are involved, particularly when it is necessary to acquire land from DB. In the case of investments, a consensus should always be reached.

Light maintenance depots

In the area of light maintenance depots, the regional transport authorities and special purpose associations for railway undertakings call for eliminating the potential for discrimination when other railway undertakings use the light maintenance depots. To achieve this, the respondents recommended conducting effective reviews of the annual charges for using light maintenance depots under a short-distance passenger rail transport service contract.

Personnel

Looking at the subject of personnel, the regional transport authorities stated that DB companies should hire more personnel to step up completion of construction projects and maintenance measures.

Long-distance rail transport

A medium-term long-distance rail transport concept with shorter intervals should not be allowed for congested routes because this would lead to a massive decline in the quality of the train paths offered in passenger rail transport service, they stated (trains being overtaken by several other trains).

Charges

On the subject of charges, the regional transport authorities call for transparency with regard to the cost finding in the track access charge system and the station usage charge system.

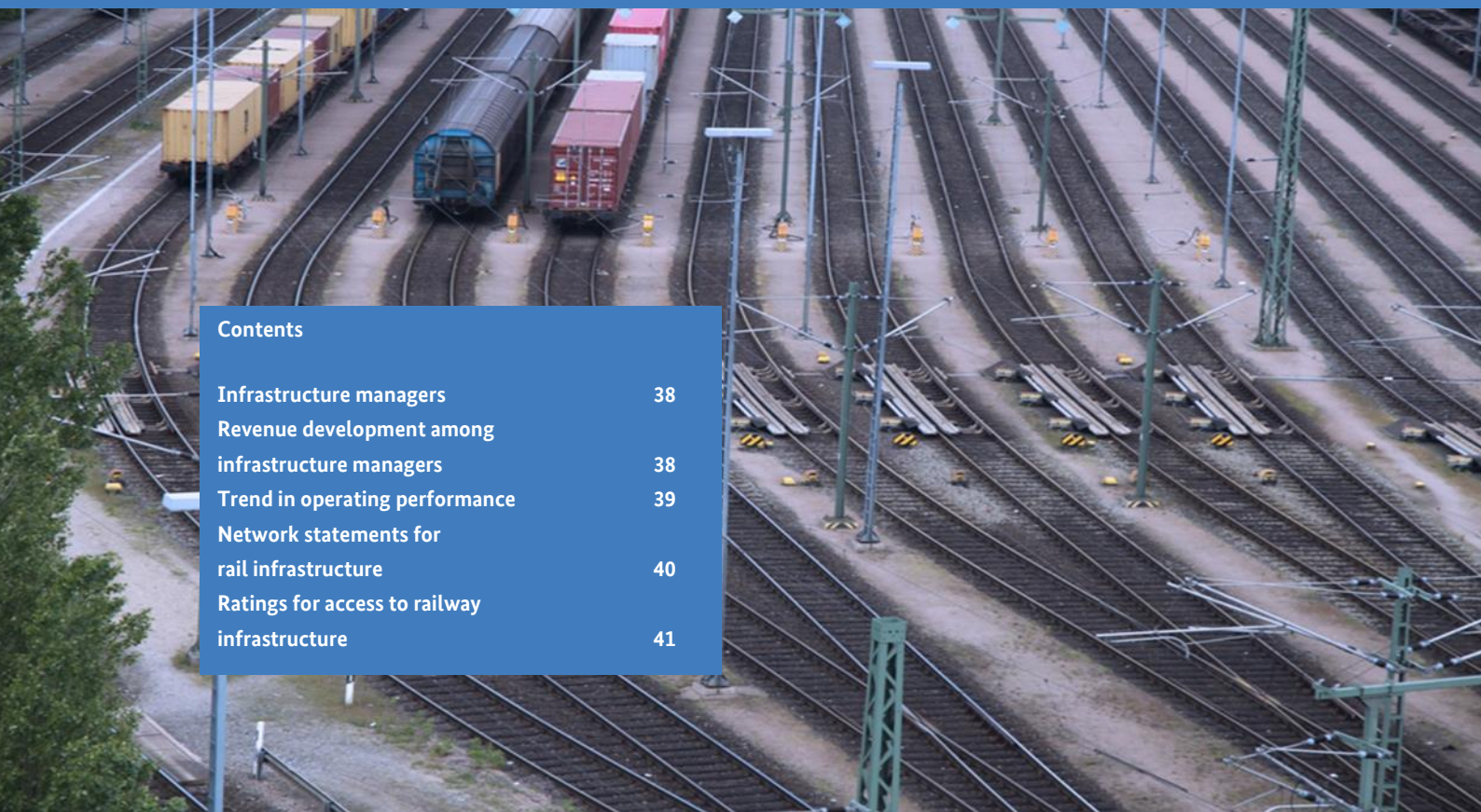
They would also like to see an improved price-performance ratio for stations. Furthermore, there should be a transparent portrayal of the pricing and cost increases for railway undertakings and regional transport authorities.

In addition, there should be the possibility of negotiating station charges. This should go hand-in-hand with greater competencies for DB Station&Service AG's regional units.

Moreover, station charges are reportedly being issued too late and only after a train path has been contracted. Track access charges and station charges should be disclosed on the same day, the respondents said.

Provision of infrastructure

The regulation required by law in the railway sector is aimed at enterprises in the railway infrastructure market. This regulation ensures non-discriminatory access to railway infrastructure in Germany for all railway undertakings. To ensure that the regulatory activities necessary for this are both moderate and objective, the Bundesnetzagentur relies not only on data from infrastructure managers, it also takes the railway undertakings' qualitative assessments into account in its analyses.



Contents

Railway infrastructure market

The revenue generated by infrastructure managers continued to rise in 2015. The number of train-path kilometres travelled increased over the previous year. The ratings assigned by railway undertakings for areas with regulatory relevance improved once again last year.

Infrastructure managers

At present, approximately 150 railway line infrastructure managers and more than 600 service facility operators receive the questionnaire for the Bundesnetzagentur's annual market survey. Many of the infrastructure managers operate service facilities as well.

The number of infrastructure managers contacted for the survey is determined by the Bundesnetzagentur's level of market penetration. Furthermore, there is no central register for railway infrastructure that covers all infrastructure managers. In addition, no licence is required to operate most service facilities. With this in mind, it must be assumed that the Bundesnetzagentur's overview of the railway infrastructure market is not complete in some segments. The new Rail Regulation Act contains provisions that permit the Bundesnetzagentur under certain circumstances to exempt infrastructure managers from individual sections or parts of the Act. Due to these exemptions, it can be assumed that the number of infrastructure managers on file with the Bundesnetzagentur will increase in the coming years.

According to data currently available to the Bundesnetzagentur, German infrastructure managers operate routes totalling some 39,000 kilometres with a track length of approximately 59,500 kilometres (excluding tracks in service facilities). Tracks with a total length of more than 11,300 kilometres are operated in service facilities.

Revenue development among infrastructure managers

The infrastructure managers generated their revenues primarily from the charges they collected for the use of train paths and service facilities. At approximately €4.8 billion, track access charges accounted for approximately 80 percent of total revenue from infrastructure usage in 2015.

Looking back at recent years, this represents a steady increase in the revenues generated from usage charges. This figure has grown from €5.4 billion in 2011 to a total of €6 billion in 2015. This is equal to an average annual increase of 2.7 percent.

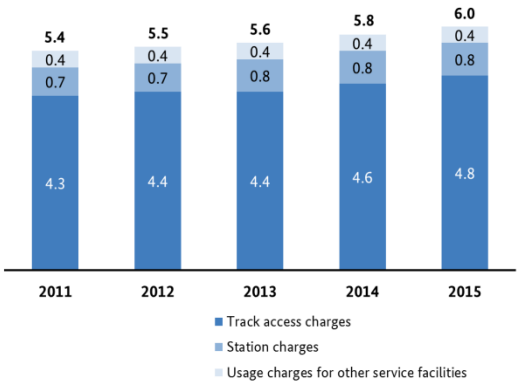


Figure 28: Revenue generated from usage charges in the rail infrastructure market (2011-2015; € billion)

Slightly more than two-thirds of total revenue from track access charges are generated in the short-distance passenger rail transport segment. The remaining third comes from charges paid in the long-distance passenger rail transport segment and the rail freight transport segment. In recent years short-distance passenger rail transport accounted for a steadily growing share of the infrastructure managers' revenues from track access charges.

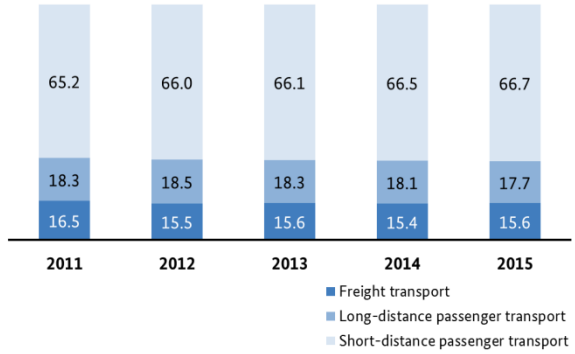


Figure 29: Total revenue of German infrastructure managers from track access charges, broken down by type of service, in percent (2011-2015; in percent)

Trend in operating performance

The number of kilometres travelled in Germany's public railway network increased once again after 2014 and totalled some 1.078 billion train-path kilometres in 2015, setting a new record after having declined slightly in 2012 and 2013. Since 2004, more than one billion train-path kilometres have been travelled every year on Germany's railway network.

Although the number of train-path kilometres travelled in the long-distance passenger rail transport segment fell, both the rail freight transport segment and the short-distance passenger rail transport segment posted increases once again. The short-distance passenger rail transport segment set a new record with 671 million train-path kilometres.

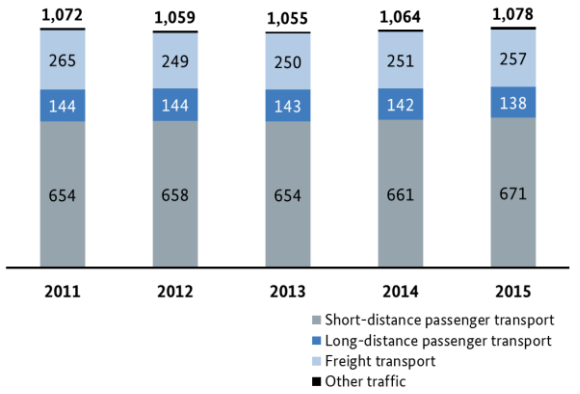


Figure 30: Development of train-path kilometres broken down by type of service (2011-2015; million train-path km)

Almost all of the train-path kilometres travelled were travelled on railway infrastructure operated by DB AG. Only slightly more than two percent of the total number of train-path kilometres are travelled on the railway infrastructure of other operators.

Network statements for rail infrastructure

Rail infrastructure managers are required by law to allow all parties with access entitlement to use their infrastructure on a non-discriminatory basis under the same terms and conditions. Under certain circumstances however, the Railway Regulation Act which went into force in September 2016 provides for the possibility of limiting free access, such as in the area of factory railways (Section 15 of the Railway Regulation Act).

The terms for using railway infrastructure that have been made available for use are to be drawn up in the form of network statements for railway infrastructure and as service facilities statements for service facilities. Network statements and service facilities statements that have been drawn up or amended must be submitted to the Bundesnetzagentur for review before they can take effect. The Bundesnetzagentur assists infrastructure managers to ensure that the statements they develop are in conformity with the law.

In 2016, 97 percent of the infrastructure managers and 79 percent of the service facility operators had network statements or service facilities statements. Publication rates are 93 percent and 72 percent respectively (Figures 31 and 32).

