Bundesnetzagentur

Railway Market Analysis 2015

December 2015

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**Bundesnetzagentur für Elektrizität, Gas,
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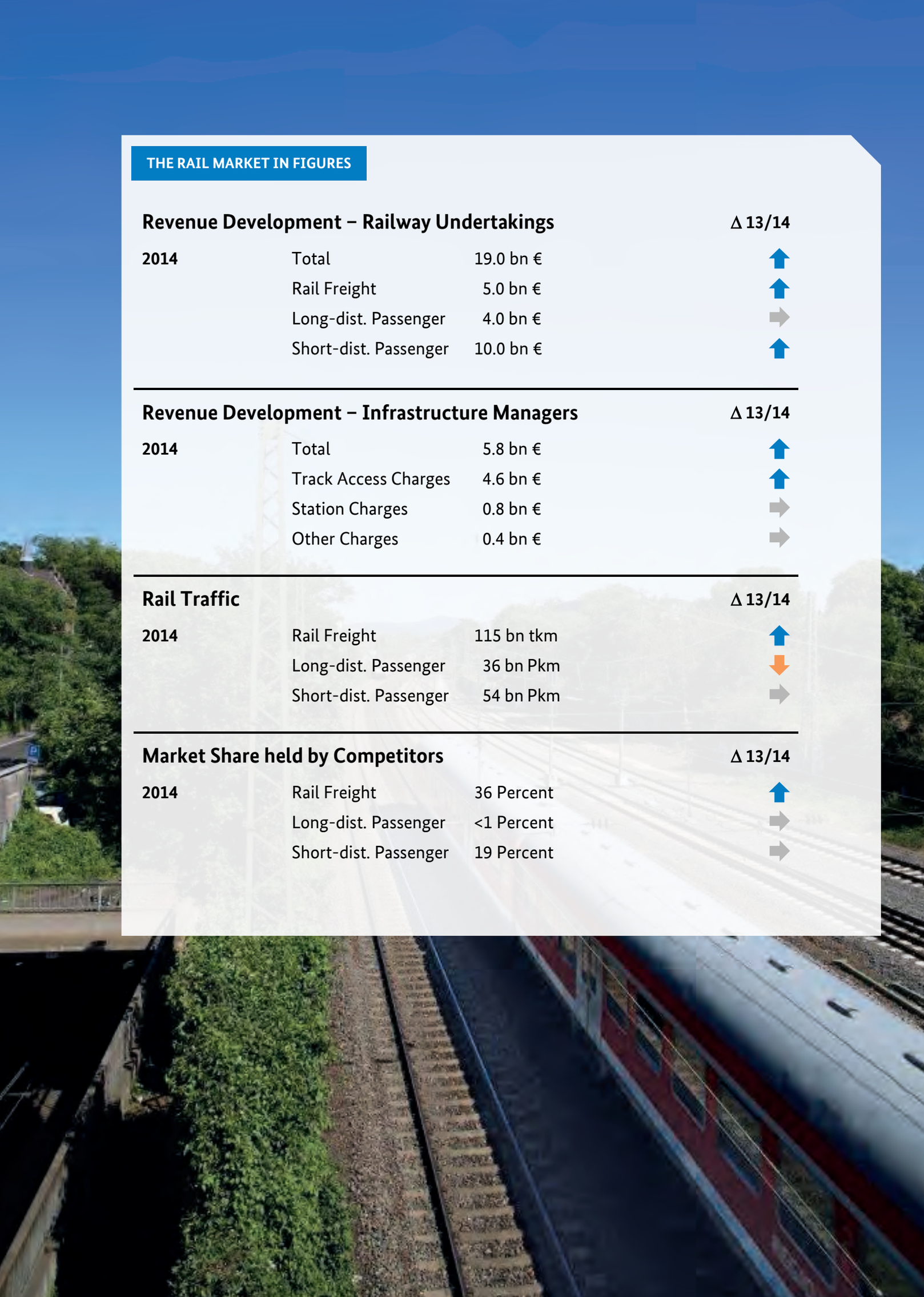


THE RAIL MARKET IN FIGURES

Revenue Development – Railway Undertakings			Δ 13/14
2014	Total	19.0 bn €	↑
	Rail Freight	5.0 bn €	↑
	Long-dist. Passenger	4.0 bn €	→
	Short-dist. Passenger	10.0 bn €	↑

Revenue Development – Infrastructure Managers			Δ 13/14
2014	Total	5.8 bn €	↑
	Track Access Charges	4.6 bn €	↑
	Station Charges	0.8 bn €	→
	Other Charges	0.4 bn €	→

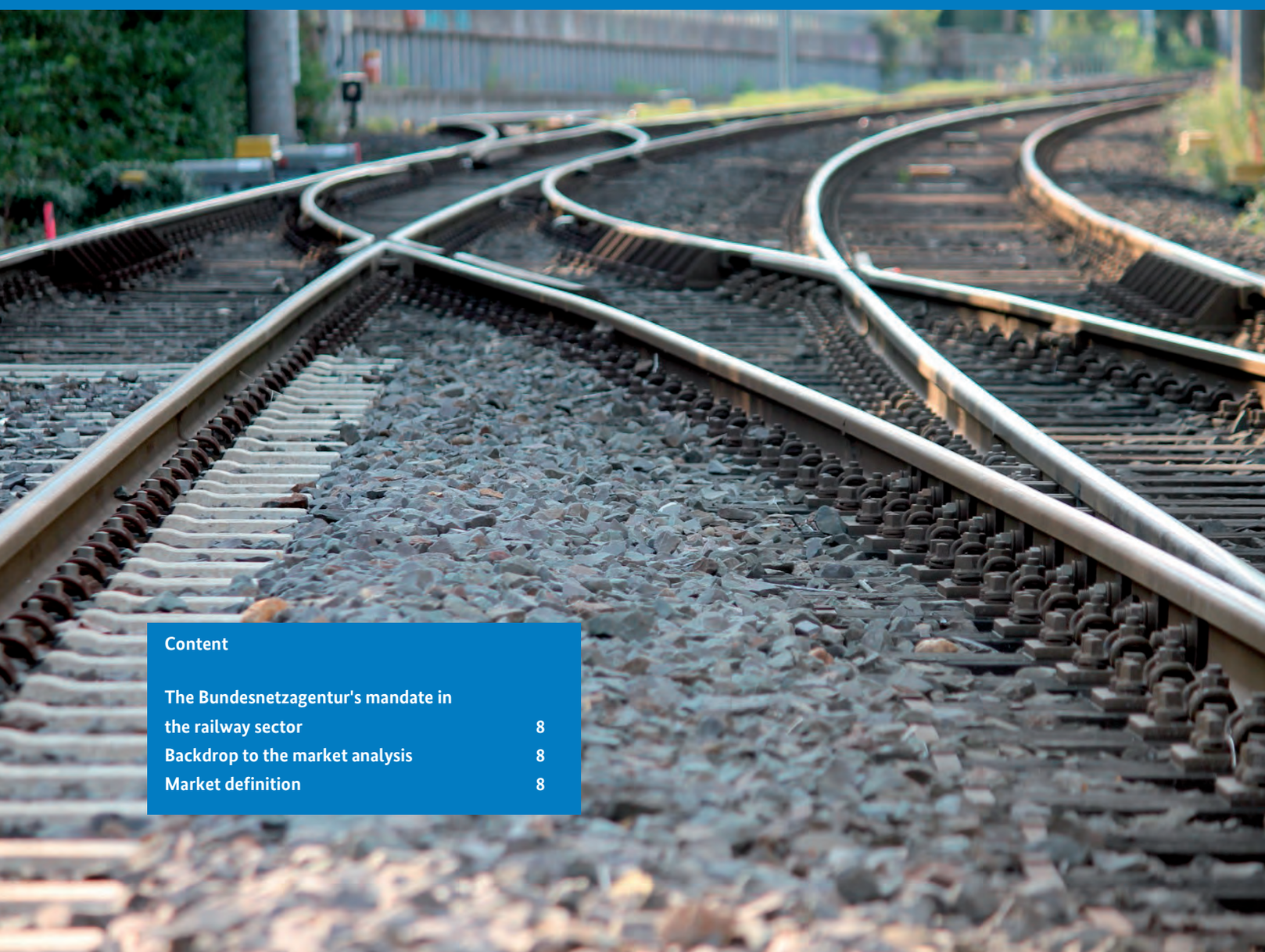
Rail Traffic			Δ 13/14
2014	Rail Freight	115 bn tkm	↑
	Long-dist. Passenger	36 bn Pkm	↓
	Short-dist. Passenger	54 bn Pkm	→

Market Share held by Competitors			Δ 13/14
2014	Rail Freight	36 Percent	↑
	Long-dist. Passenger	<1 Percent	→
	Short-dist. Passenger	19 Percent	→

INTRODUCTION

Background to the market analysis

The aim of the Bundesnetzagentur is to ensure there is effective competition in the railway market. In order to do so, it needs up-to-date, reliable information about the railway market and railway undertakings. To this end, the Bundesnetzagentur gathers information each year and publishes its findings in its Market Analysis.



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Introduction

By conducting the market survey and reporting on the market in its Market Analysis, the Bundesnetzagentur is helping to identify potential for discrimination and is thereby fostering 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 Sections 14ff. of the General Railway Act (AEG), as supplemented by provisions of the Rail Infrastructure Usage Regulations (EIBV).

Background to the market analysis

In order to be in a position to fulfil these tasks, the Bundesnetzagentur requires access to valid, up-to-date information about the railway market in general and railway companies 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 2014, the year under review here, the Bundesnetzagentur sent its questionnaire to more than 850 market participants.

The results of the survey are published not only in the "Railway Market Analysis" but also in the Bundesnetzagentur's "Annual Report" and the "Activity Report – Railways". The focus of the latter two publications is on regulatory aspects of the market, while the "Railway Market Analysis" publishes 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 companies and parties with access entitlements a sound basis for planning. Moreover, it is the only way that useful time series can be produced.

In addition to this, specific data is collected on topical issues every year. The analysis for the 2014 reporting year elaborated, inter alia, on issues relating to expenditure and energy procurement as well as scheduled construction measures carried out by infrastructure managers.

Market definition

The "Railway Market Analysis 2015" 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 railway line infrastructure operators or public operators of service facilities. 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 data in the text and diagrams here refer to the 2014 reporting year.

An assessment of the infrastructure managers' performance and charges was carried out as part of the market survey conducted in 2015.

The following diagram provides an overview of the market definition used in the Railway Market Analysis. It must be borne in mind here that, for instance, rolling stock manufacturers or railway undertakings may also be rail infrastructure managers as a sub-function of their primary business.

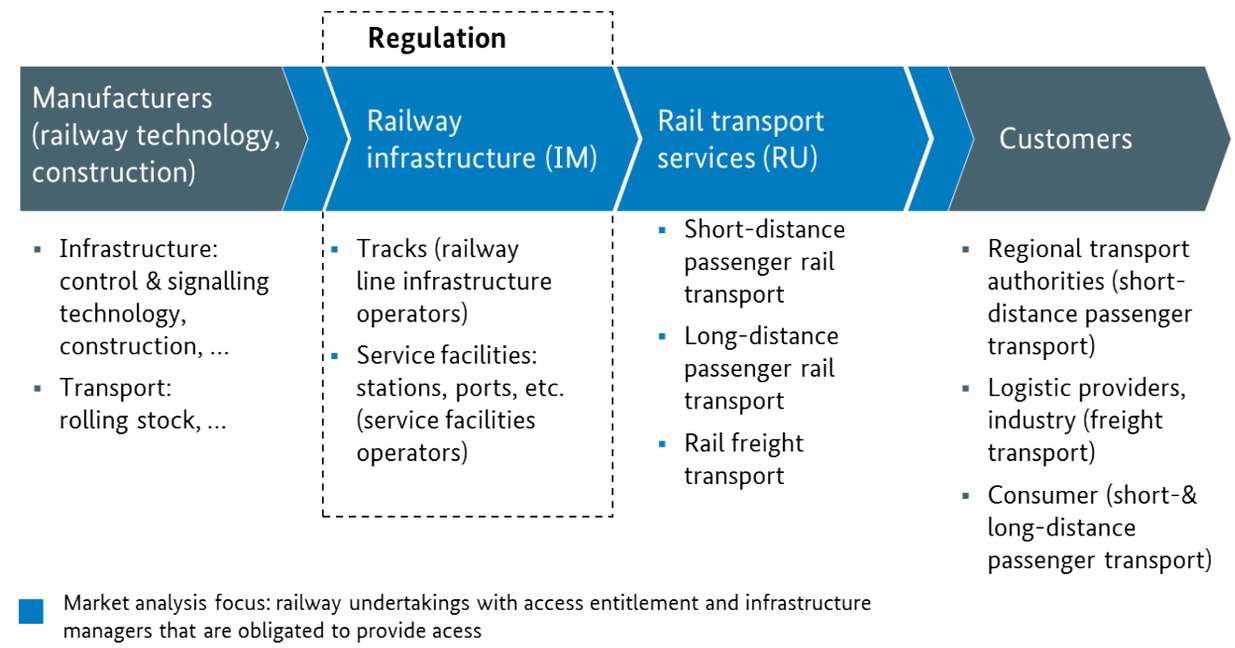
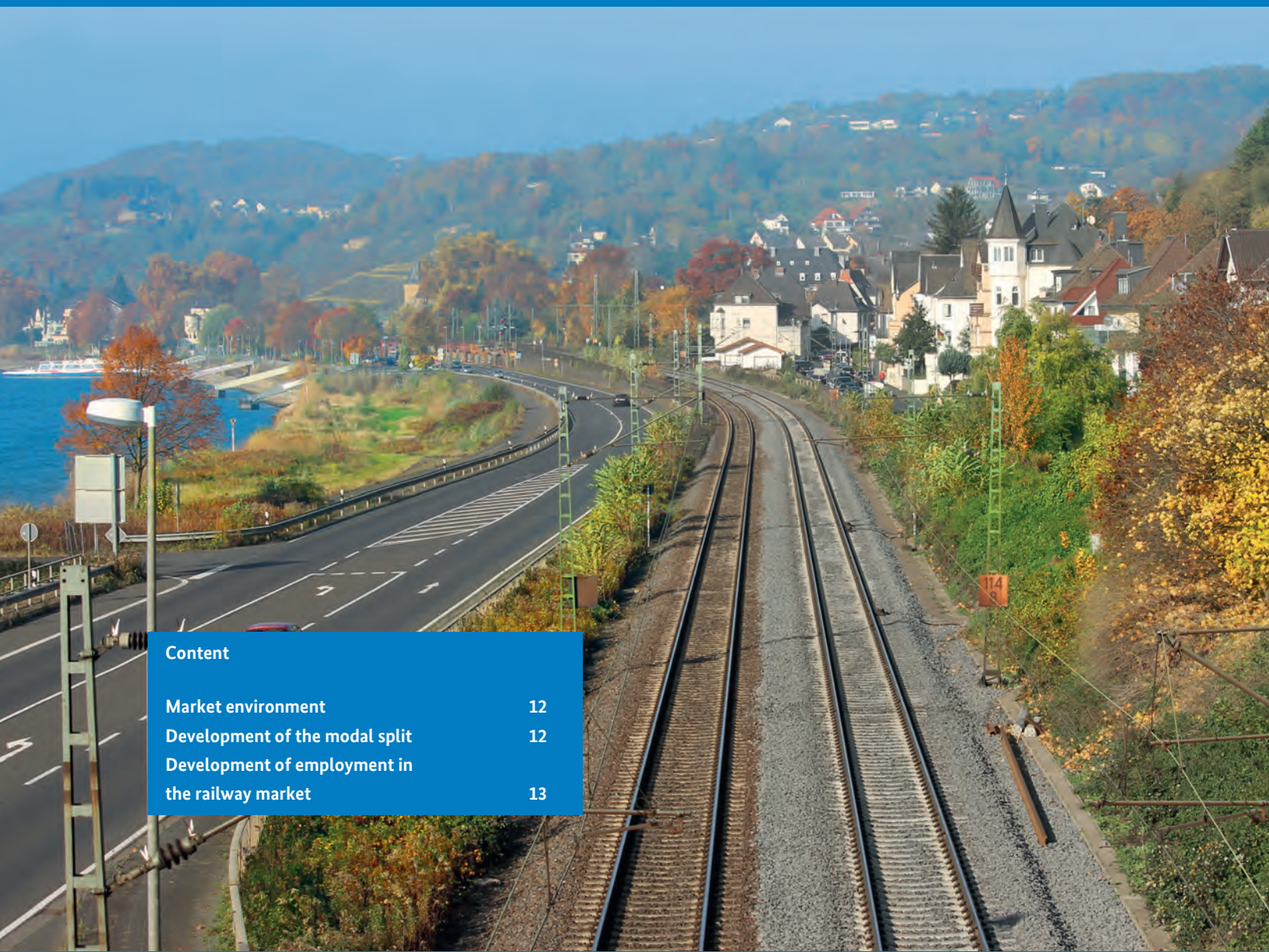


Figure 1: Market breakdown used in the Railway Market Analysis

RAILWAY MARKET

Economic environment

In addition to asking companies of the rail sector to provide information, the Bundesnetzagentur reviews trends in the economic environment. This means company-specific trends can be assessed more reliably in the overall context of macro-economic trends.



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Railway market analysis

The share of rail transport in Germany's overall transport services remained, by and large, stable in an ever-growing economic environment.

Market environment

The German economy has developed positively in the years since the downturn in 2009. For 2015, the country's Gross Domestic Product (GDP) is expected to grow 1.4 Percent year-on-year in real terms. Although this is slightly lower than the growth rate reported for the year 2014 (1.6 Percent), it is way above the growth rate seen in 2013 (0.3 Percent). All in all, the years 2013 to 2015 saw modest growth rates.

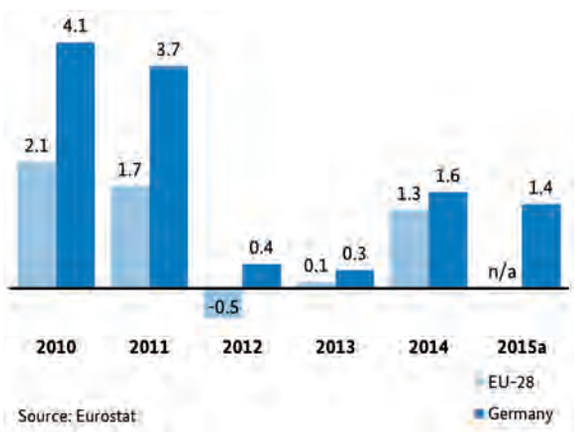


Figure 2: Development of GDP in real terms, (2010-2015a; year-on-year increase in percent; "a" = anticipated values).

The picture is different in the European Union's 28 Member States (EU-28). The economy in the eurozone rebounded in the first few years following 2010 but slowed down again in 2012 and 2013. Economic growth was slower than in the previous years, although it did pick up slightly in 2014. EUROSTAT currently has no figures available for the European Union (EU-28) for the year 2015.

Development of the modal split

In 2013, the share of road freight transport in the modal split dropped whereas the share in rail transport and inland waterway transport grew. However, road freight transport managed to regain some lost ground in 2014, with its share of the modal split rising to 73.2 percent whereas the inland waterway transport and rail freight transport segment saw their market share decline slightly. This means that the share of rail freight transport reached its lowest ebb since 2010.

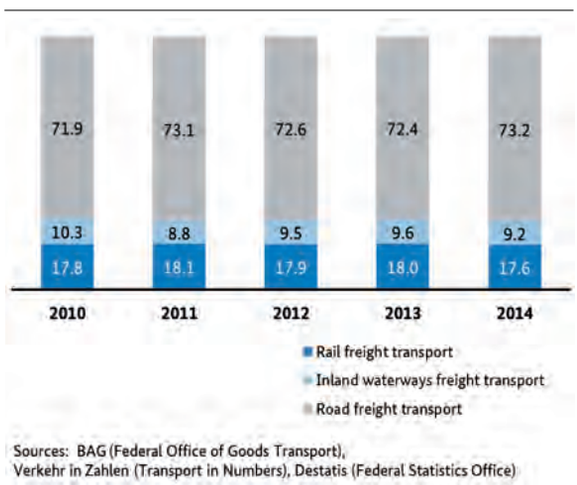


Figure 3: Development of the modal split in the freight transport market (2010-2014; percentages)

In the passenger transport segment, motorised private transport grew again in 2013, after having declined slightly the previous year. The market share held by public road transport in the passenger transport segment shrank slightly from 7.1 percent in the previous year to 7.0 percent, while passenger rail transport remained constant with a market share of 8.2 percent. The only figures that are currently available for the year 2014 are those indicated in the Flexible Medium-Term Forecast undertaken by Transport Consulting Röhling International for passenger transport and freight transport[1] . They indicate that the market shares of the modal split have remained steady for the most part in all transport segments or have changed only slightly.

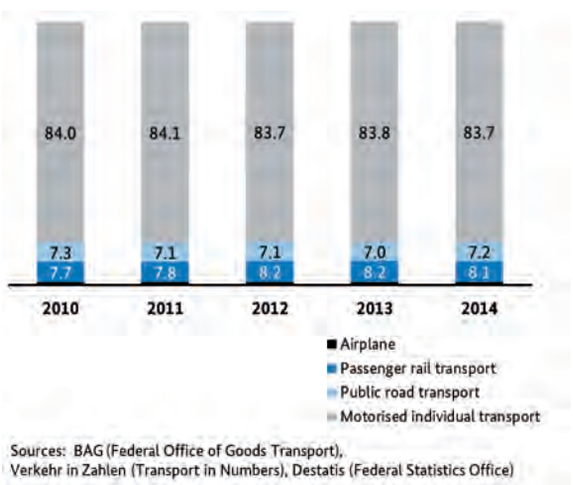


Figure 4: Development of the modal split in the passenger transport segment (2010-2014; percentages)

Employment trend in the railway market

The number of full-time equivalents in the railway market rose slightly among infrastructure managers and railway undertakings in the year under review. Having bottomed out in 2010, railway companies are meanwhile busy hiring again. Approximately 145,000 full-time positions[2] were filled in the railway market at the end of 2014.