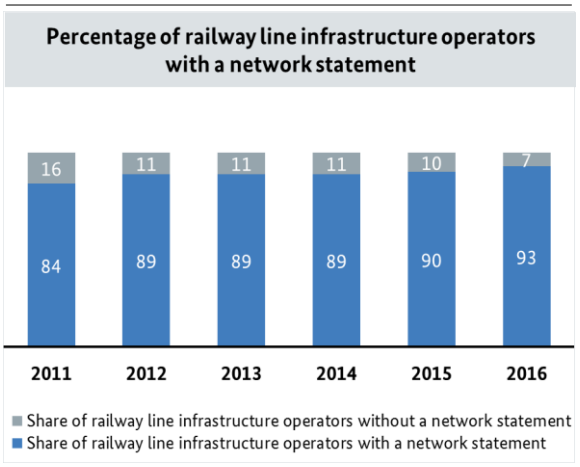


Figure 31: Share of railway line infrastructure operators that have drawn up a network statement (2011-2016; in percent)

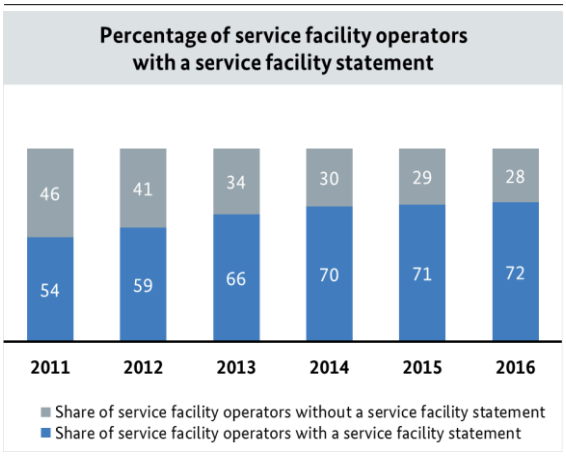


Figure 32: Share of service facility operators that have drawn up a service facility statement (2011-2016; in percent)

Infrastructure managers that have been exempted from the requirement to draw up network statements have not been included in the shares calculated here. Some of the remaining companies are still in the process of drawing up their network statement.

Infrastructure managers are required to draw up and publish schedules of their charges for the services they provide. Service facility operators are likewise required to draw up schedules of their charges. Although these operators are not required to publish their service facilities

statements, transparency fosters acceptance among prospective customers.

A total of 86 percent of the infrastructure managers had drawn up and published corresponding schedules of charges. (Figure 33).

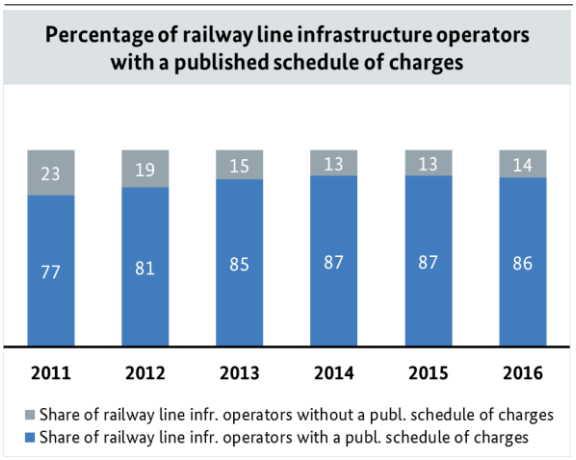


Figure 33: Share of railway line infrastructure operators that have published schedules of their charges (2011-2016; in percent)

The share of service facility operators that had drawn up schedules of their charges grew to 70 percent in 2016 (Figure 34). By comparison, only 47 percent of the service facility operators make their schedules of charges available to the public.

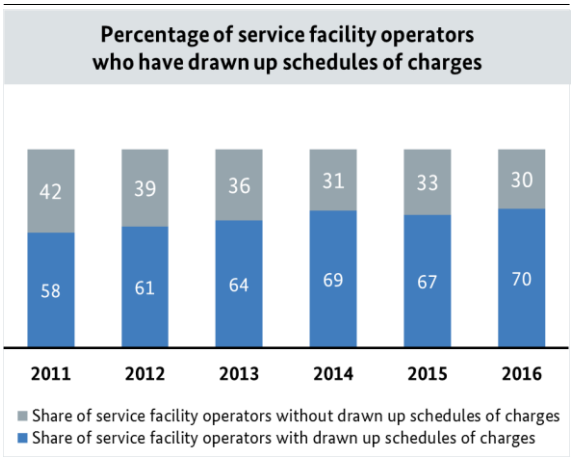


Figure 34: Share of service facility operators that have drawn up schedules of their charges (2011-2016; in percent)

Ratings for access to rail infrastructure

As part of its annual survey the Bundesnetzagentur gives all parties with access entitlement the opportunity to evaluate and rate market-related aspects on a scale of 1 (very good) to 5 (unsatisfactory). Here the Bundesnetzagentur surveys not only railway undertakings but also the regional transport authorities that task railway undertakings with providing transport services in the short-distance passenger rail transport segment. The market findings for the regional transport authorities are summarised in Chapter 4, starting on page 32.

As in the previous year, railway undertakings rated most of the subject areas better than in the foregoing reporting period. Once again, the areas "non-discriminatory pricing systems", "access to service facilities" and "access to train paths" - all of which are regulated by the Bundesnetzagentur - received the highest ratings, alongside "IMs' customer-friendliness".

The area "price-performance ratio of IMs" was the only area to receive just a "satisfactory" rating despite the fact that it had improved over the previous year. The criticism from the railway undertakings focused primarily on the areas "tariffs and sales", "network development / condition" and "international access".

Looking at access to rail infrastructure, railway undertakings gave both train-path allocation and railway timetable quality good ratings on average.

The sub-areas of regulatory relevance are examined in detail below.

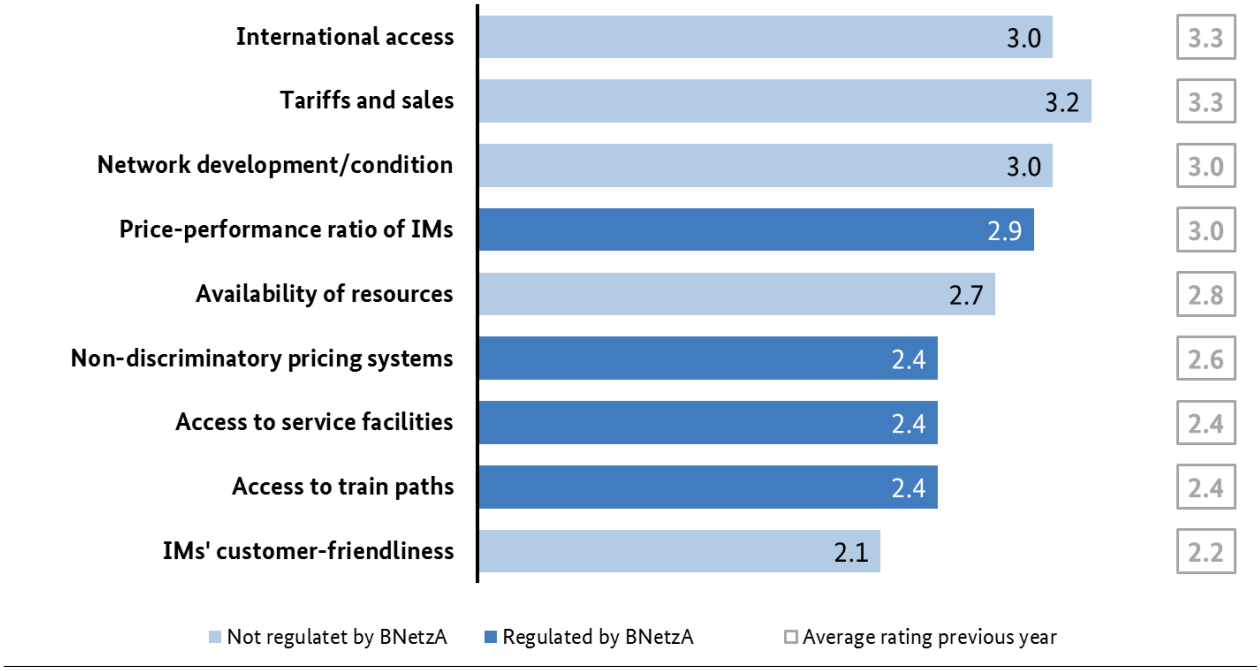


Figure 35: Factors influencing the railway market (2016; average values)

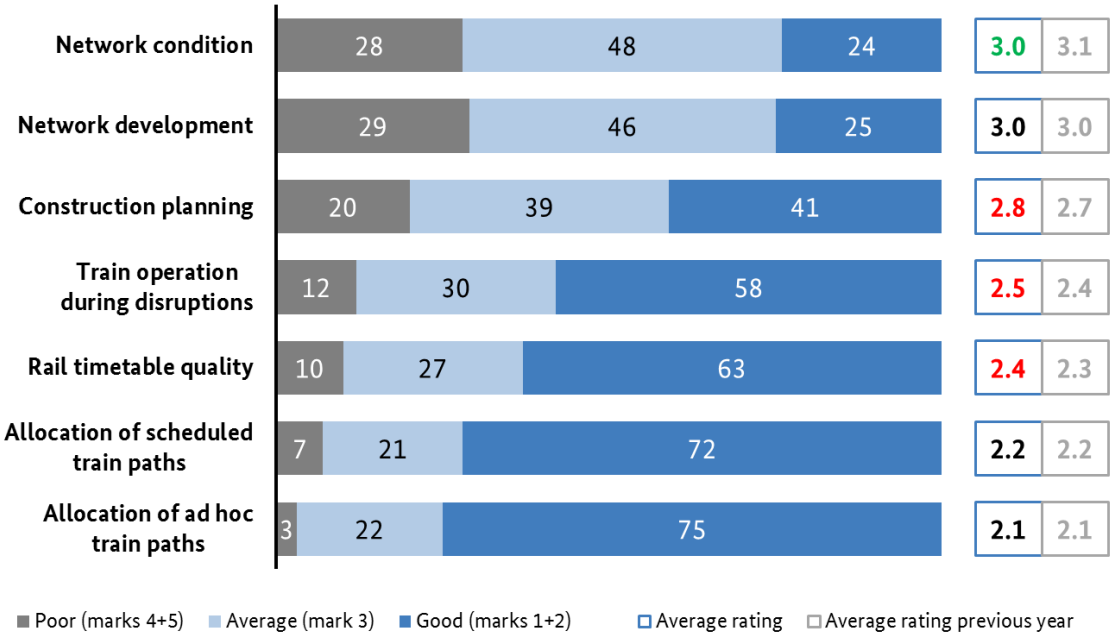


Figure 36: Ratings given for track access (2016; rating shares in percent and average marks)

More than half of the railway undertakings taking part in the survey rated train operation during disruptions as "good" or "very good". Nonetheless, the railway undertakings submitted a large number of comments indicating difficulties with the scheduling of traffic (see "Problems from the perspective of parties with access entitlement" in the chapter on the Railway Transport Market).

The market players' markedly improved assessment of the quality of coordination in the infrastructure managers' construction site planning (from 3.0 in 2014 to 2.7 in 2015) fell off slightly again in 2016 and is now 2.8.