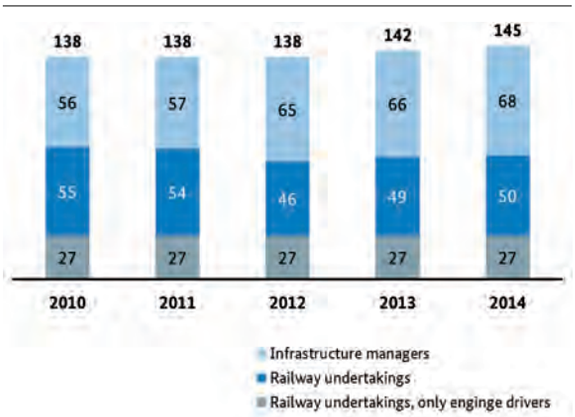


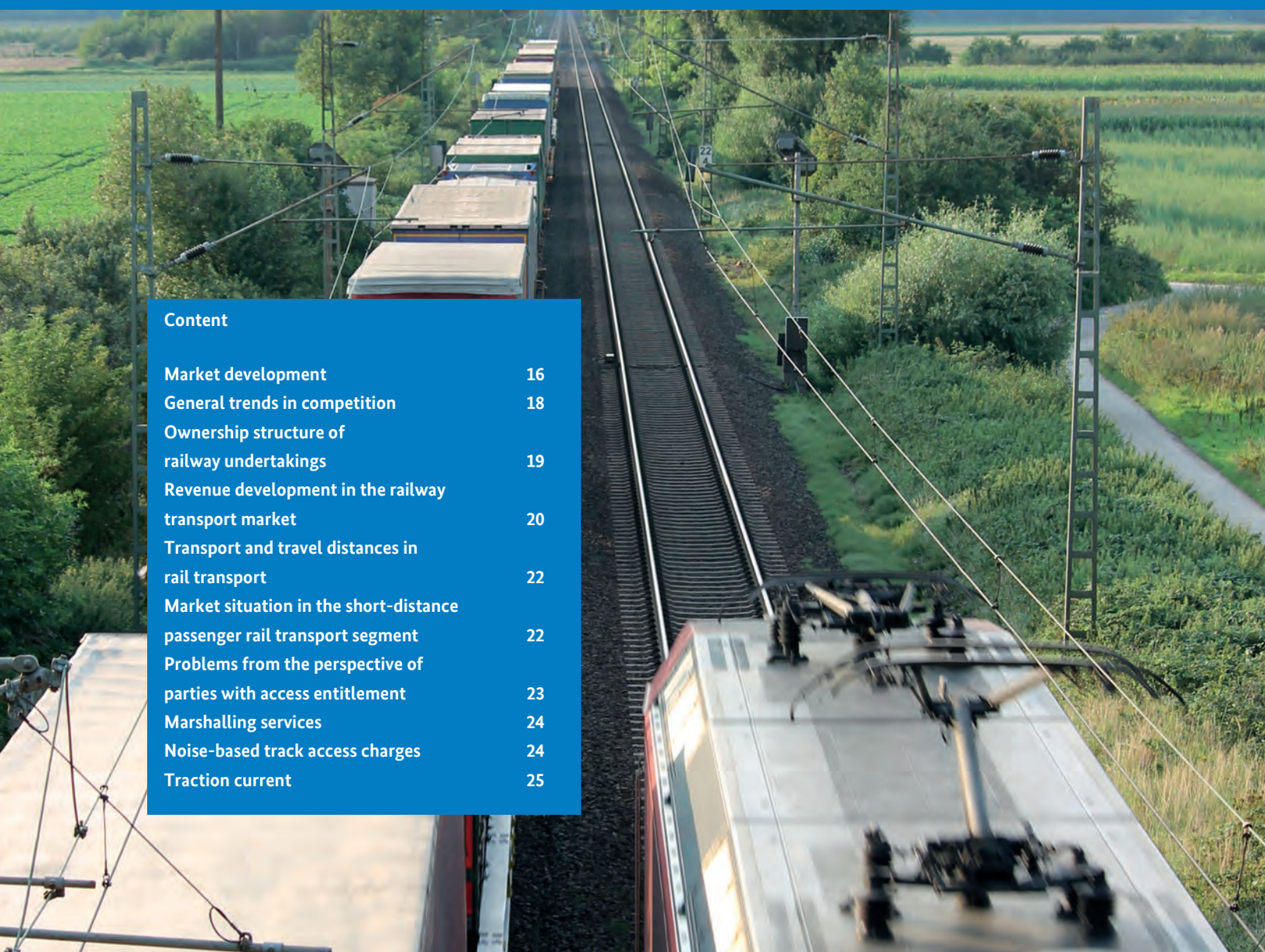
Figure 5: Employment trend in the railway market (2010-2014; full-time equivalents in thousands)

[1] Source: http://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/mittelfristprognose-sommer-2015.html

[2] Part-time positions recalculated to provide the corresponding number of full-time positions.

Railway Transport

The railway market is broken down into the transport market and the infrastructure market. Railway undertakings provide rail transport services. The Bundesnetzagentur monitors railway undertakings and assesses the functionality and efficiency of the railway market.



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Railway transport market

The number of railway undertakings involved in the rail transport market is rising steadily. The revenue generated has shown slight increases year-on-year. The transport services provided are, by and large, stable.

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 2014 and 2015, after having remained virtually constant in recent years. In September 2015, 447 railway undertakings held a licence to provide rail transport services for the public.

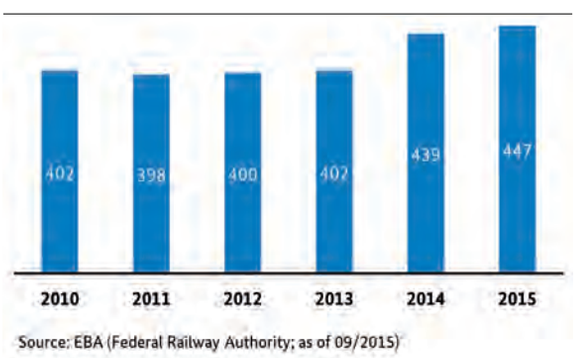


Figure 6: Licensed public railway undertakings (2010-2015; number of railway undertakings in Germany)

According to the Bundesnetzagentur's annual survey, more than 320 railway undertakings were actively involved in providing railway services in Germany, representing an increase over the previous years and the highest number to date. By international standards, the German railway market therefore counts among those national railway markets with the largest number of competitors.

163 railway undertakings provided commercial rail freight services. This means that 124 railway undertakings provided short-distance passenger transport services.

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

The growth trend seen in the cumulative revenues in the railway market in recent years continued through 2014. However, the increase in revenue from 2013 to 2014 was very small as it had been the previous year. All in all, railway undertakings generated a total revenue of €19bn in 2014. Revenue generated in the rail freight market increased from €4.8bn to €5.0bn in 2014, whereas revenue in the passenger rail transport segment remained fairly steady.

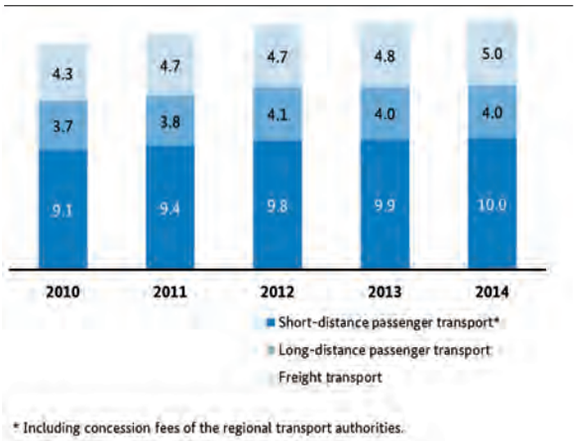


Figure 7: Revenues in the railway market (2010-2014, € billion)

Transport volume in rail freight transport rose in 2014 and fell in the passenger rail transport segment.

The short-distance passenger rail transport segment transported 2.52 billion passengers, a total of 10 million fewer passengers than in 2013, representing a decline of around 0.4 percent.

Although the transport volume in the long-distance passenger rail transport segment remained constant over the previous year, it dropped by 1.5 percent in 2014, from a total of 131 million passengers to 129 million passengers.

The volume of rail freight transported in 2014 increased by 2.4 percent, from 380m tonnes to 389m tonnes. This marks the return of positive growth after the decline reported in 2012 and 2013.

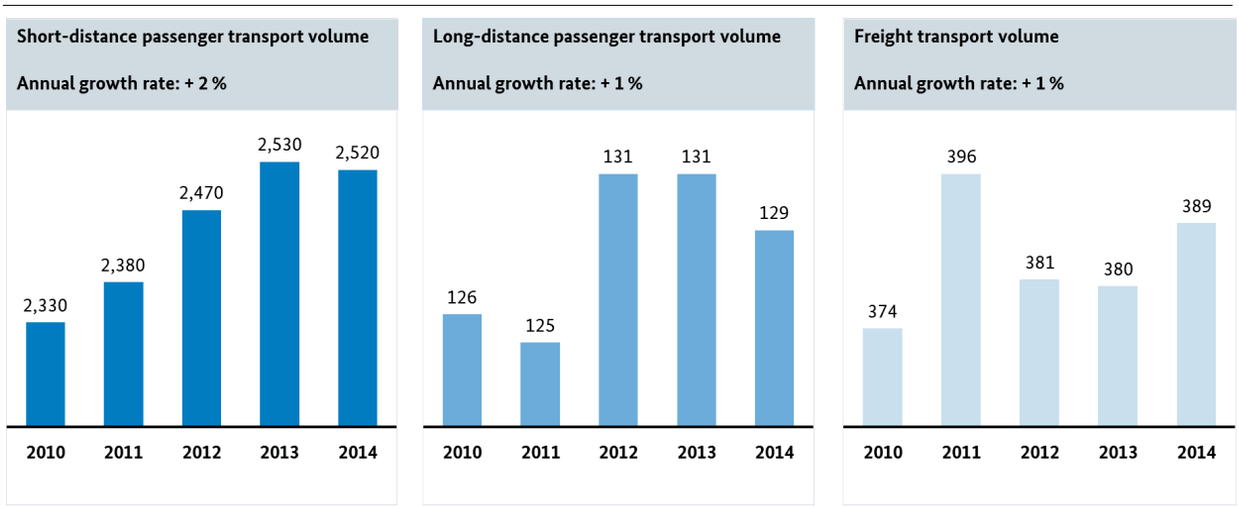


Figure 8: Development of transport volumes broken down by type of transport service (2010-2014; in million passengers/in million tonnes of freight)

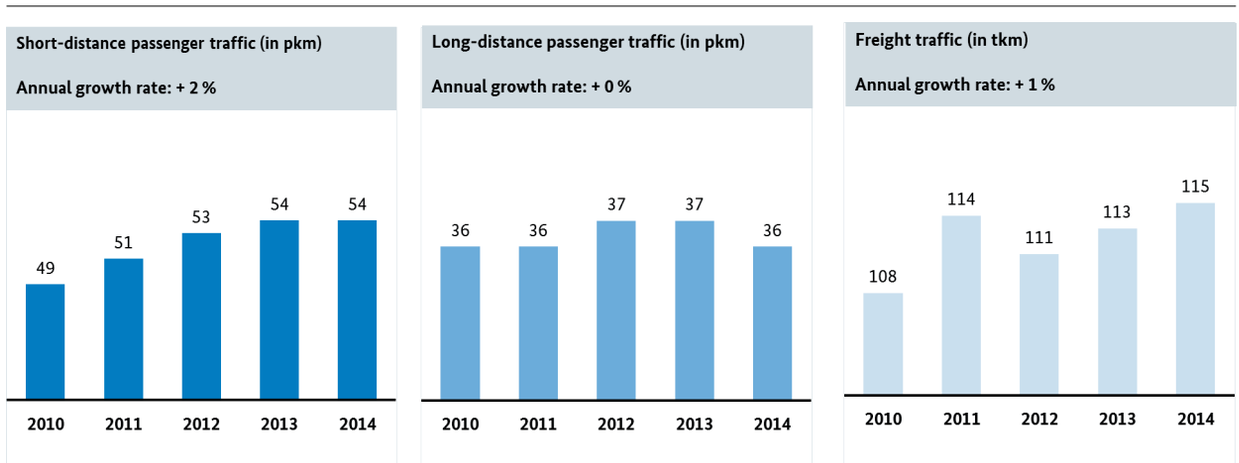


Figure 9: Development of traffic broken down by type of transport service (2010-2014; in billion passenger/tonne kilometres)

In contrast to transport volume (freight volumes or number of passengers), traffic (passenger or tonne kilometres) also takes average transport or travel distances into account.

Compared to the previous year, long-distance passenger rail traffic decreased slightly from 37bn to 36bn passenger kilometres, whereas short-distance passenger rail traffic remained at roughly the same level at 54bn passenger kilometres. By contrast, rail freight traffic improved, with a total increasing from 113 tonne kilometres to 115 tonne kilometres, meaning the positive trend observed in the past few years in the rail freight segment has been sustained.

General trends in competition

Growing competitor shares were observed in the rail freight transport segment in the year 2014. This continued the positive trend in competition seen in recent years. Competitors gained further market share and now hold 36 percent of the rail freight transport market.

Competitors did not succeed in growing their market share in the passenger rail transport segment in 2014. Railway undertakings belonging to Deutsche Bahn AG continue to clearly dominate the markets in this segment.

The competitors in the short-distance passenger rail transport segment held their market share of 19 percent. However, the Bundesnetzagentur expects this market share to grow significantly in 2015 as DB Regio lost several major transport contracts to competitors when the timetable changed for 2014/2015.

As in the previous years, the share held by competitors in the long-distance passenger rail transport segment is significantly less than 1 percent. As a result the market leader continues to dominate the long-distance passenger rail transport market.