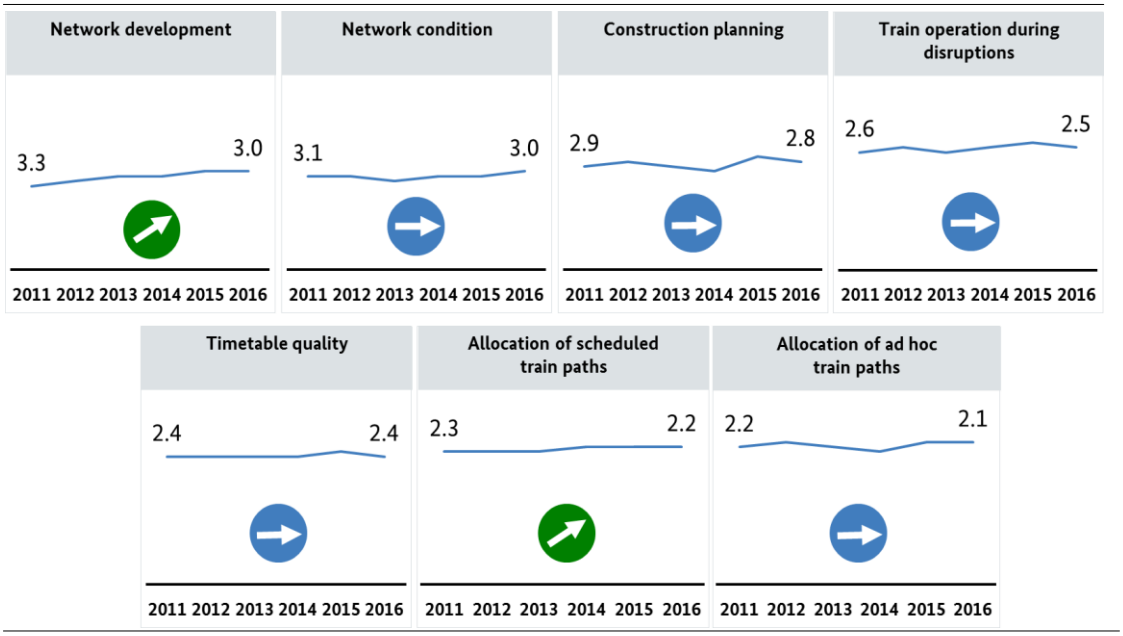


Figure 37: Trends in the ratings given for areas pertaining to track access (2011-2016)

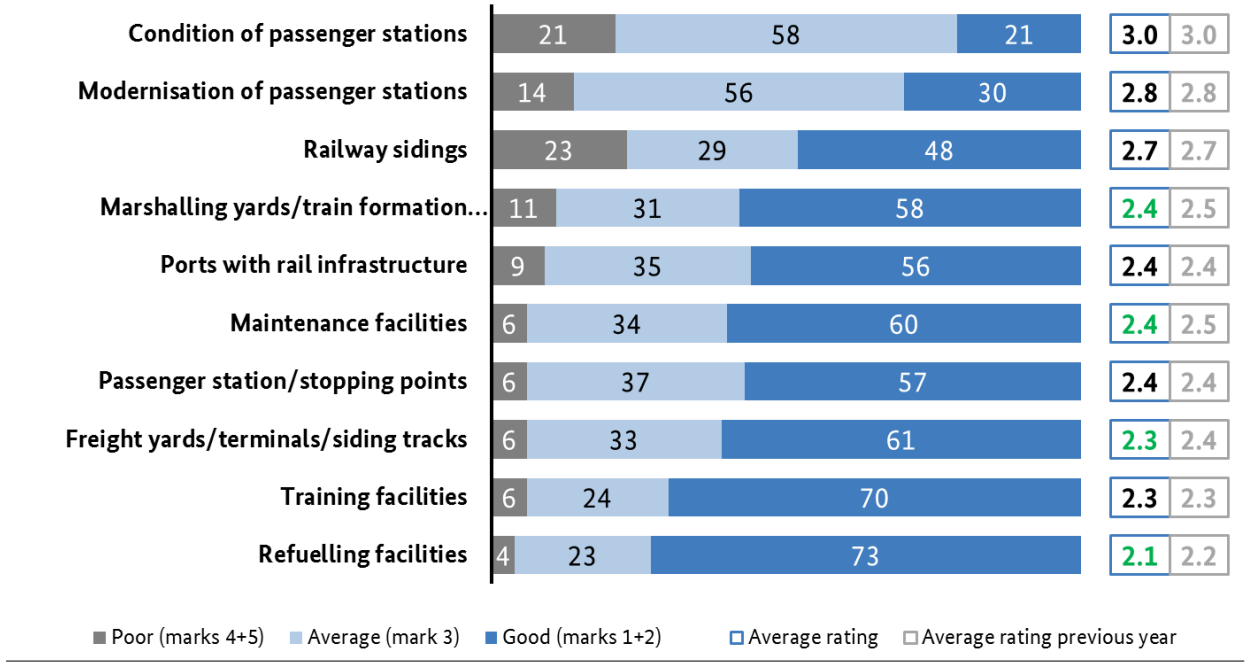


Figure 38: Ratings for access to service facilities (2016; rating shares in percent and average marks)

The railway undertakings surveyed continue to see an urgent need for improvement in the condition and development of the railway network infrastructure. They assigned a rating of 3.0 for this area, the worst in this group of issues (Figure 36).

There was no significant change in the ratings the railway undertakings have given to the area "access to train paths" in recent years, except with regard to network development.

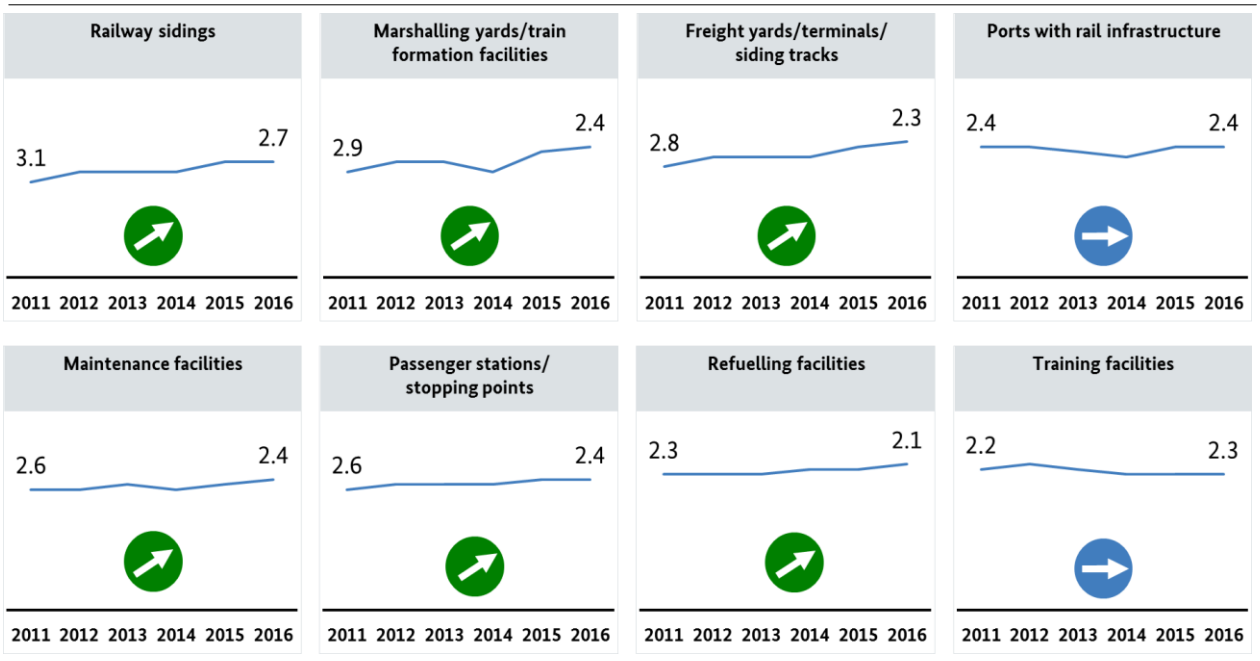


Figure 39: Trends in the ratings given for areas pertaining to service facilities (2011-2016)

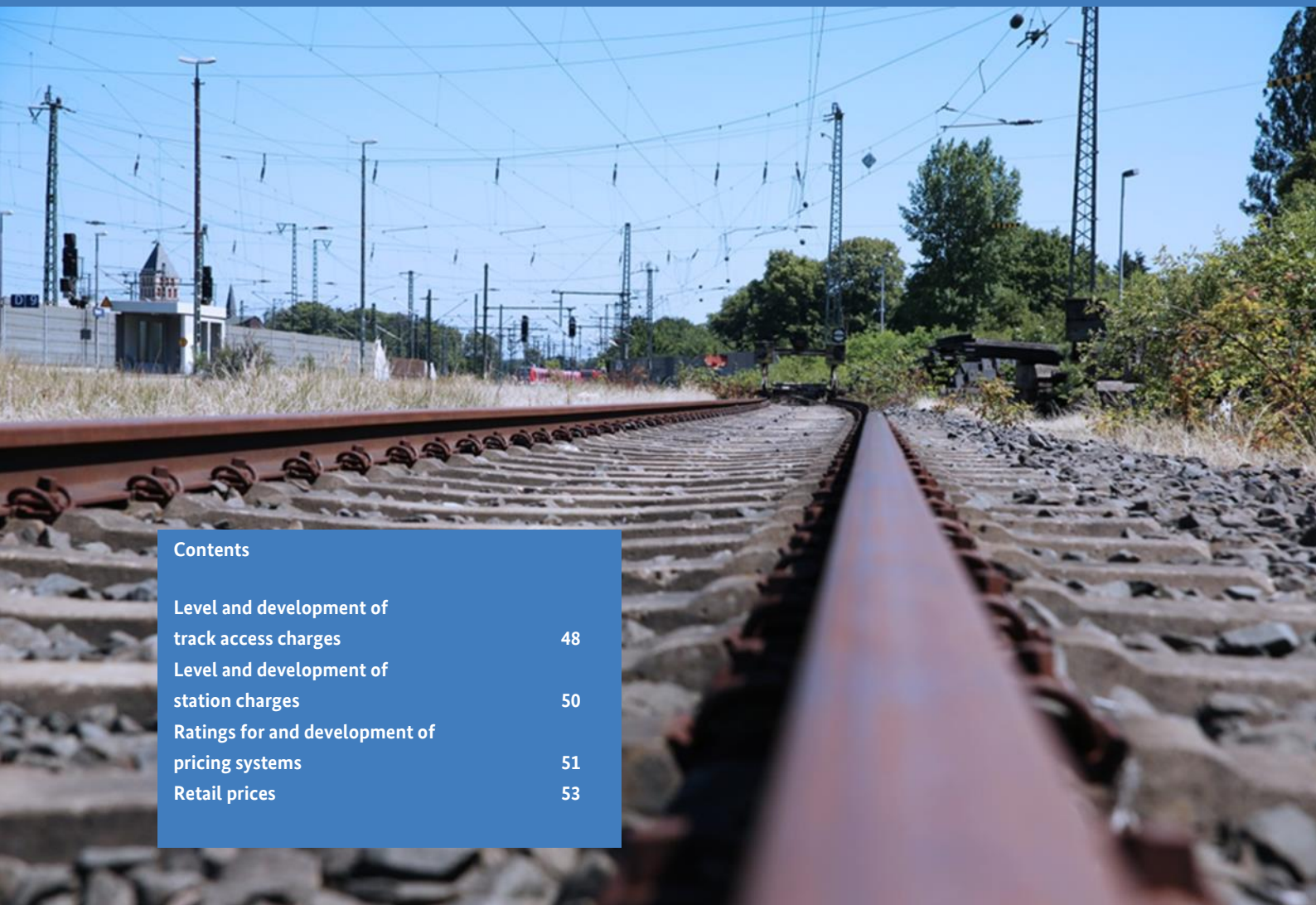
From the railway undertakings' point of view, there has been overall a noticeable improvement in access to services facilities in recent years. The marks they gave this issue in the current reporting period were almost all good. The most marked improvements in 2016 were seen in access to marshalling yards and train formation facilities and in freight terminals.

The only rating to decline was for "access to storage sidings" (2.7) where nearly one out of every five railway undertakings assigned a rating of "poor" or "inadequate". In the area of service facilities, the condition and modernisation of passenger stations - two aspects that are particularly important in connection with passenger contact - once again received the most criticism.

The railway undertakings' ratings - 2.8 for the level of modernisation of passenger stations and 3.0 for the condition of passenger stations - were significantly more negative than for access-related issues. As in recent years, the best ratings were given for "access to training facilities" (which received a mark of 2.3) and "access to refuelling facilities" (fuelling stations) (2.1). More than two-thirds of the participating railway undertakings rated access to these facilities as good or very good.

Price trends

Operating within its statutory framework, the Bundesnetzagentur reviews the charges which railway undertakings have to pay infrastructure managers for access to railway infrastructure. The following chapter examines these charges from the market perspective.



Contents

Infrastructure access charges and retail prices

The steady rise in track access and station usage charges is having a significant impact on railway undertakings' business operations.

Infrastructure managers pass their costs for operating and maintaining railway infrastructure on to railway undertakings in the form of infrastructure access charges. Given that railway undertakings together have to spend approximately one-third of their revenue on usage charges, the level of these charges represents an important cost factor for them.