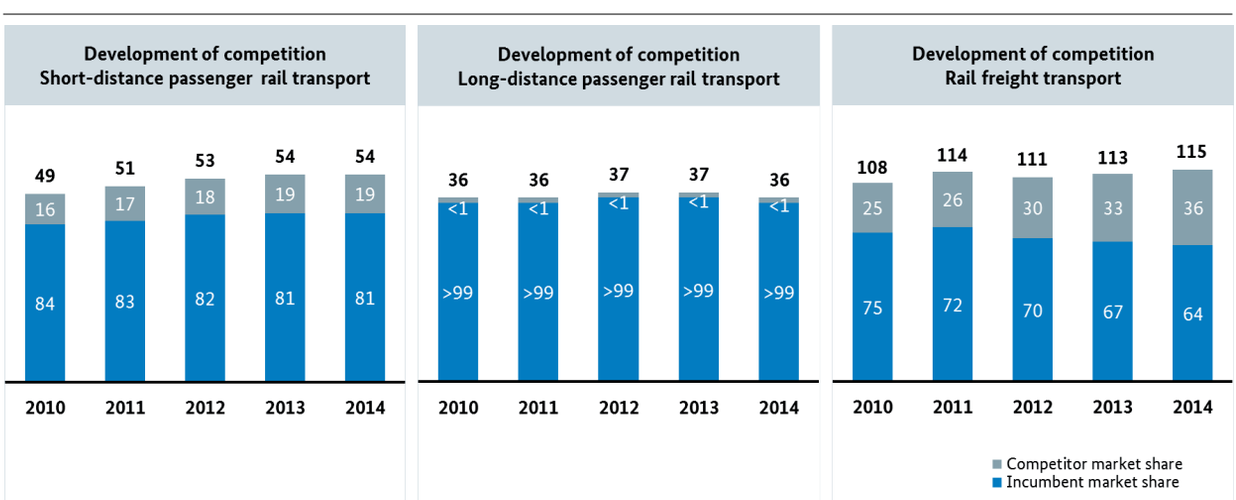


Figure 10: Development of competition broken down by type of transport service
(2010-2014, Traffic handled in billion passenger/tonne km and percentages based on passenger/tonne km)

Ownership structure of railway undertakings

With the liberalisation of the railway market which was part of the 1994 Railway Reform, the railway undertakings of DB AG faced growing competition from other railway undertakings in subsequent years.

As such, the German railway market is also attractive for international railway undertakings. Alongside privately-owned railway undertakings state-owned railway undertakings of other European countries operate in the German railway market and compete with state-owned and privately-owned companies.

The Railway undertakings owned by DB AG continue to dominate the market. However, if the market is viewed separately from federally-owned Railway undertakings, it becomes evident that the share of competition in the short-distance passenger rail transport segment is spread almost equally among the three ownership groups, namely the federal states and local authorities, privately-owned companies and subsidiaries of foreign state-owned rail companies.

In the rail freight market, railway undertakings owned by the federal states and local authorities play less of an important role, accounting for approximately one-seventh of the transport services provided by non-federally-owned companies. Foreign state-owned rail companies and privately-owned railway undertakings have an almost equal market share here too.

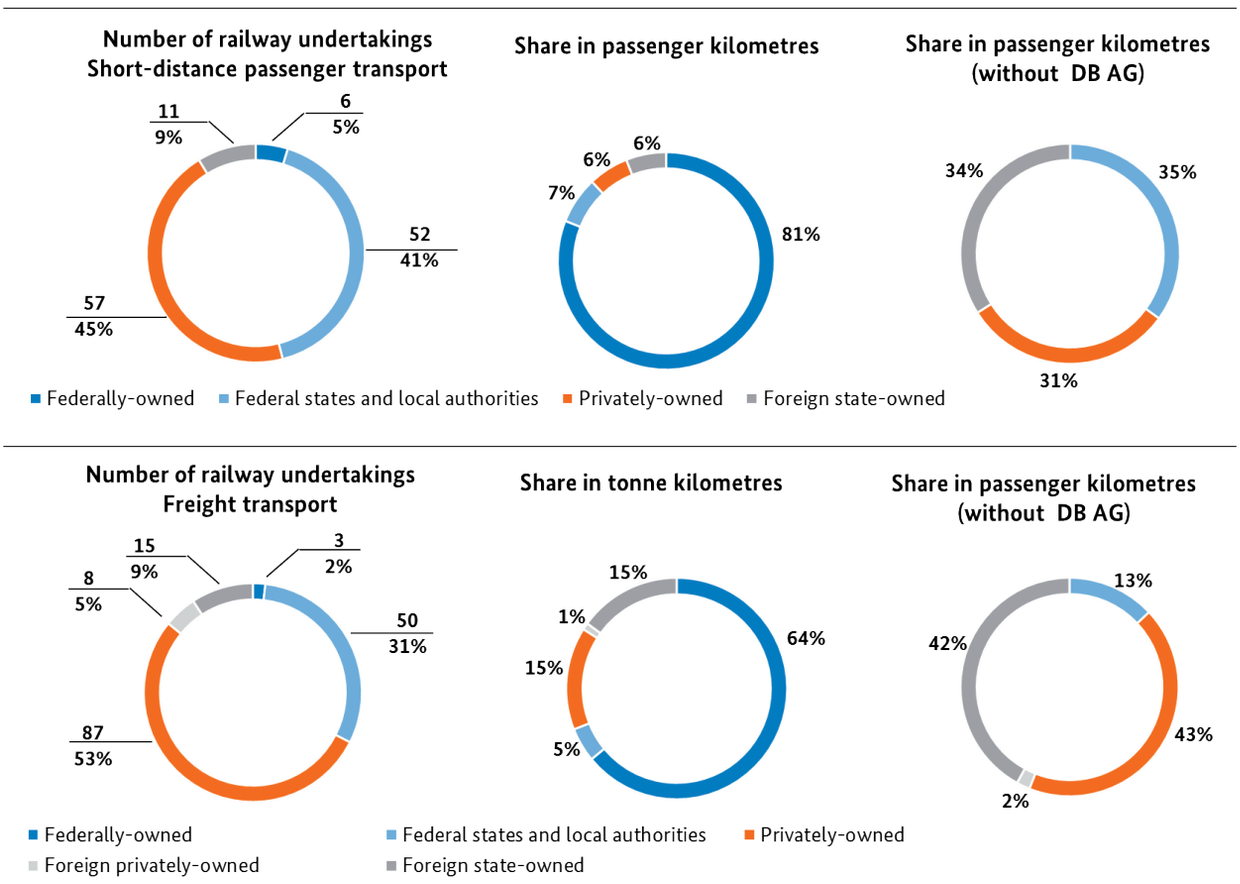


Figure 11: Ownership structures of railway undertakings (2014, number/share of traffic handled in percent)

Revenue development in the rail transport market

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 contracting short-distance passenger transport services (regional transport authorities) 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 *Länder* (federal states) under the Regionalisation Act.

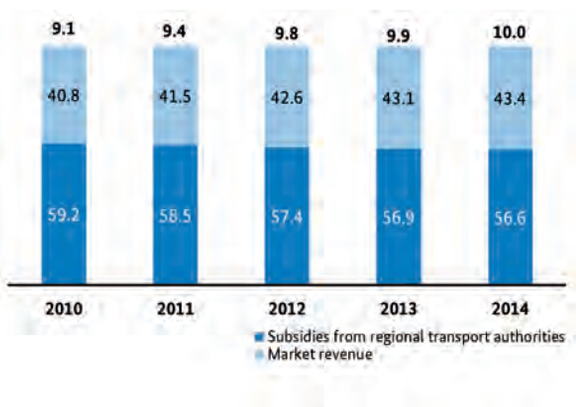


Figure 13: Share of subsidies of regional transport authorities in revenue generated in the short-distance passenger rail transport segment (2010-2014; revenue in € billion, shares in percent)

Using a breakdown of the revenue components, Figure 12 shows the importance of public subsidies for the short-distance passenger rail transport segment. The share of public subsidies decreased noticeably up to the year 2007 and then remained constant until 2010 at a level of almost 60 percent. After 2011, the share of market revenue increased slightly which meant the share of public subsidies declined. This trend continued in 2014. Market revenues (primarily from the sale of tickets) covered an average of only 43 percent of the costs of the short-distance passenger rail services in 2014.

As shown in Figure 13, the revenue generated per train-path kilometre travelled remained virtually unchanged at a total of €15.1 per train-path kilometre. The revenue generated per passenger kilometre has remained steady since 2010. In 2014, railway undertakings generated revenue of 18.6 cents per passenger kilometre in the short-distance passenger rail transport segment. In contrast to the trend, the average train occupancy which increased noticeably in the past few years decreased slightly in 2014.

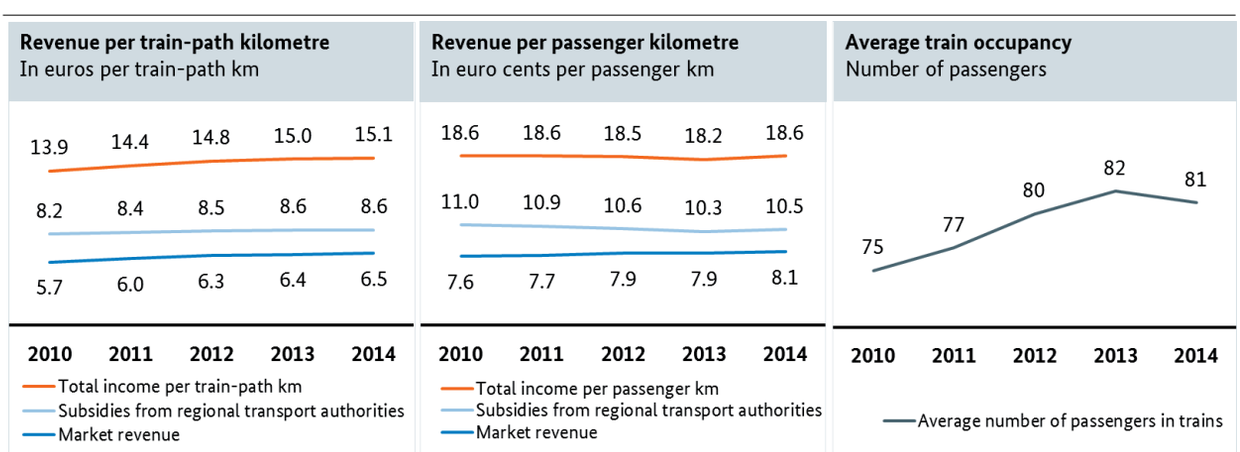


Figure 12: Development of revenues and average train occupancy in short-distance passenger rail transport (2010-2014)

The fact that average train occupancy is much higher in the long-distance passenger transport segment than in the short-distance transport segment means that revenue per train-path kilometre is approximately twice as high in the long-distance passenger transport segment. However since subsidies are generally not paid in the long-distance passenger transport segment, revenue per passenger kilometre – at just under €0.11 – is significantly lower than it is in the short-distance segment. The average number of passengers per train in the short-distance passenger transport segment dropped from 258 to 254.

The revenue generated per train-path kilometre and the mean freight tonnage per train rose in the rail freight market in 2014. The freight tonnage per train rose from 448 in 2013 to 459 tonnes of freight per train, representing an increase of almost 2.5 percent. Accordingly, the revenue generated by railway undertakings in rail freight transport per train-path kilometre has risen more sharply than the revenue per tonne kilometre.

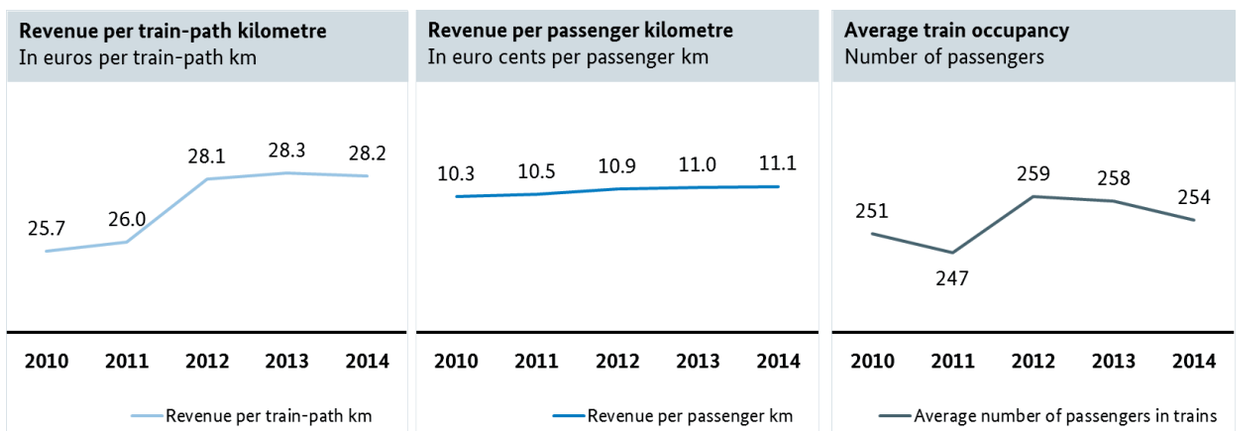


Figure 14: Development of revenues and average train occupancy in long-distance passenger rail transport (2010-2014)

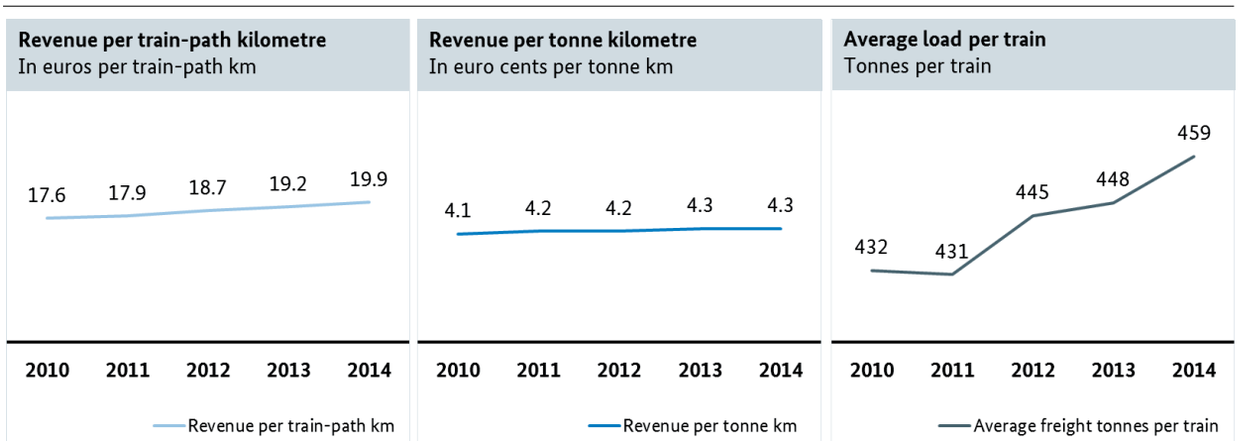


Figure 15: Development of revenues and average freight tonnes in the rail freight market (2010-2014)

Transport and travel distances in the rail transport market

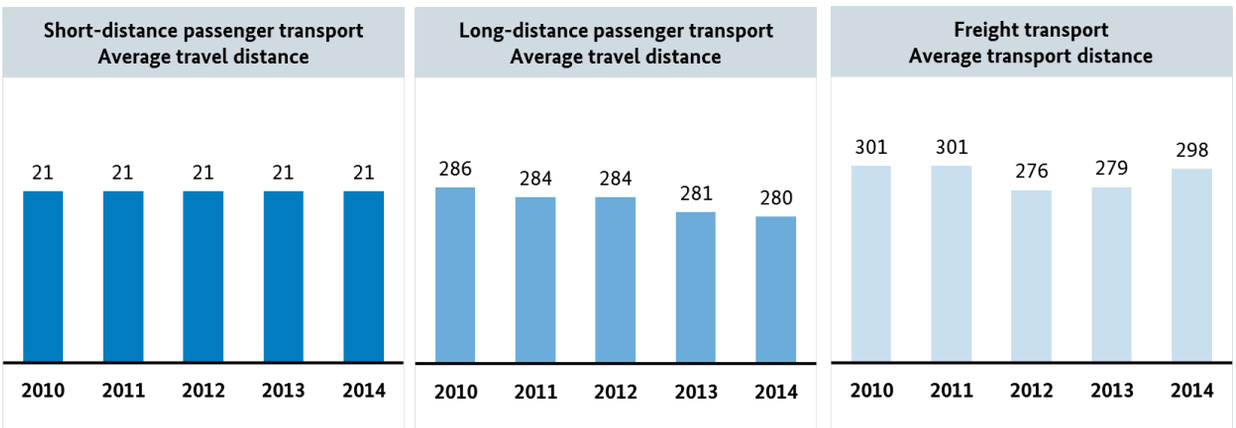


Figure 16: Development of transport and travel distances (2010-2014, in km)

Figure 16 shows the mean transport and travel distances calculated on the basis of the respective quotient of passenger or tonne kilometres and transport volume.

The mean travel distance in the short-distance passenger rail transport segment remained virtually unchanged at 21 kilometres in 2014 whereas this figure was 280 kilometres in the long-distance passenger rail transport segment, representing a slight decline over the previous year. By contrast, the mean transport distance in the rail freight segment increased from 279 to 298 kilometres.

When looking at average travel and transport distances, it should be borne in mind 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 are included in the survey data.

Market situation in the short-distance passenger rail transport segment

The federal states contract railway undertakings to provide short-distance passenger rail transport services. Transport contracts are put to tender or are awarded direct for extended periods of time. The regional transport authorities are responsible for the operational handling of transport contracts.

The regional transport authorities were asked to provide information about the rail services they were contracted to provide in train-path kilometres and the transport services they provide in passenger kilometres in respect of the contracts they were awarded direct and tenders they won. The survey shows that in the year under review, 42 percent of train-path kilometres were contracted direct and 58 percent were awarded by tender. Unfortunately, the number of responses received was too low to yield a representative result regarding the allocation of transport services.

Problems from the perspective of parties with access entitlement

Railway undertakings have the opportunity to highlight themes that are important to them and problems within the framework of the market survey. In addition to rating general influencing factors (cf. Chapter “Rating access to the rail infrastructure“) railway undertakings can voice their concerns about specific issues. The survey carried out in 2015 covered above all the issues timetable, scheduling and communication. Even though the issues “timetable quality” and “management of and arrangements during disruptions” were rated more positively in terms of influencing factors, more than 30 railway undertakings submitted more detailed comments about these specific issues.

Timetable, scheduling, communication

Railway undertakings complained above all about the provision of timetables in ad hoc rail services, criticising the fact that DB Netz AG rarely provides timetables on time and indeed often provides them too late. In some cases, DB Netz AG did not send out the timetable until after the departure time indicated in the timetable. The problems arise above all with timetables covering longer distances involving several regional segments of DB Netz AG. In some instances, personnel shortages were indicated as the reason for delays in issuing the timetables.

Clear statements were made about the quality of timetables. Occasionally, special customer requests for train paths are simply disregarded. The timetables for ad hoc rail services tend to include idle times and routes that are incomprehensible. This extends the overall travel times which in turn pushes up costs and increases planning effort for the railway undertakings. In some cases, missing infrastructure or insufficient capacities in the infrastructure were given as the explanation for long travel times.

Some railway undertakings criticised the management of and arrangements made during disruptions by infrastructure managers. According to information provided by several railway undertakings, the quality of scheduling varies greatly depending on which dispatcher is on duty at the time. They complained that little or no use is made of the alternatives available when a disruption occurs. Some railway undertakings also said they would like to have route scheduling on certain sections of the track. They think coordination by one train dispatcher is needed especially on highly-frequented routes and on single-track routes.

Some of the feedback submitted by railway undertakings related to communication with infrastructure managers and the flow of information between the companies involved in rail transport. Some railway undertakings said they would like to see more proactive communication, others complained about the difficulties in contacting the competent parties. They say predictions on how long disruptions are likely to last are not accurate enough. Some railway undertakings also say response times and decision-making are too slow.

Railway operations

Railway operations involve an extremely complex system. Any intervention in this system, regardless of whether this is because of disruptions that have occurred or scheduling measures, have a major impact on traffic. It is all the more important for railway line infrastructure managers to get to grips with this system as best they can. State-of-the-art electronic systems can help them to master the system but they cannot replace the human factor. It is therefore all the more important to employ well-trained, qualified staff who are capable of taking the right decisions and of communicating them. In addition to having enough experience, dispatchers also need to be consistent in applying their own rules when disruptions occur. General specifications for the formation of special trains,

for instance, may also lead to self-imposed restrictions. Generally speaking, “secure passage" for trains exceeding the maximum load across several sections of the infrastructure, for instance, is no longer permitted. The need to recalculate all maximum loads simultaneously reduces transport capacity and causes additional restrictions. If scheduling was of a high quality and could offer the required level of flexibility, from the market perspective, these trains could in fact be guaranteed secure passage.

Marshalling services

Even though the main transport services are provided on the track, they require comprehensive pre-carriage and post-carriage activities, typically involving marshalling services at the service facilities. Railway undertakings were asked about the type and extent of marshalling services they used at service facilities in 2014. The key issue involved regular marshalling services with locomotives they operated themselves.

One-third of the railway undertakings involved in the market said they used marshalling yards at service facilities on a regular basis. For the most part, these marshalling services are provided by the railway undertakings involved in rail freight transport themselves. These companies generally use marshalling yards once a month at the very least. Around 80 percent of these railway undertakings use marshalling yards on a daily basis.

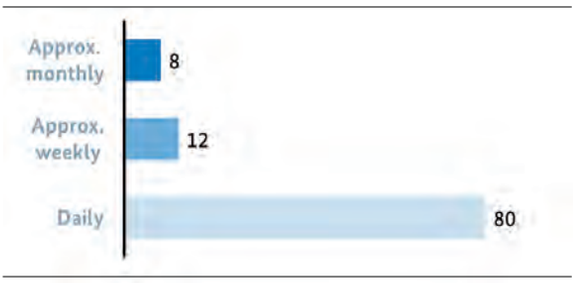


Figure 17: Frequency of marshalling services carried out by railway undertakings (2014; shares in percent)

Around 70 percent of the railway undertakings that provide marshalling services at service facilities also offer these services to third parties.

Noise-based track access charges

The Bundesnetzagentur asked the railway undertakings in the annual market survey about their use of “low-noise freight trains”.

The introduction of the noise-based track access charging system by DB Netz AG when the timetable 2014/2015 changed provided the backdrop to the relevant questions. The objective of the noise-based infrastructure charging system was to promote the use of “more low-noise freight cars” and “more low-noise freight trains”. If at least 80 percent of the freight cars of a freight train are retrofitted with noise-reducing brakes, the railway undertakings receive refunds on the track access charges paid for this freight train.

In 2014, a total of 23 railway undertakings were using “low-noise trains”. Measured against the number of 163 railway undertakings providing commercial rail freight transport services, this corresponds to a share of just under 15 percent of railway undertakings. “Low-noise trains“ travelled 12.5 million train-path kilometres. This corresponds to around 5 percent of total train-path kilometres in the rail freight market.

Figure 18: Overall train-path kilometres and train-path kilometres of "low-noise trains" in the rail freight market (2014, million train-path km)

Figure 19 shows the freight corridors of the European Union on which "low-noise trains" were used according to information provided by the railway undertakings.