Within the scope of its legal obligations and discretion, the Bundesnetzagentur reviews the infrastructure managers pricing systems and in many cases has been able to effect improvements to the benefit of the parties with access entitlement. Reliable, non-discriminatory access rules and usage charges that are viable in the market will also continue to be essential factors for ensuring that rail transport is competitive enough to be able to maintain its current market position in the face of intermodal competition.

Level and development of track access charges

As a rule, track access charges payable to infrastructure managers must be based on the costs incurred in connection with operating and maintaining the track infrastructure. These charges can however vary greatly, depending on the operating density and general condition of the railway infrastructure.

Maintenance measures such as bridge restoration can have a significant, long-term impact on the level of track access charges. Important cost factors include not only the usage profile, age, level of modernisation and condition of the railway infrastructure but also topographical features (bridges/tunnels, costly routing).

Public funding accounts for a significant part of the financing of the rail infrastructure in Germany. Consequently, in the case of necessary infrastructure measures, for example, public funding can be the factor that decides whether the infrastructure will continue to exist.

The weighted arithmetic mean of the track access charges that infrastructure managers levied in 2015 was €4.43 per train-path kilometre. This was approximately two percent more than in the previous year. The median was €4.44 per train-path kilometre. This means that something more than half of the infrastructure managers charge more than the average track access charge of €4.43 per train-path kilometre.

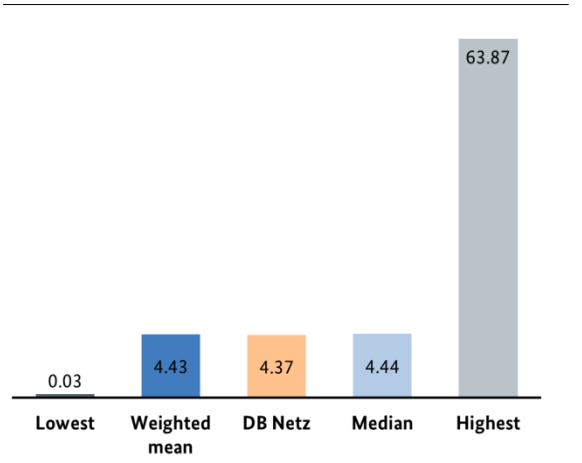


Figure 40: Range of mean track access charges in euros (2015; euros per train-path kilometre)

Track access charges have increased steadily over the last five years. Between 2011 and 2016, the track access charges railway undertakings had to pay increased by an average of approximately 15 percent in the long-distance passenger rail transport segment, by 14 percent in the short-distance passenger rail transport segment and by 13 percent in the rail freight segment. These increases are markedly higher than those for important benchmark indicators such as the consumer price index or the producer price index for industrial products. The consumer price index rose by only five percent while the producer price index for industrial products actually fell by three percent during the reporting period.

The typical cost structure of an infrastructure manager can be reproduced more precisely by combining publicly available indices of the Federal Statistical Office than by using universal indices.

The "infrastructure managers' input price index" posted a year-on-year increase of four percent, once again following the development of the consumer price index relatively closely.

Track access charges in the short-distance passenger rail transport segment in 2015 averaged €4.72 per train-path kilometre. Track access charges in the long-distance passenger rail transport segment were significantly higher. Here the average charge was €6.08 per train-path kilometre. In the rail freight segment, railway undertakings had to pay an average of €2.89 per train-path kilometre.

Development of specific DB Netz AG track access charges

Train path product	F1, long-dist. passenger rail transport	F2, passenger rail transport	F4, short-dist. passenger rail transport*	F3, standard rail freight transport
2002	5.58	3.71	3.50	2.17
2003	5.58	3.70	3.42	2.12
2004	5.79	4.17	3.63	2.28
2005	6.07	4.17	3.65	2.29
2006	6.25	4.13	3.58	2.26
2007	6.63	4.59	3.89	2.47
2008	6.80	4.70	3.99	2.53
2009	6.95	4.80	4.13	2.61
2010	7.08	4.92	4.24	2.68
2011	7.22	5.02	4.32	2.73
2012	7.39	5.13	4.42	2.80
2013	7.59	5.26	4.54	2.88
2014	7.80	5.41	4.67	2.96
2015	8.00	5.54	4.79	3.03
2016	8.20	5.68	4.92	3.10
2017	8.40	5.82	5.05	3.17
Increase 2002 - 2017	51%	57%	44%	46%
CAGR**	2.8%	3.0%	2.5%	2.6%

* Regional factors not taken into account ** Average annual rate of increase

Sources: DB Netz AG, Bundesnetzagentur

Figure 41: Development of DB Netz AG track access charges (2002-2017)

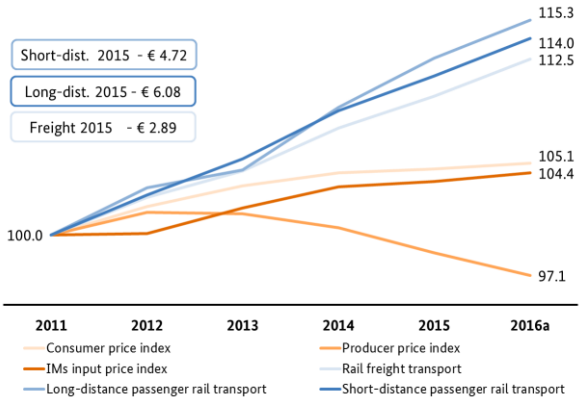


Figure 42: Development the infrastructure manager's average track access charges (2011-2016a; "a" – anticipated values; indexed 2011 = 100)

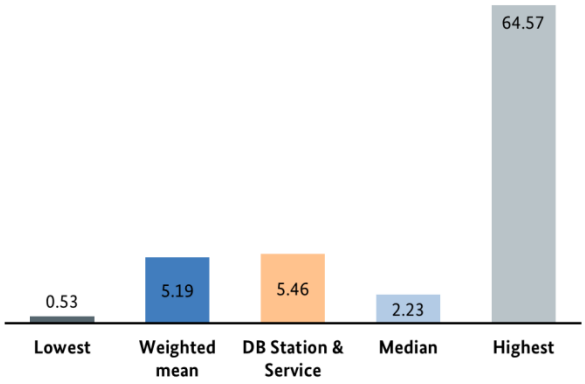


Figure 43: Range of average station charges (2015; euros per stopping point)

The Figure 41 on the previous page shows the trend seen for several of DB Netz AG's frequently demanded train-path products. The charges for individual train-path products have increased by between 44 and 57 percent since 2002. This corresponds to an annual inflation rate of between 2.5 and 3.0 percent.

Level and development of station charges

The operators of passenger stations charged an average of €5.19 per station stop in 2016. At €2.23 per station stop, the median figure is significantly lower. Thus one out of every two passenger station operators charges parties with access entitlement less than €2.23 per station stop on average. Many non-federally owned operators of passenger stations run basic stations. DB Station&Service AG on the other hand also operates significantly larger train stations. Correspondingly, its average station charge (€5.46) is somewhat higher than the overall average and markedly higher than the median.

The charges imposed for train stops at passenger stations have also steadily increased, parallel to the trend seen in track access charges. The Bundesnetzagentur expects the average station charge to have increased by approximately 10 percent during the period from 2011 to 2016. During the same period, important benchmark indices indicate growth rates of four to five percent. Producer prices fell by three percent.

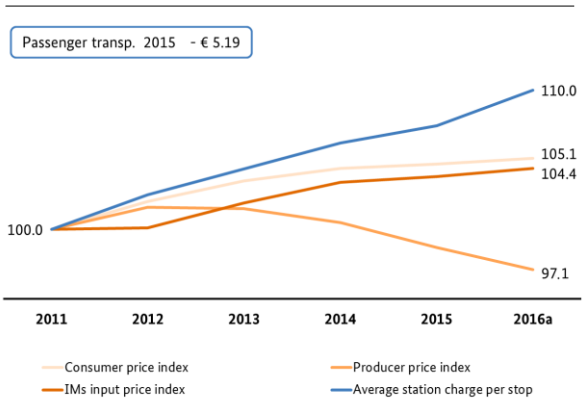


Figure 44: Development of infrastructure manager's average station charges (2011-2016a; "a" – anticipated values; indexed 2011 = 100)

Ratings for and development of pricing systems

As part of the Bundesnetzagentur's annual market survey, railway undertakings have the opportunity to rate the level of non-discrimination and the price performance of the infrastructure managers' pricing systems.

In recent years, the ratings for all of the points pertaining to the level of non-discrimination in the pricing systems have improved, in some cases significantly.

This area received a good overall rating - 2.4 - for the first time in this year's survey. Participating railway undertakings saw the greatest year-on-year improvements in the area of traction current charge systems. Their ratings of the pricing systems for marshalling yards / train formation facilities, freight terminals and maintenance facilities also improved once again.

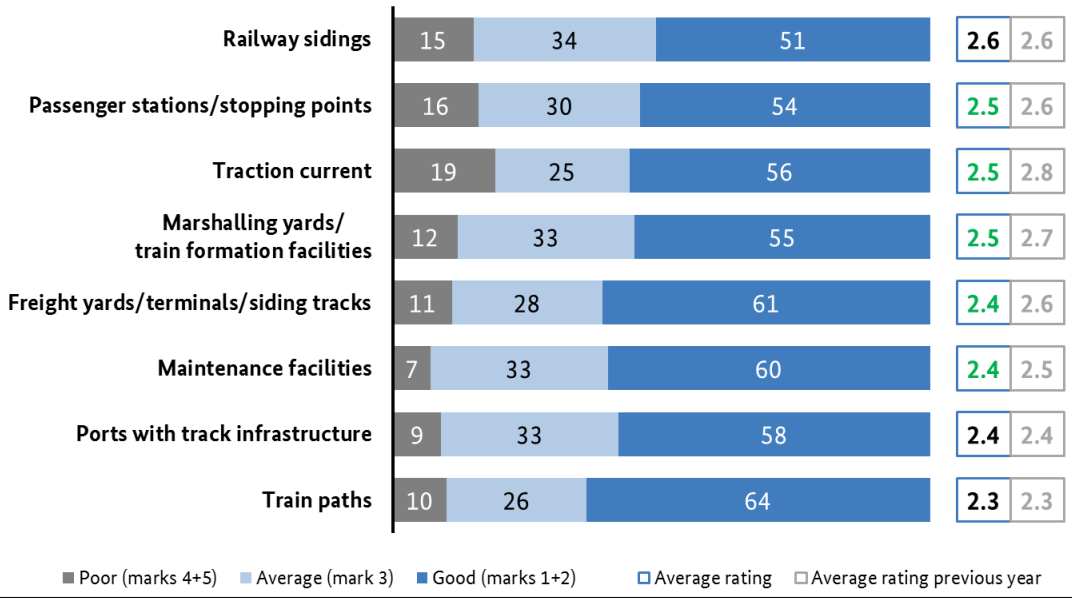


Figure 45: Ratings for the level of non-discrimination in IMs' pricing systems (2016; ratings shares in percent and average marks)

Figure 46: Trend in the ratings for the level of non-discrimination in IMs' pricing systems (2011-2016)

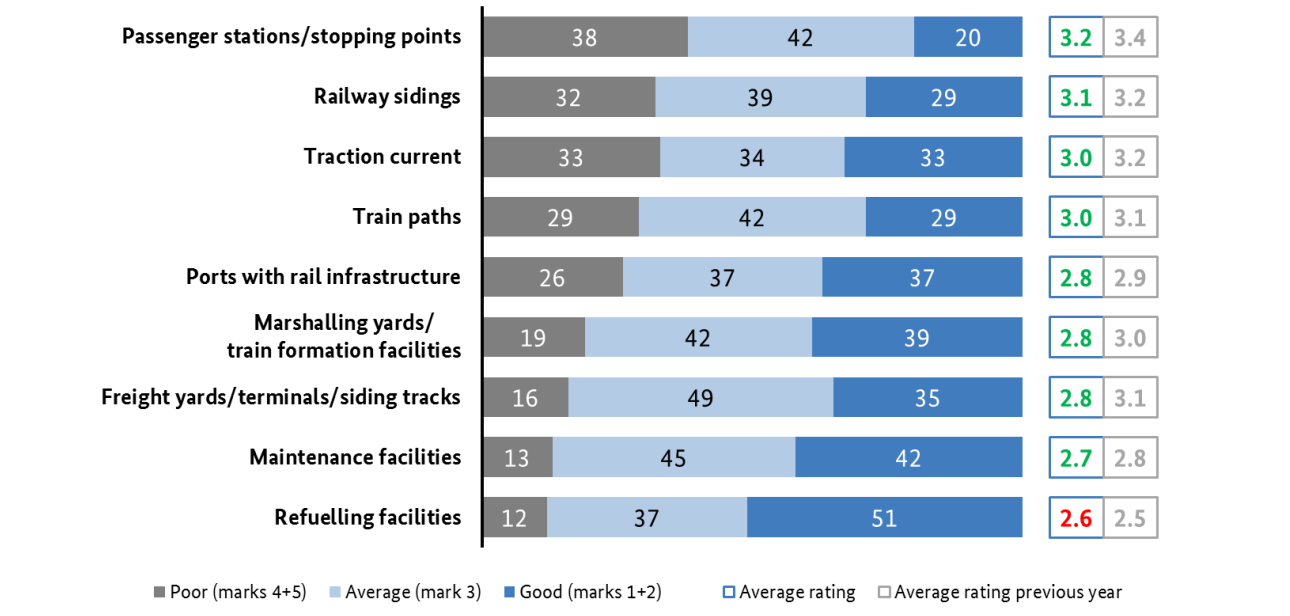


Figure 47: Infrastructure managers' price-performance ratio (2016; rating shares in percent and average marks)

The railway undertakings rated the infrastructure managers' price-performance ratio as satisfactory. Here too, there were in some cases significant improvements in the ratings assigned by the railway undertakings.