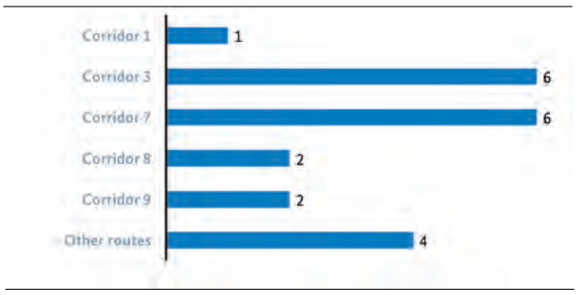


Figure 19: Use of "low-noise trains" on the freight corridors of the European Union (2014; numbers reported by railway undertakings)

Freight corridor 1 (Rhine – Alpine)

- Antwerp – Duisburg
- Rotterdam – Duisburg – Basel

Freight corridor 3 (Scandinavia – Mediterranean)

- Copenhagen – Hamburg – Innsbruck

Freight corridor 7 (Orient – Eastern Mediterranean)

- Rostock/Hamburg/Wilhelmshaven/Bremerhaven – Dresden
- Dresden – Prague

Freight corridor 8 (North Sea – Baltic)

- Bremerhaven/Rotterdam/Antwerp – Aachen
- Aachen – Duisburg – Magdeburg
- Magdeburg – Berlin – Warsaw
- Magdeburg – Horka – Terespol

Freight corridor 9 (Rhine – North Sea)

- Strasbourg – Mannheim – Nuremberg – Wels
- Strasbourg – Munich – Salzburg

In addition to the freight corridors, "low-noise trains" were also used on other routes. All in all, the majority of railway undertakings said they used freight corridors 3 and 7; whereas only one railway undertaking said it used freight corridor 1.

Traction current

The introduction of the new pricing system by DB Energie on 1 July 2014 brought about significant changes in the traction current market. For the first time, railway undertakings had the unrestricted option of procuring traction current from energy suppliers other than DB Energie via the network access model. Some railway undertakings seized the opportunity to switch to another energy supplier immediately. At the beginning of 2015, additional railway undertakings switched to new energy suppliers. In relation to the total traction current requirement of all non-federally-owned railway undertakings, around 63 percent, which is equivalent to around 1.2 terawatt hours, were ordered from suppliers other than DB Energie in 2015. As such, the share of other energy suppliers is around 11 percent.

An increase of 5.5 percent to almost 10 percent was recorded for the long-distance traction current network of DB Energie in 2015.

Figure 20 shows the trend in network charges compared to the network charges of network operators in the 50 Hz segment. The extent to which the increase has affected individual railway undertakings depends on the number of hours they used the network which reflects the individual usage patterns of the individual railway undertakings. This means the impact of the price increase on the individual railway undertakings varies. The charge per kilowatt hour increased by approximately 9.6 percent for railway undertakings whose usage of the infrastructure does not exceed 2,500 hours.

For railway undertakings whose network usage exceeds 2,500 hours, the amount of the total network charge per kilowatt hour depends on the share of the price per kilowatt for the annual maximum demand. This affects railway undertakings differently, depending on how the service charge is calculated in conjunction with the kilowatt hour rate. The following diagram shows the increase in network charges as a percentage observed for the year 2014, 2015 and 2016, in relation to the previous years respectively. Railway undertakings whose network usage exceeded 2,500 hours paid a higher percentage increase in network charges in 2014. The opposite trend applies to the years 2015 and 2016. Railway undertakings facing the highest increase rates were those that were already paying high network charges per kilowatt hour.

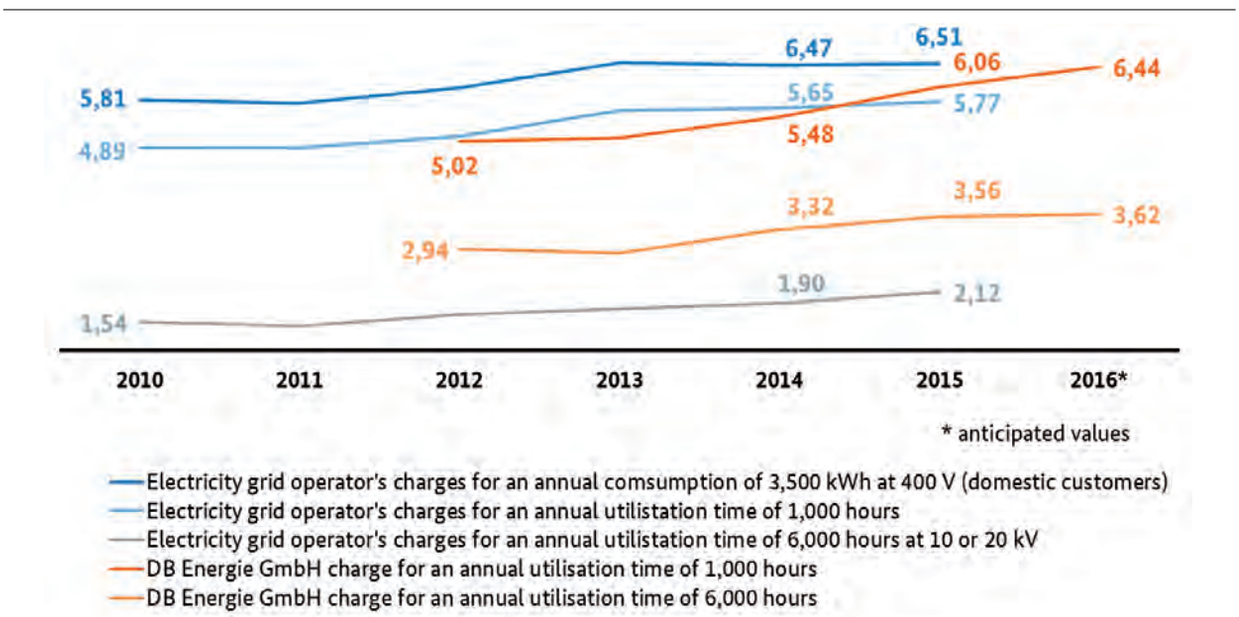


Figure 20: Development of network charges levied by electricity grid operators (2010-2016; in cent per kWh – tariffs valid on 1 April of the respective year)

Owing to the differentiated network charges, the refunds granted for traction current recovered that is fed back into the grid also varies. The refund for network usage avoided in 2014 was a standard € 2.83 per kilowatt hour. This means that the refund for traction current recovered that is fed back into the grid varies between 52 percent and around 85 percent. Railway undertakings are only eligible for a 100 percent refund if they reach the maximum 8,760 hours of network usage. For 2015, the share of refunds for network charges avoided has decreased.

The refund paid is now only between 49 percent and 84 percent of the network charge. €0.03 per kilowatt hour has been paid for network usage avoided in 2015. According to the preliminary price list published by DB Energie for 2016, the share of refunds is expected to decrease further to between 46 percent and 82 percent. This means that in absolute terms the refund will decrease slightly by around 0.2 percent. If traction current is purchased, however, 100 percent of the share of traction current that is fed back into the grid is generally refunded since the introduction of the new pricing system.

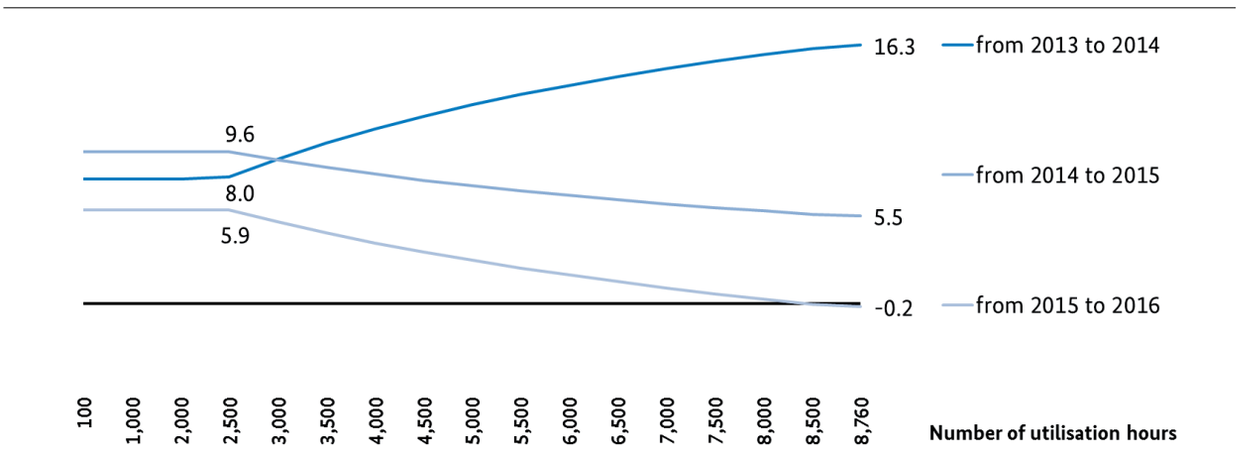


Figure 21: Increase in network access charges in percent based on the number of utilisation hours (2014-2016; in percent)

Provision of the infrastructure

The companies involved in the railway infrastructure market are the focus of regulation. In the interest of achieving objective and reasonable regulation, the Bundesnetzagentur not only relies on figures but also bases it analysis on quality ratings submitted by the railway undertakings.

Content

Railway infrastructure market

The revenue generated by infrastructure managers is rising steadily. Likewise, train-path kilometres rose slightly year-on-year. The ratings for issues relevant for regulation improved once again last year.

Infrastructure managers

At present, around 160 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 both railway line infrastructure and service facilities. Taking these overlaps into account, over 600 infrastructure managers are contacted in connection with the railway market survey.

The actual number of infrastructure managers contacted is largely determined by the Bundesnetzagentur's market penetration. To date, Germany does not have a central railway infrastructure register that lists all infrastructure managers. In addition, no licence is required to operate most service facilities. Bearing this in mind, it can be assumed that the Bundesnetzagentur does not always have a complete overview of the market in the infrastructure area.

According to data available to the Bundesnetzagentur, German infrastructure managers operate routes totalling some 38,900 kilometres with a track length of approximately 60,700 kilometres (excluding tracks in service facilities). Tracks with a total length of more than 10,600 kilometres are operated in service facilities.

Revenue development among infrastructure managers

The infrastructure managers generated their revenues primarily from the usage charges they collected for their provision of train paths and service facilities. The greater part of these revenues came from track access charges. At approximately €4.6 billion, track access charges accounted for more than 79 percent of total revenue from infrastructure usage in 2014.

Overall, an increase in revenue in the railway infrastructure market was observed for the year 2014, confirming the trend towards rising revenue levels seen the previous year. The steady rise in revenue generated by infrastructure managers in the previous years therefore continued.

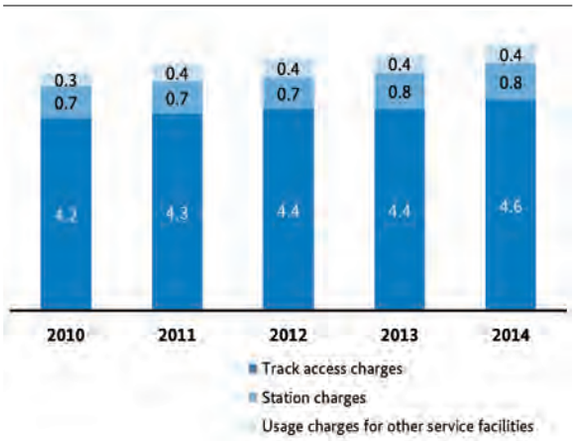


Figure 22: Revenue generated from usage charges in the rail infrastructure market
(2010-2014; € billion)

Short-distance passenger rail transport was responsible for more than two-thirds of the total revenues from track access charges. Charges paid in the long-distance passenger rail transport segment and charges paid in the rail freight market accounted in nearly equal parts for the remaining third. The share of track access charges in the revenue generated declined slightly by around 0.2 percent in the long-distance passenger rail transport segment and in the rail freight market compared to the previous year.