The railway undertakings continue to see the greatest deficits in the relationship between the prices charged and the services provided for passenger stations (mark: 3.2), as well as for storage sidings (mark: 3.1) and traction current (mark: 3.0).

The ratings for price performance improved in all areas in 2015, except with respect to refuelling facilities (2.6).

Viewed over a longer period, the ratings for price performance have gradually improved only in recent years. Parties with access entitlement continue to see the greatest potential for improvement in this area, with respect to points that are subject to regulation.

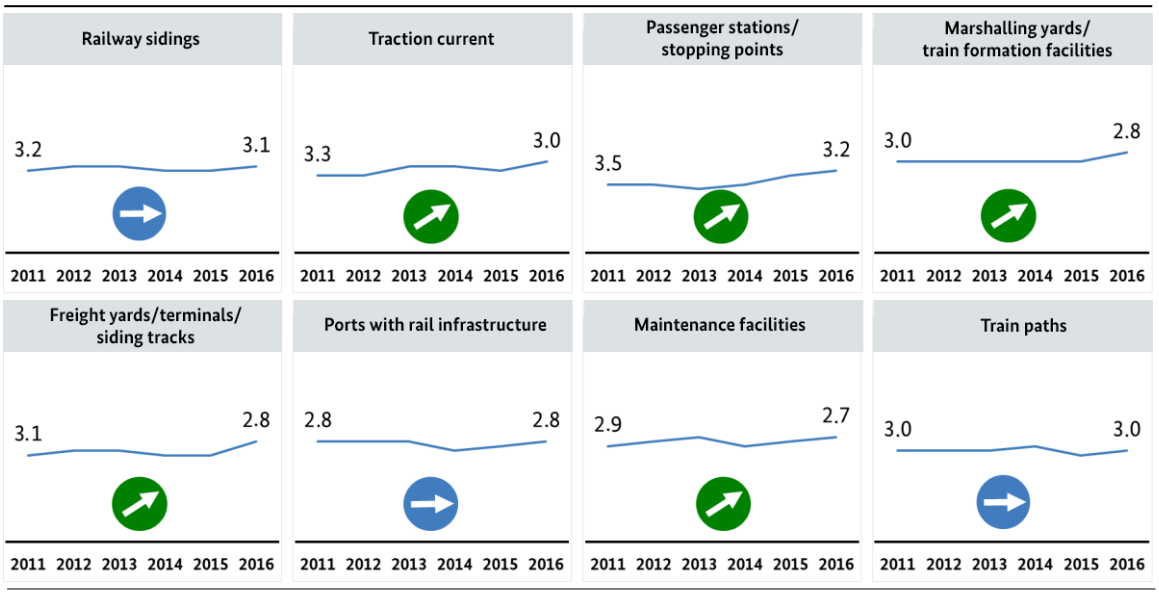


Figure 48: Development of the infrastructure managers' price-performance ratios (2011-2016)

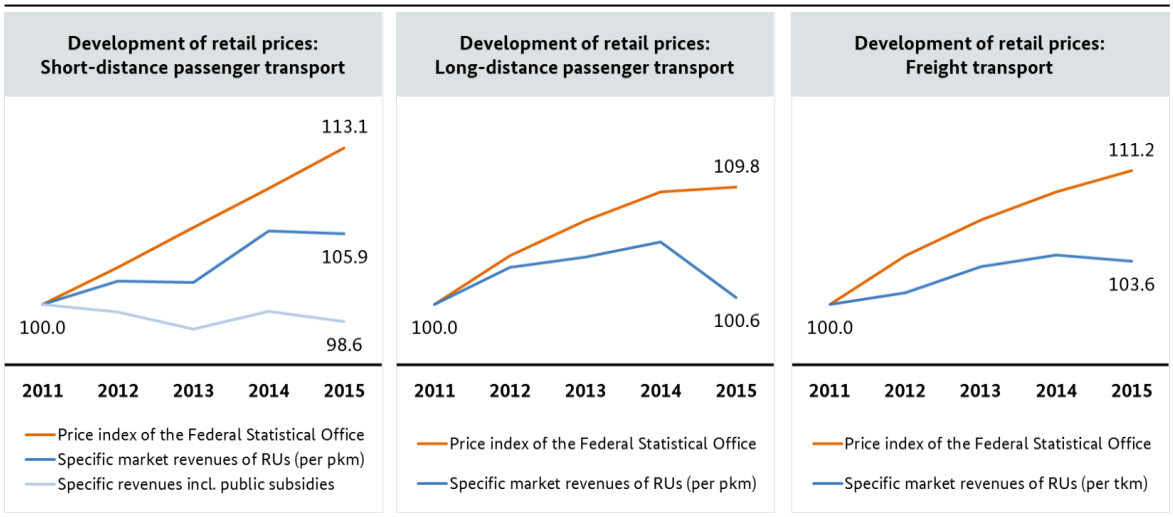


Figure 49: Development of retail prices (2011-2015; indexed 2011 = 100)

Retail prices

The Bundesnetzagentur's regulatory activities in the railway sector do not directly affect prices for passengers of railway undertakings because the regulated infrastructure usage charges comprise only part of the retail price. However, ticket prices - alongside convenience and the range of the offerings - are very important when assessing how attractive passenger rail services are or how competitive they are at intermodal level. The same applies to transport charges in the rail freight market.

For its examination of how retail prices have developed, the Bundesnetzagentur draws on indices published by the Federal Statistical Office and on its own data analyses. The indices published by the Federal Statistical Office show the development of prices for precisely-defined services based on the same fixed quantities, whereas the average revenue per tonne-kilometre or passenger-kilometre as determined by the Bundesnetzagentur additionally reflects differences in the quantities of the demanded products or services.

For example, changes in the demand for rail passes or discount offers such as special prices or the Bahncard (railcard) can impact the development of these particular market revenues.

This explains why the price indices published by the Federal Statistical Office tend to reflect the perspective of end customers who follow the development of prices for specific services. By contrast, examining specific charges allows for a more precise assessment of the revenue development from the railway undertakings' perspective.

Ticket prices in the short-distance passenger rail transport segment have increased steadily in recent years. The increase seen between 2011 and 2015 averaged 13.1 percent. On the other hand, looking at the railway undertakings, fare revenue per passenger-kilometre (pkm) increased by only six percent and total revenue per passenger-kilometre, including public subsidies, actually fell by one percent. Compared to 2011, railway undertakings generated less income in 2015 from transporting a passenger over the same distance, including subsidies from

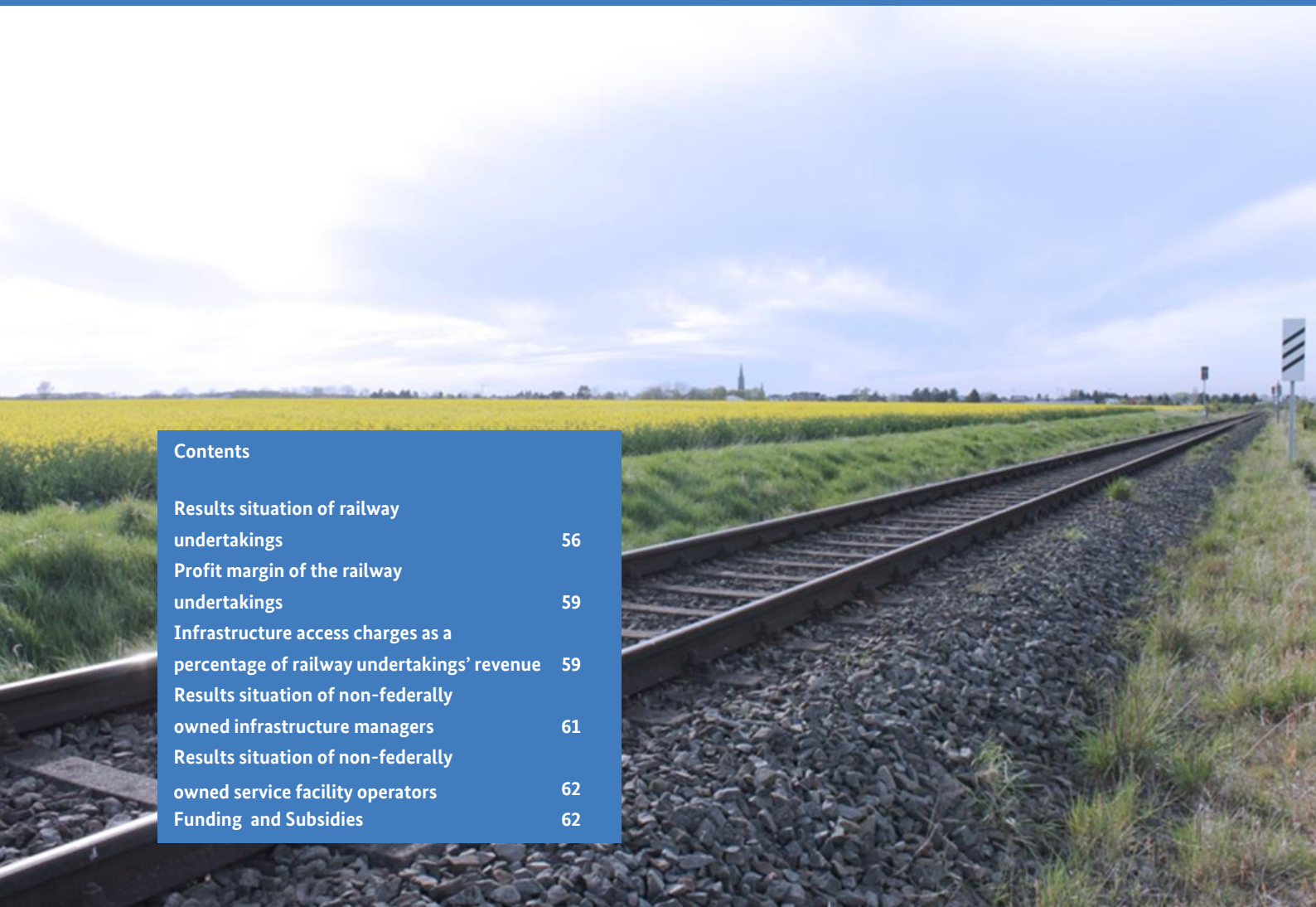
regional transport authorities, despite the fact that ticket prices had risen.

Ticket prices in the long-distance passenger rail transport segment have also risen faster than the revenues generated per passenger-kilometre. The marked decline in these revenues in 2015 was due to the greater number of reduced-price tickets for long-distance bus service being offered by the intermodal competition that has grown significantly in recent years.

In the case of the freight rail transport market, the railway undertakings' average revenue per tonne-kilometre (tkm) also fell as a result of the significantly larger share of the market held by the competition in 2015 and the higher average train capacity utilisation. By contrast, the freight prices reported to the Federal Statistical Office rose once again.

Cost development and results situation of the railway undertakings

The Bundesnetzagentur monitors the economic situation of enterprises operating in the railway market. As part of these activities, it examines company-specific developments and developments over specified periods of time.



Contents

Economic situation of enterprises operating in the railway market

In 2015, the economic situation of companies operating in the rail transport market deteriorated further over the previous year.

The Bundesnetzagentur has asked railway undertakings and infrastructure managers since 2012 to provide it business information which it then compiles and presents for the previous three years. For these analyses, the Bundesnetzagentur uses only the feedback it receives; it conducts a plausibility check on it. It must be borne in mind however that not all railway undertakings had completed their annual financial statements before the date on which the market survey was conducted. In the case of analyses of specific individual segments, only those undertakings that operate exclusively in the particular segment were included in the calculations.

Results situation of railway undertakings

A total of 67 percent of the railway undertakings surveyed reported positive operating results for the year 2015. This is a marked decline over last year's 71 percent. This means that one-third of the railway undertakings did not generate enough revenue to cover their costs in their core business during the reporting year.

These differences can be seen in the detailed examination of the individual transport services in Figure 50. The situation for enterprises in the short-distance passenger rail transport segment is particularly striking. Only about half of these enterprises were able to report positive operating results. Their share has fallen steadily over the last three years and reached 53 percent in 2015.

On the positive side, these 53 percent represent some 91 percent of the market, measured in train-path kilometres. These 53 percent also include all federally owned enterprises. Consequently, the enterprises that did not generate positive results in their core business segments were primarily small privately owned enterprises.

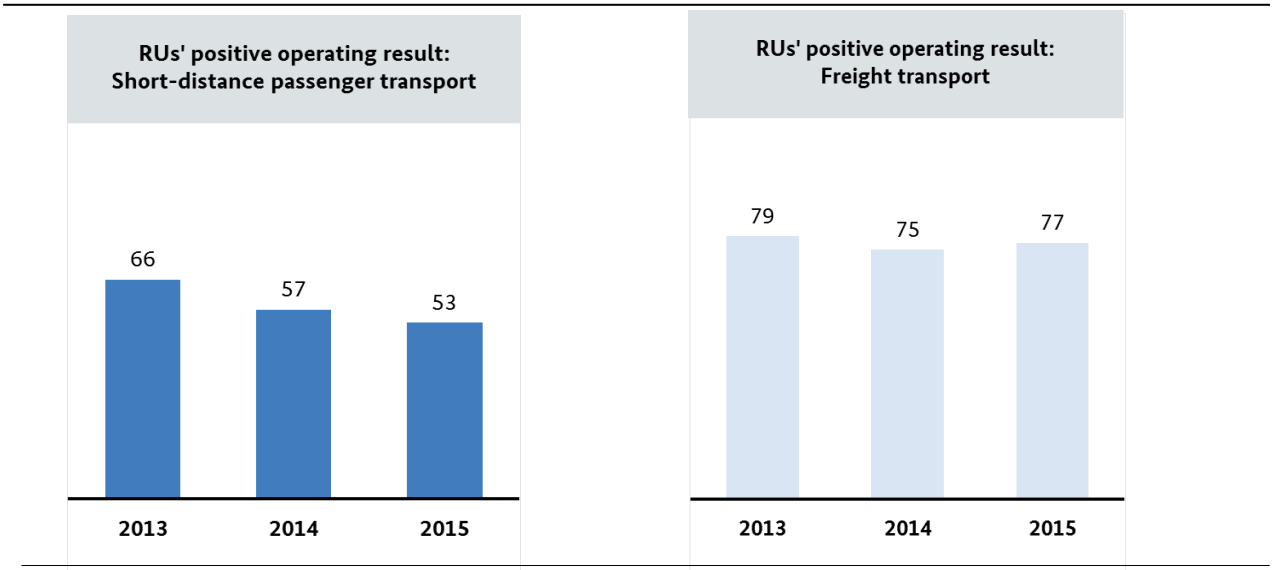


Figure 50: Market overview of railway undertakings' operating results in short-distance passenger rail transport and rail freight transport (2013-2015; percentage)

The situation was different in the rail freight segment. Here, 77 percent of the enterprises generated positive results for a slight increase over the previous year. However, enterprises that did not produce positive results accounted for two-thirds of the market, measured in train-path kilometres. For this reason, when all railway undertakings are taken into account, the rail freight segment reported a negative overall operating result.

The deterioration of the overall market situation is reflected in the range of the individual operating results (Figure 51). The highest positive operating result - €570 million - was generated in 2013. By the year 2015, this figure had fallen significantly to €393 million. At the same time, the maximum loss increased noticeably to -€221 million. This figure had been -€86 million in the previous financial year. Despite the large spread in the individual results, the average profit calculated on the basis of all enterprises - €10 million - and the average loss - -€5 million - has remained stable for several years now.

All in all, it can still be said that the enterprises' economic situation is acceptable. However, federally owned enterprises accounted for 93 percent of the positive operating results seen across all railway enterprises and types of transport services examined here.

To provide a better basis for comparing the results situation in the individual transport segments, the operating results are calculated according to different measures of performance (Figure 52). Train-path kilometres and passenger-kilometres (short-distance passenger rail transport, long-distance passenger rail transport) or tonne-kilometres (rail freight transport) were used as the respective unit of measure.

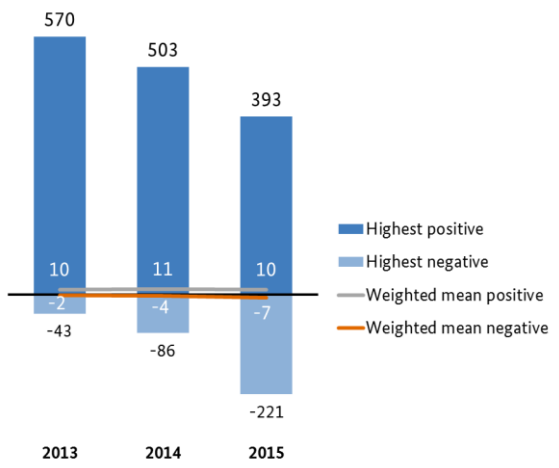


Figure 51: Range of railway undertakings' operating results (2013-2015; in € million)

The result per passenger-kilometre in the short-distance passenger rail transport segment has exhibited a negative trend over the last several years. Further, non-federally owned railway enterprises generated an operating result of -0.01 cent per passenger-kilometre, slightly less than the break-even point.

Looking at train-path kilometres travelled, the long-distance passenger rail transport segment generated a result of €1.23 per train-path kilometre in 2015, noticeably more than the results in the short-distance passenger rail transport segment where this figure fell to €1.03. The forward projection of this time series does not however indicate that these results will stabilise any time in the near future (Figure 52).

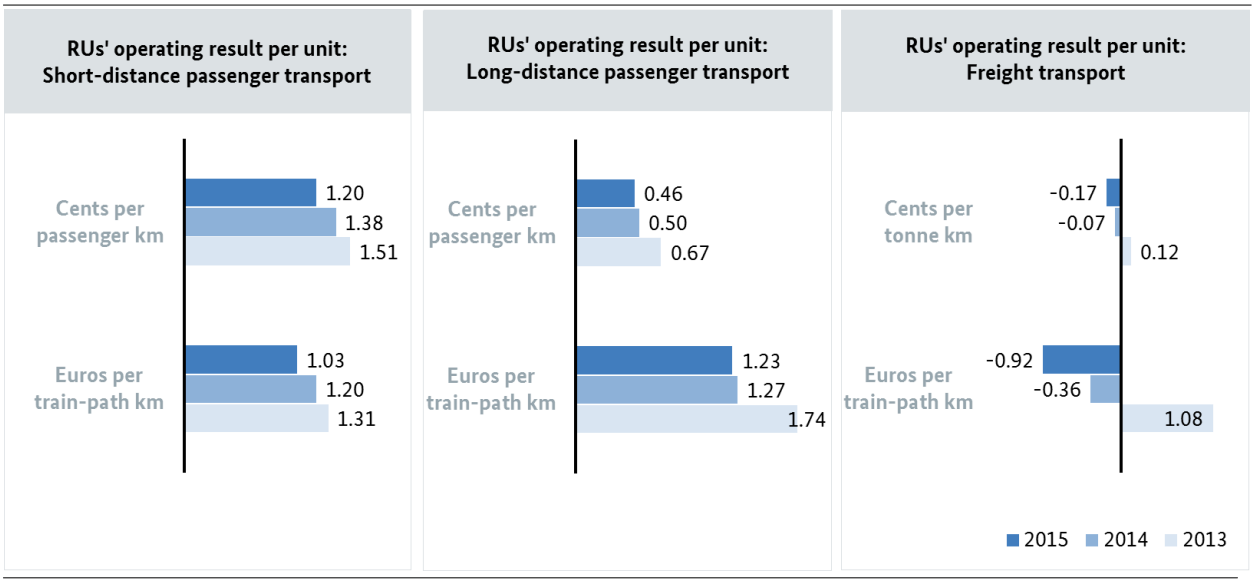


Figure 52: Result per passenger/tonne kilometre by type of transport service (2013-2015; in cents/euros)

In the rail freight transport segment, railway undertakings reported negative operating results - likewise with a downward trend - in terms of both train-path kilometres and tonne-kilometres. When non-federally owned undertakings are examined separately, this group of undertakings generated a positive operating result of €0.44 per train-path kilometre and €0.06 per tonne-kilometre.

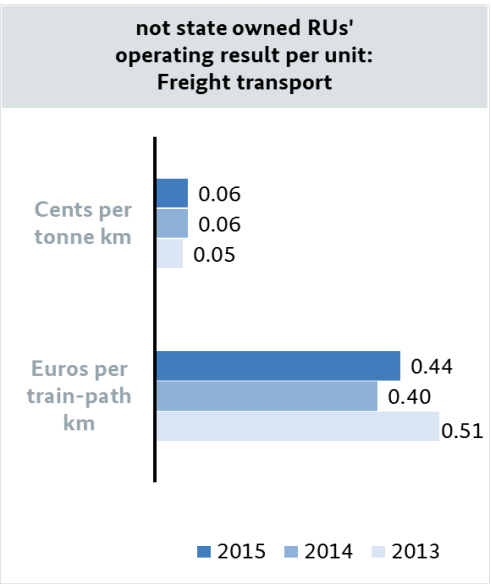


Figure 53: Operating results per tonne-kilometre/train-path kilometre of not state owned railway undertakings in the freight rail transport segment (2013-2015; in cents/euros)

Profit margin of the railway undertakings

The Bundesnetzagentur uses the enterprises' profit margin as the basis for calculating the economic efficiency of railway undertakings (Figure 54). The profit margin is calculated using the ratio of profit to revenue. It shows how much an enterprise actually earns, measured in relation to its revenue.

The level of the railway undertakings' profit margin varied greatly between the individual transport segments.

However, all transport segments reported, in some cases significant, declines in their profit margins compared to previous years.

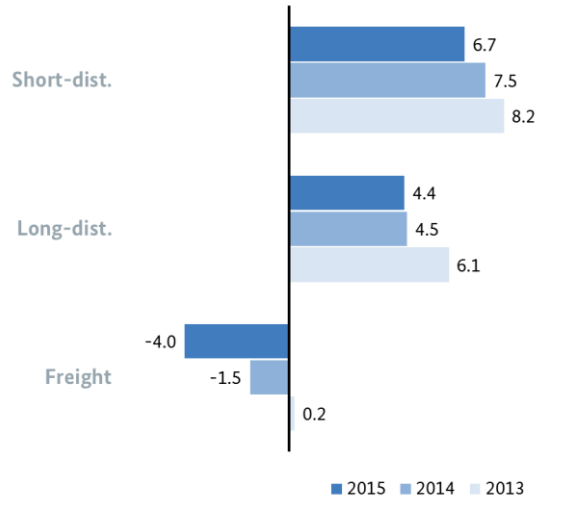


Figure 54: Railway undertakings' profit margins (2013-2015; in percent)

The profit margin was generally positive in the passenger rail transport segment, with the year-on-year decline being taken into account.