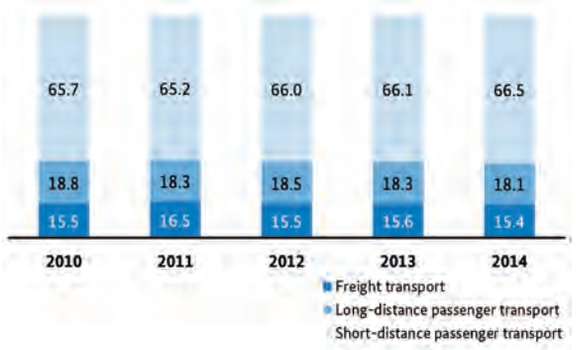


Figure 23: Total revenue of German infrastructure managers from track access charges, broken down by type of service, in percent (2010-2014; in percent)

Development of rail traffic

The number of kilometres travelled in Germany's public railway network fell slightly over the previous year's level and totalled some 1,064bn train-path kilometres in 2014, following a slight decline in 2012 and 2013. More than one billion train-path kilometres have been travelled on Germany's railway network every year since 2004.

From 2013 to 2014, short-distance passenger and freight train-path kilometres rose slightly, whereas in the long-distance passenger rail transport segment train-path kilometres declined slightly.

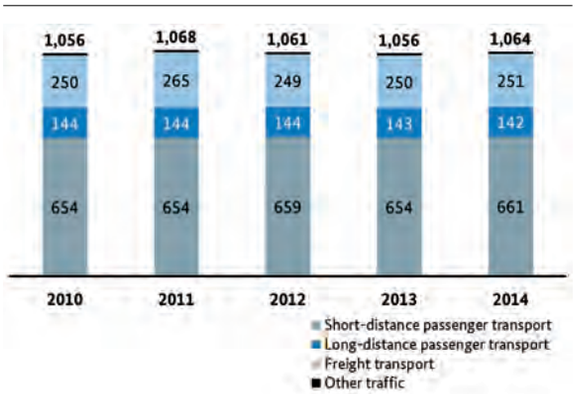


Figure 24: Development of train-path kilometres broken down by type of service (2010-2014, million train-path km)

The percentage of kilometres travelled on DB AG's rail infrastructure remained constant at just under 98 percent. Consequently the number of kilometres travelled on public, non-federally-owned infrastructure continues to represent slightly more than 2 percent of total kilometres.

Network statement for rail infrastructure

Rail infrastructure managers are required by law to allow all parties with access entitlement to use their infrastructure under non-discriminatory terms and conditions. This does not necessarily apply to railway infrastructure in the passenger rail service segment which is not linked to other railway infrastructure, or to railway infrastructure which is used exclusively for the infrastructure manager's own freight transport needs.

The terms for using railway infrastructure that has 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 go into effect.

The Bundesnetzagentur has repeatedly reminded the companies in this market in recent years to draw up network statements and/or service facilities statements and works with them to ensure that the respective statement is in conformity with the law. The Bundesnetzagentur's efforts have led in recent years to a significant increase in the number of infrastructure managers that have issued legally-binding network statements or service facilities statements.

In 2015, 94 percent of the railway line infrastructure operators and 80 percent of the service facility operators had network statements or service facilities statements. In recent years, there has been a steady increase in the number of railway line infrastructure operators and service facility operators issuing terms of use.

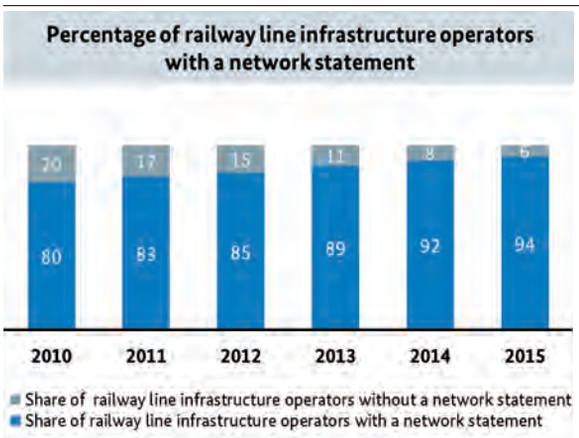


Figure 25: Share of railway line infrastructure operators that have drawn up a network statement (2010-2015; in percent)

Figure 27: Share of service facility operators that have drawn up a service facility statement (2010-2015; in percent)

Infrastructure managers that have been exempted from the requirement to draw up network statements or service facilities statements are not included in these figures. On the other hand, some of the remaining companies are still in the process of drawing up their terms of use.

Infrastructure managers are required to draw up and publish schedules of their charges for the services they provide. Service facility operators are also required to issue schedules of their charges. Although these operators are not required to publish their service facilities statements, transparency certainly fosters acceptance among prospective customers.

In 2015, the percentage of infrastructure managers that had drawn up and published such schedules of charges had risen to 88 percent. The percentage of service facility operators that had drawn up schedules of their charges decreased steadily to 68 percent throughout the year 2015. However, this decline can be attributed to the fact that overall the number of rail companies contacted was higher in the year under review.

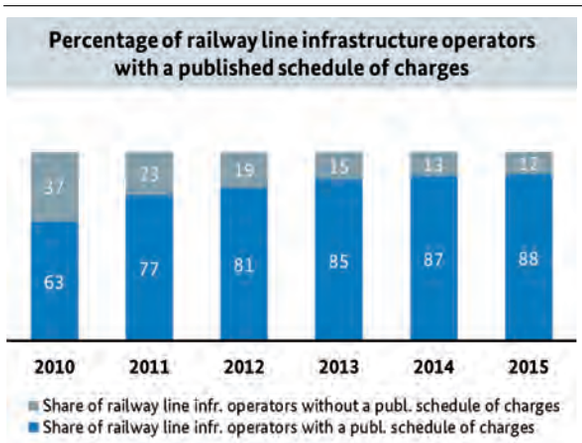


Figure 26: Share of railway line infrastructure operators that have published schedules of their charges (2010-2015; in percent)

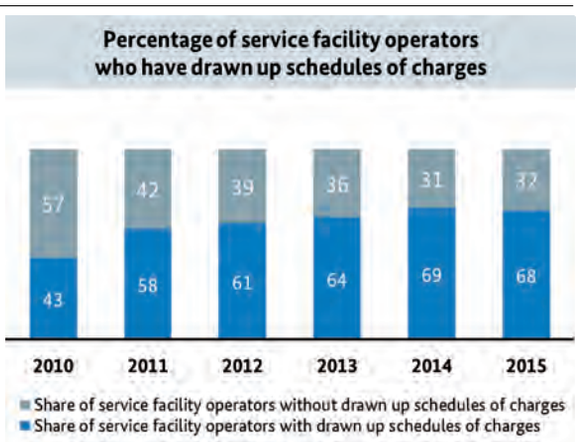


Figure 28: Share of service facility operators that have drawn up schedules of their charges (2010-2015; in percent)

Ratings for access to rail infrastructure

As in the past few years, the Bundesnetzagentur gave all parties with access entitlement the opportunity, as part of its annual survey, to evaluate and rate market-related aspects on a scale of 1 (very good) to 5 (unsatisfactory). For this, the Bundesnetzagentur surveyed 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.

Overall, most of the market-related aspects were rated higher by the parties with access entitlement than the previous year. They include the areas "non-discrimination in charging systems" and "access to service facilities" and "access to the rail infrastructure" which are regulated by the Bundesnetzagentur. The only areas to receive the same ratings from parties with access entitlement as the previous year were "price-performance ratio of infrastructure managers" and "international access" (which received ratings of 3.0 and 3.3 respectively). As in the previous year, the infrastructure managers' customer friendliness received a good overall rating (2.2).

In the following, Figure 29 examines in detail the segments shown in the above diagram that are relevant to regulation.

On average, the parties with access entitlement gave issues related to track access, train path allocation and rail timetable quality either good or satisfactory ratings. The respondents continue to see an urgent need for improvement in the condition of the railway network infrastructure (rating: 3.1). The parties with access entitlement gave track condition a rating of 3.0, representing a 0.1 point improvement over the previous year.

The ratings given by parties with access entitlement for the planning and coordination of construction measures carried out by railway line infrastructure operators improved year-on year. The average rating given was 2.7 which was an improvement on the poor ratings given the previous year.

The parties with access entitlement gave the infrastructure managers predominantly good ratings of 2.3 for timetable quality, 2.2 and 2.1 for their train path allocation processes, as they had done the previous year.

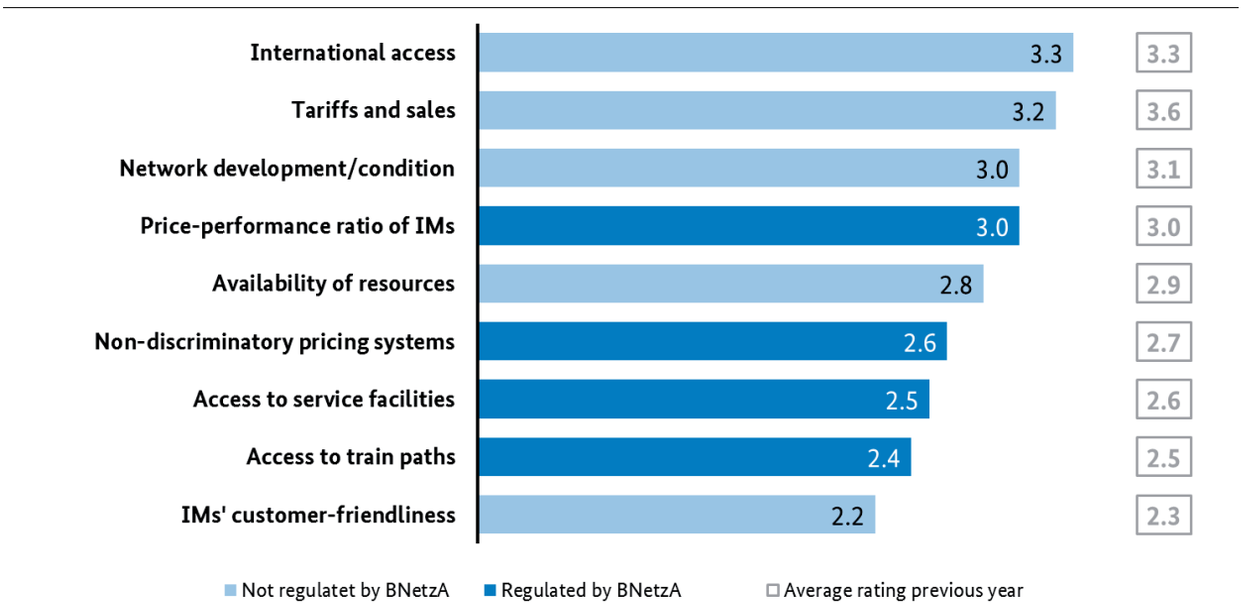


Figure 29: Factors influencing the railway market (2015; average ratings)

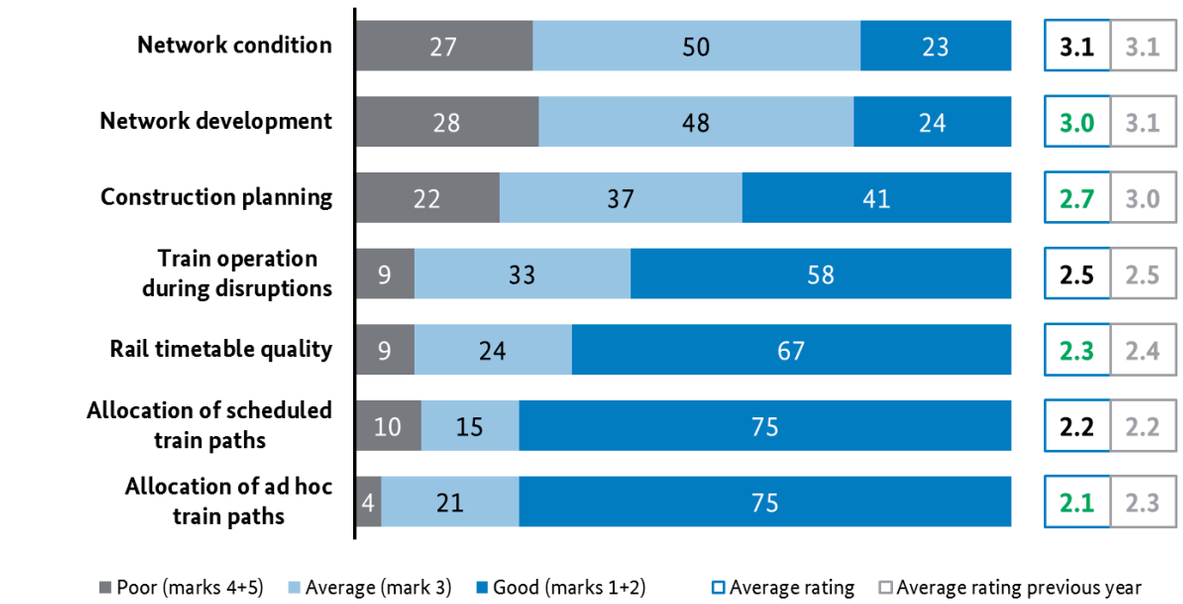


Figure 30: Ratings given for track access (2015; rating shares in percent and average marks)

More than half of the railway undertakings taking part in the survey rated the management of and arrangements during disruptions as “good” or “very good”. However, the railway undertakings submitted a large number of comments indicating difficulties with the scheduling of traffic (Chapter “Problems from the perspective of parties with access entitlement“).