The profitability lead seen in the short-distance passenger rail transport segment was due primarily to federally owned enterprises. By contrast, the profit generated by non-federally owned enterprises averaged only -0.1 percent.

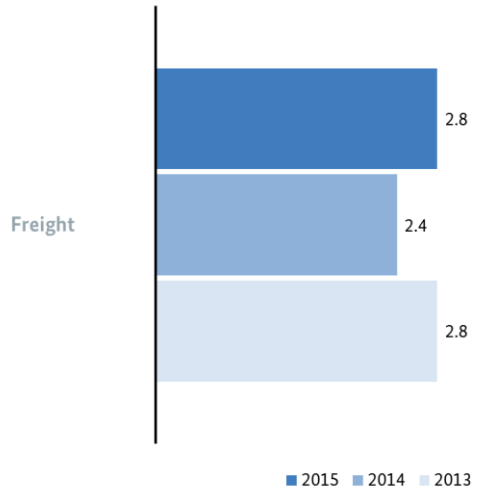


Figure 55: Profit margins of non-federally owned railway undertakings in the rail freight transport segment (2013-2015; in percent)

The profit margins in the rail freight transport segment are significantly smaller. The profit margin was still slightly positive in 2013. It has however slipped into the red over the last two years and fell to -4.0 percent in 2015. A detailed analysis reveals a contrast to the picture seen for rail passenger transport. Non-federally owned railway undertakings in the rail freight transport segment reported, as a whole, a positive profit margin of 2.8 percent in 2015 (Figure 55). The margin of federally owned enterprises however pulls the overall figure into negative territory.

Infrastructure access charges as a percentage of railway undertakings' revenue

Placing infrastructure access charges in relation to total revenue (Figure 56) reveals marked differences between the individual types of service.

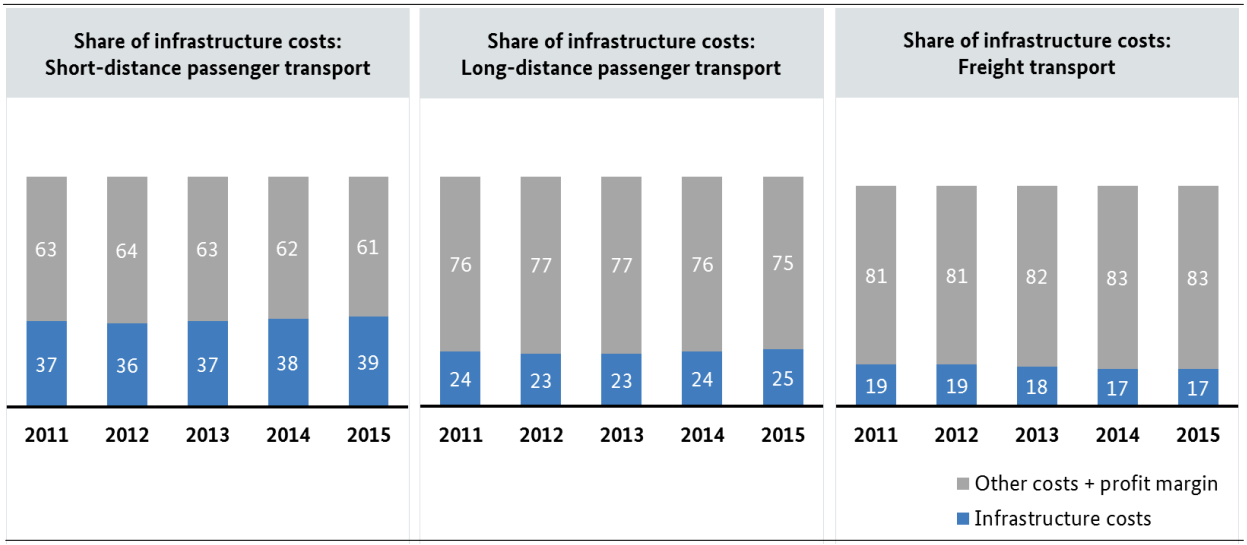


Figure 56: Share of infrastructure access charges as a percentage of railway undertakings' revenue, by mode of transport (2011-2015; shares in percent)

Infrastructure access charges accounted for the largest share of revenue: 39 percent in the short-distance passenger rail transport segment which has reported moderate but steady growth over the years.

At 25 percent, the share in the long-distance passenger rail transport segment was markedly lower but has remained quite stable over the years. By contrast, the share of revenue generated through infrastructure access charges in the rail freight transport segment has declined over time and was only 17 percent in 2015.

A further breakdown of the infrastructure usage charges paid shows that track access charges constituted the largest share of the infrastructure access charges for all transport services: between 76 and 88 percent.

Station charges accounted for 18 percent of the infrastructure access charges paid by short-distance passenger rail transport services due to their greater use of stations. By contrast, this figure was only eight percent in the long-distance passenger rail transport segment.

Charges for other types of service facilities particularly made a difference in the rail freight segment where they represented 24 percent of infrastructure access charges paid. This is due first and foremost to this segment's greater use of marshalling yards, storage sidings and similar infrastructure. Service charges for other service facilities were of secondary importance in the passenger rail transport segment.

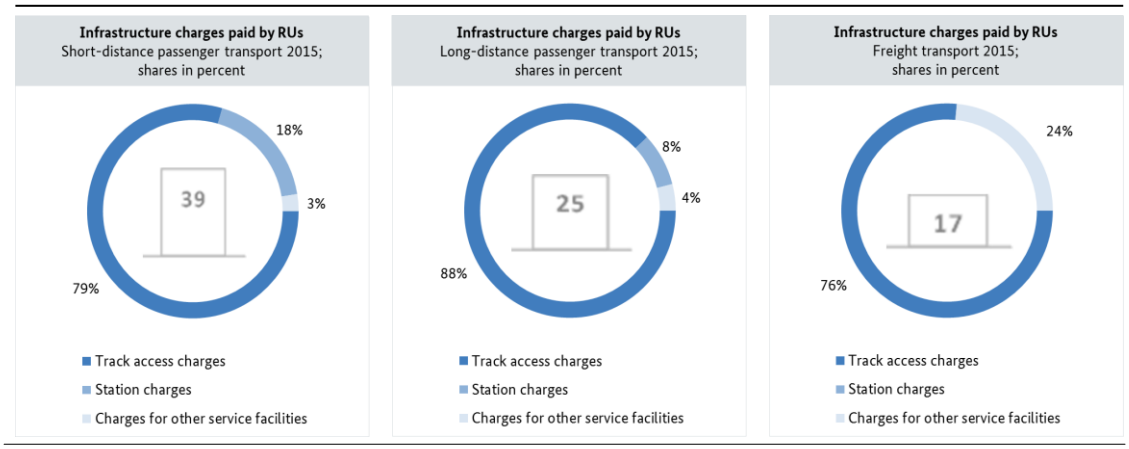


Figure 57: Breakdown of the infrastructure access charges (2015; shares in percent)

Results situation of non-federally owned infrastructure managers

As in the previous year, the managers of non-federally owned railway infrastructure continued to expend more on infrastructure than they generated through track access charges (Figure 58). As a result they continue to be dependent on public subsidies.

Short-distance passenger rail transport is the source of most - 82 percent – of the revenues generated from track access charges. Rail freight transport accounts for the other one-fifth.

At 43 percent, material expenditure is the largest block of expenses, followed by personnel costs (22 %). Depreciation is also included in total expenditure and represents a smaller share of 13 percent.

Looking at financing, it was noted that at 33 percent, the average own-funds ratio of the non-federally-owned infrastructure managers was slightly less than the own-funds ratio of the overall market's average of approximately 35 percent.

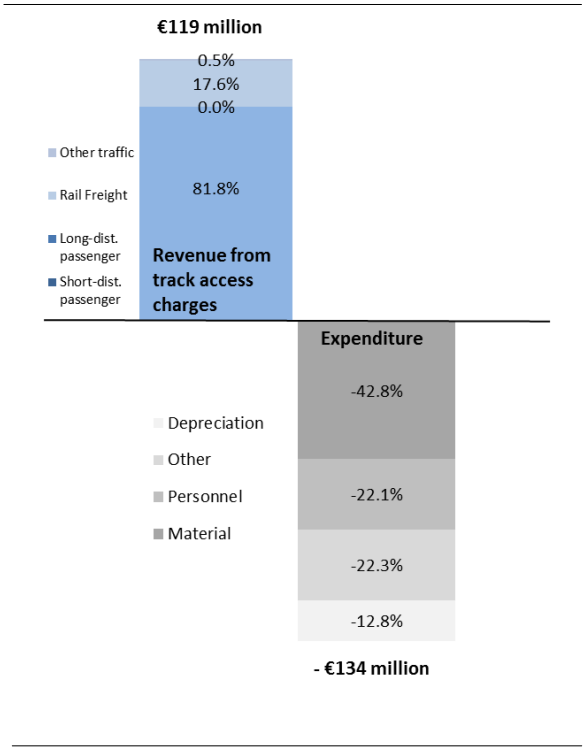


Figure 58: Revenue and expenditure of non-federally owned infrastructure managers (2015; shares in percent)

Results situation of non-federally owned service facility operators

The results situation of non-federally owned service facility operators improved slightly during the last business year.

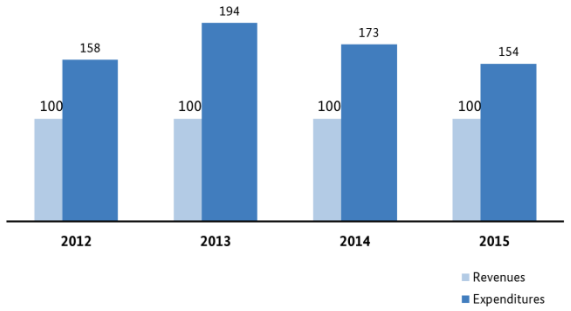


Figure 59: Development of revenue and expenditure of non-federally owned service facility operators (2012-2015; in percent)

However, expenditure for maintenance, depreciation and the operation of service facilities continues to exceed the revenue generated from the charges for use of the infrastructure. At 54 percent, the shortfall in 2015 continued to be significant.

It can generally be assumed that the function of many non-federally owned service facilities is simply to support the respective company's primary business purpose, similarly to non-federally owned infrastructure managers. Therefore not every enterprise is geared to generating a profit. In many cases, railway operations do not constitute a core business activity for these enterprises. Therefore any shortfalls are offset by other business units.

Funding and Subsidies

In 2015, the infrastructure managers surveyed reported that they had received approximately €3 billion in external funding to invest in existing infrastructure. They also reported spending just under €0.25 billion of their own funds for this. All in all, some €3.3 billion were invested in existing infrastructure. The federally owned infrastructure managers are required under the Service Level and Funding Agreement to contribute funds of their own to investments in existing infrastructure.

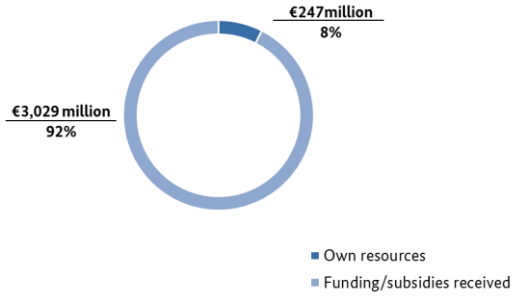


Figure 60: Investment in the existing infrastructure broken down by own resources and subsidies
(2015; in million euros/percentages)

Some €2 billion in external funding and nearly €0.7 billion in own funds were invested in the modernisation and expansion of the infrastructure. The enterprises surveyed invested a total of €2.7 billion to modernise and expand the infrastructure (Figure 61).

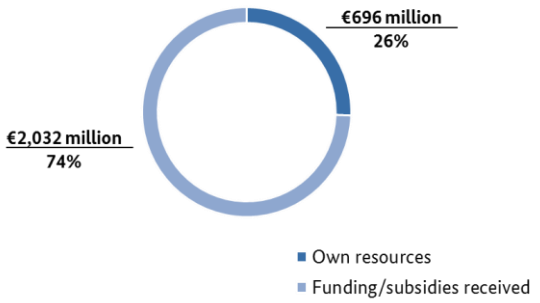


Figure 61: Modernisation and expansion of infrastructure broken down by own resources and subsidies (2015; in million euros/percentages)

At 74 percent, the external funding rate for the modernisation and expansion of the infrastructure was lower than the external funding rate of 92 percent for investment in existing infrastructure.

The federal government provided €4.1 billion to subsidise investment measures totalling €5.1 billion in 2015. These funds represented 82 percent of the total investment. Germany's federal states and local authorities provided a further 16 percent (€0.8 billion) while EU funding covered another two percent.

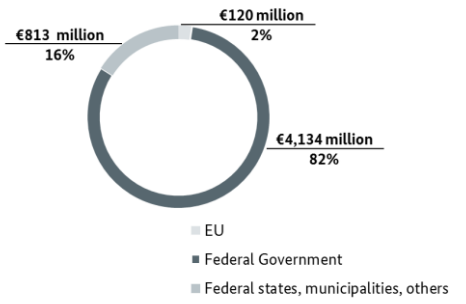
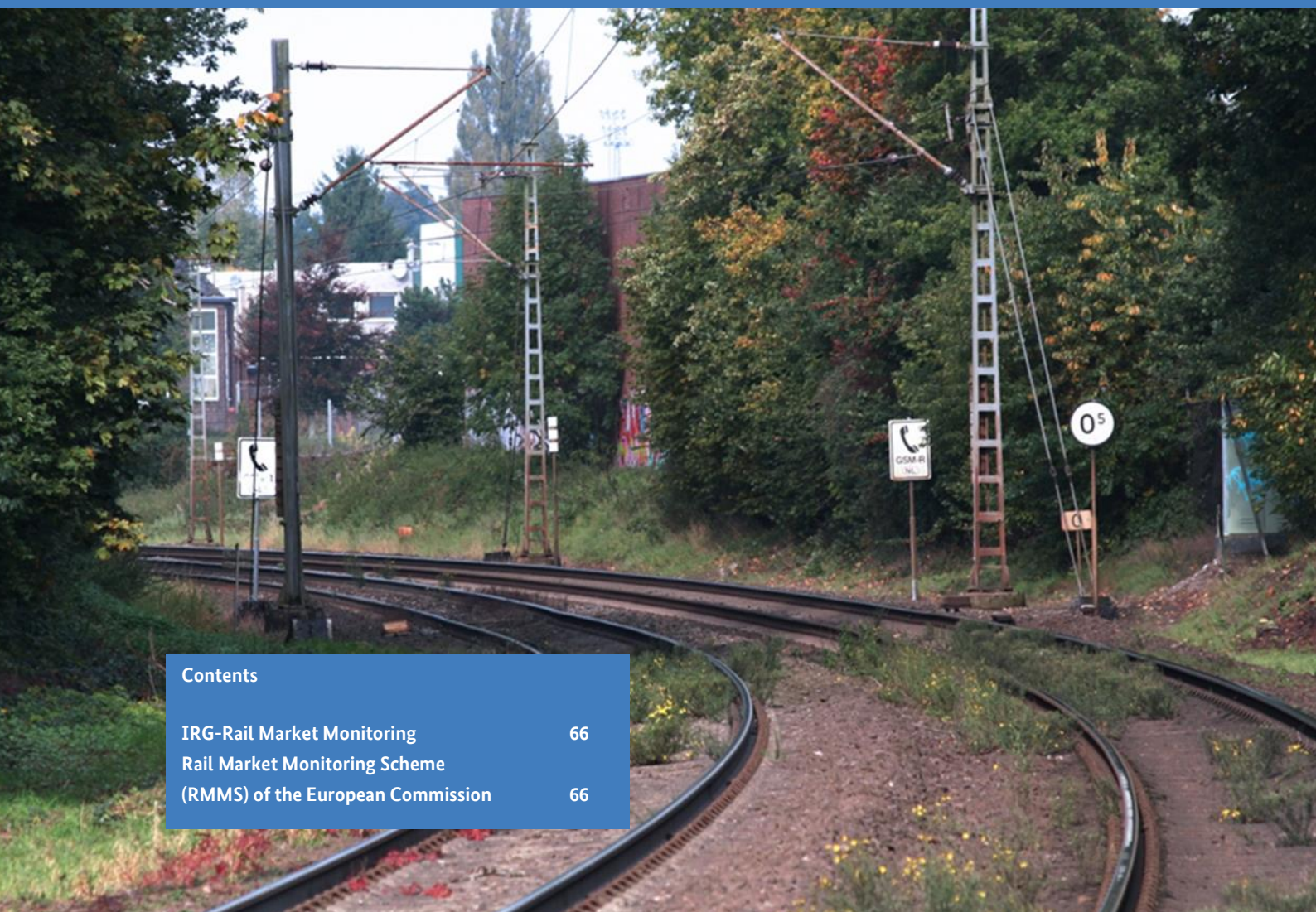


Figure 62: Funding sources of investment measures (2015; in million euros/percentages)

IRG-Rail and the Rail Market Monitoring Scheme

Participation in international market monitoring activities and conducting an international market analysis have become firmly established in the railway segment. Member States have been required to provide data for the European Commission's Rail Market Monitoring Scheme since 2015.



Contents

International market monitoring

Competition in the European railway markets continued to develop positively in the year under review. The competitors of well-established railway undertakings managed to gain further market shares both in the passenger and the freight transport markets.

IRG-Rail Market Monitoring

Since it was established in 2011, IRG-Rail (Independent Regulators' Group - Rail) has developed into an important body at European level with respect to the harmonisation of the European railway market.

This year, the Bundesnetzagentur was once again actively involved in the international Market Monitoring Working Group and in their activities. IRG-Rail issues a joint report on its homepage during the first quarter of every year. This report can be downloaded at no cost.

The latest - fourth - joint report of the IRG-Rail Market Monitoring Group includes interesting information and assessments regarding railway infrastructure, rail passenger and rail freight transport, and service facilities.

It also contains information about market trends and special measures.

http://www.irg-rail.eu/public-documents/2016/

Rail Market Monitoring Scheme (RMMS) of the European Commission

Pursuant to Article 15 (4) of Directive 2012/34/EU, the European Commission is required to issue a report on the railway market in Europe every two years and submit it to the European Parliament.

The report examines trends in the railway markets as per the above-mentioned Directive, as well as the general framework conditions, the use of access rights, obstacles affecting more efficient rail transport services and the need for legislation. It also maps out the development of the internal market for service facilities, and the outlines framework conditions such as investment in the infrastructure, price trends, quality of service, public service obligations, the employment trend and the social environment.

The European Commission issued Implementing Regulation (EU) 2015/1100 in July 2015. This Regulation requires Member States to provide the European Commission certain information regarding the development of the railway markets. This is done as part of the Rail Market Monitoring Scheme (RMMS).

The European Commission’s report is available free of charge at:

http://ec.europa.eu/transport/modes/rail/market/market_monitoring_en.htm

The latest report was issued in December 2016.

ANNEX

Annex

Method used for rating influencing factors

The sections "Ratings for access to rail infrastructure" and "Ratings for and development of pricing systems" outline the views of railway undertakings and regional transport authorities regarding key factors that influence the railway market.

The findings outlined in these sections are based on the feedback that railway undertakings and regional transport authorities responsible for short-distance passenger rail transport service provided for the annual market survey. As part of this survey market players are asked to rate issues relating to access and non-discrimination. The scale used for these ratings ranged from "1 - Excellent, no need for action" to "5 - Inadequate, urgent action necessary". Even though this part of the questionnaire was optional for the respondents, many of the railway undertakings offered their assessment of the current market situation. As a result, the published results reflect the market situation and can thus be regarded as representative. The order of similar indicators in the ratings particularly reveals the areas where railway undertakings see the most problems.

Since the railway undertakings usually assess the market from their point of view at the time of the survey, these findings – unlike the other analyses presented here – refer to the year in which the Bundesnetzagentur conducted the survey (2016).

DB Netz AG's track access charges, 2002 to 2017

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Base price (€)																
FPlus	n.v	8.30	8.30	8.30	8.30	7.90	8.09	8.30	8.38	8.55	8.76	9.00	9.26	9.50	9.74	9.97
F1	3.38	3.38	3.51	3.68	3.79	4.02	4.12	4.21	4.29	4.38	4.48	4.60	4.73	4.85	4.97	5.09
F2	2.25	2.24	2.53	2.53	2.50	2.78	2.85	2.91	2.98	3.04	3.11	3.19	3.28	3.36	3.44	3.53
F3	2.17	2.12	2.28	2.29	2.26	2.47	2.53	2.61	2.68	2.73	2.80	2.88	2.96	3.03	3.10	3.17
F4	2.12	2.07	2.20	2.21	2.17	2.36	2.42	2.50	2.57	2.62	2.68	2.75	2.83	2.90	2.98	3.06
F5	2.05	2.02	2.03	1.74	1.76	1.82	1.86	1.90	1.90	1.94	1.99	2.04	2.10	2.15	2.20	2.25
F6	1.93	1.92	2.00	2.05	2.06	2.13	2.18	2.25	2.31	2.36	2.64	2.71	2.79	2.86	2.94	3.01
Z1	2.12	2.11	2.13	2.13	2.14	2.21	2.26	2.34	2.40	2.45	2.74	2.81	2.89	2.96	3.03	3.11
Z2	2.20	2.19	2.20	2.20	2.21	2.29	2.34	2.42	2.48	2.53	2.82	2.89	2.97	3.05	3.13	3.21
S1	1.48	1.45	1.46	1.46	1.46	1.55	1.59	1.64	1.70	1.73	1.77	1.82	1.87	1.92	1.97	2.02
S2	n.v	2.09	2.09	2.09	2.09	2.09	2.14	2.20	2.26	2.31	2.37	2.43	2.50	2.56	2.63	2.70
S3	n.v	n.v	n.v	2.51	2.51	2.51	2.57	2.64	2.70	2.75	2.82	2.89	2.97	3.05	3.13	3.21
Product factors																
Passenger transport train paths																
Express train path	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Long-distance regular-interval train path	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Short-distance regular-interval train path	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Economy train path	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Traction unit train path (passenger transp.)			1.00	1.00	1.00	0.65	0.65	0.65	0.65	0.65	0.65					
Freight transport train paths																
Express train path	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Standard train path	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Feeder train path	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Traction unit train path (freight transp.)			0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Other surcharges																
Utilisation factor	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20					
Deviation from minimum speed (factor)							1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Load component rail freigt + 3,000t (in €)*	1.33	1.33	1.33	0.59	0.53	0.90	0.92	0.92	0.92	0.94	0.96	0.98	0.98	0.98	1.00	1.00
NDTAC surcharge **												1.00%	1.50%	2.00%	2.50%	2.50%

Source: DB Netz AG

* Prior to 2007: surcharge already payable starting from 1,000 t; indicated surcharge applies to 3,000 t

** Only applies when less than 90 percent of the wagons making up the freight train fulfil the requirements of the Technical Specification for Interoperability (TSI) Noise; the surcharge was one percent until 31 May 2014.

List of figures

List of abbreviations

AEG	General Railway Act
BAG	Federal Office of Goods Transport
CAGR	Compound Annual Growth Rate
GDP	Gross domestic product
DB	Deutsche Bahn
EBA	Federal German Railway Authority
EIBV	Rail Infrastructure Usage Regulations
ERegG	Railway Regulation Act
EU	European Union
RU	Railway undertaking
HKX	Hamburg-Köln-Express GmbH
IM	Infrastructure Managers
IRG-Rail	Independent Regulator's Group-Rail
km	Kilometre
pkm	Passenger-kilometre
RMMS	Rail Market Monitoring Scheme
t	Tonnes
tkm	tonne kilometre
TSI	Technical Specification for Interoperability

Legal Notice

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