The assessment by regional transport authorities' for short-distance passenger rail transport changed only slightly compared to the previous year. Around two-thirds of regional transport authorities gave an average rating for the level of modernisation of the infrastructure. On average, regional transport authorities gave a rating of 3.0 for the condition and 3.1 for the level of modernisation of the railway network infrastructure (Figure 32).

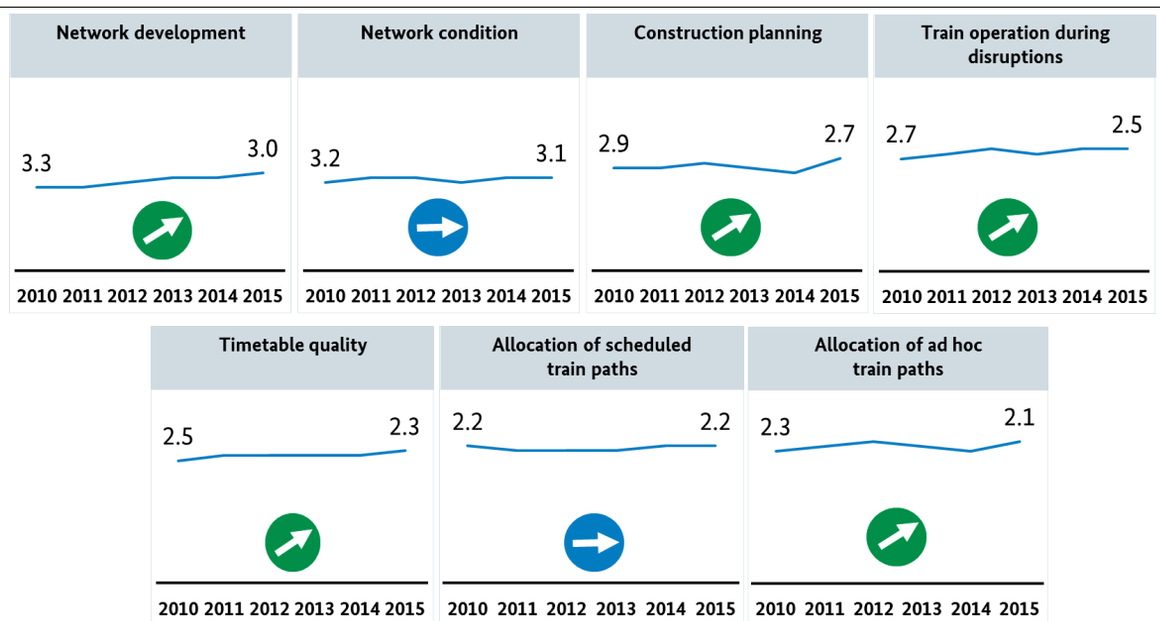


Figure 31: Trends in the ratings given for areas pertaining to service facilities (2010-2015)

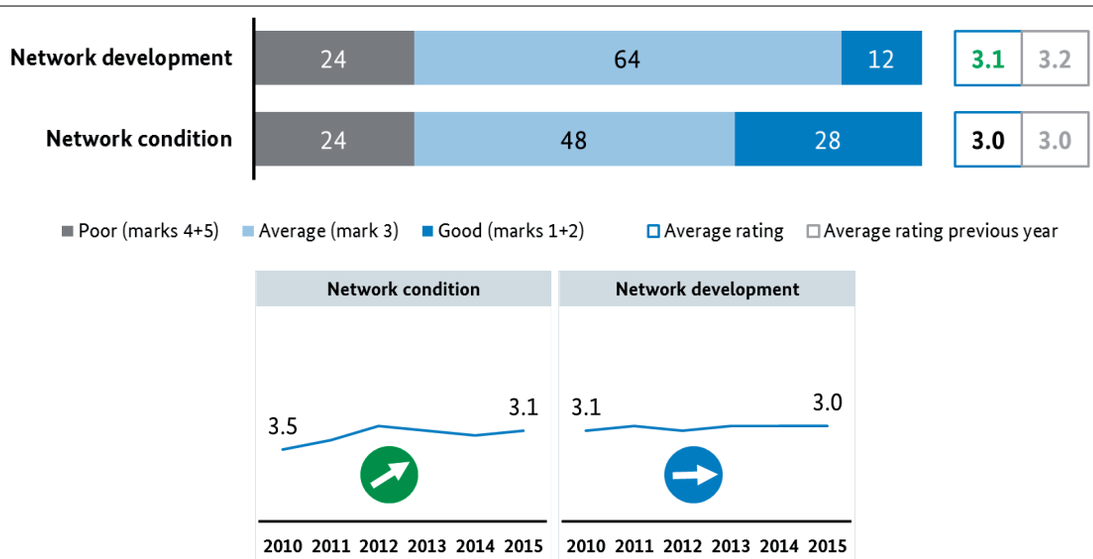


Figure 32: Regional transport authorities' ratings for train path condition and development (2010-2015)

Whereas ratings for access to service facilities were poorer in the last year under review, improvements were once again visible in most areas in 2015. The important level of modernisation and the condition of passenger stations in the field of service facilities which are particularly important in connection with passenger contact once again received the most criticism from parties with access entitlement. The level of modernisation of passenger stations received an average rating of 2.8 (from railway undertakings) and 2.9 (from regional transport authorities). Access to storage sidings receiving a rating that was 0.2 points higher than last year's rating of 2.7. Access to marshalling yards received a rating from parties with access entitlement that was 0.3 points higher than the previous year (2.6). The fact that DB Netz AG only awards contracts for use of the track for a maximum of 12 months may well have been a contributing factor.

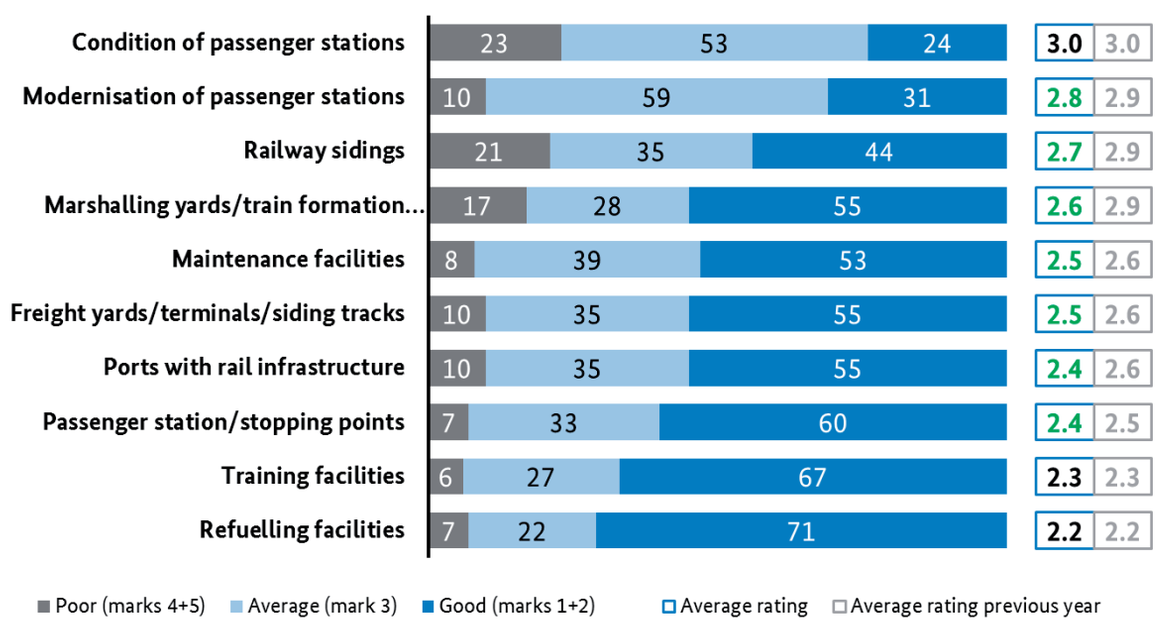


Figure 33: Ratings for access to service facilities (2015; rating shares in percent and average marks)

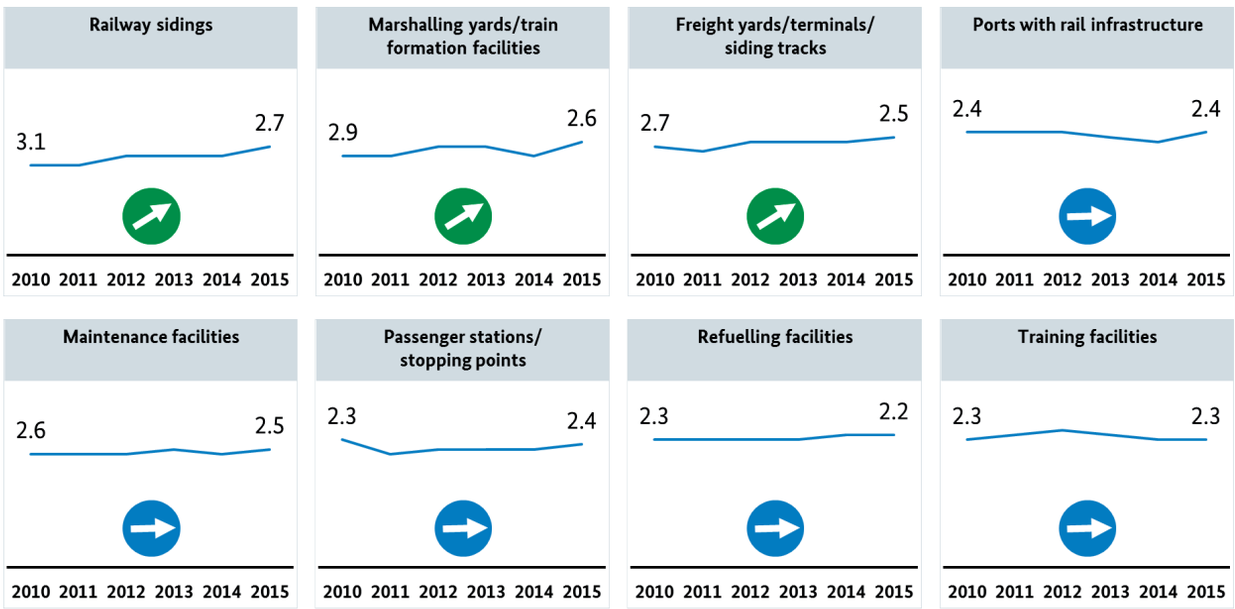


Figure 34: Trends in the ratings given for areas pertaining to service facilities (2010-2015)

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) (which received a mark of 2.2). Slightly more than two-thirds of the participating railway undertakings rated the latter as good or very good. Access to other service facilities was rated with marks between 2.4 and 2.5. Approximately one out of every two railway undertakings assessed access in this area positively; however approximately one out of every ten railway undertakings is so dissatisfied that it rated access as "poor" or "inadequate".

The regional transport authorities gave the condition of passenger stations a rating of 3.1, a somewhat lower rating than the railway undertakings which gave the same rating as the previous year, namely 3.0.

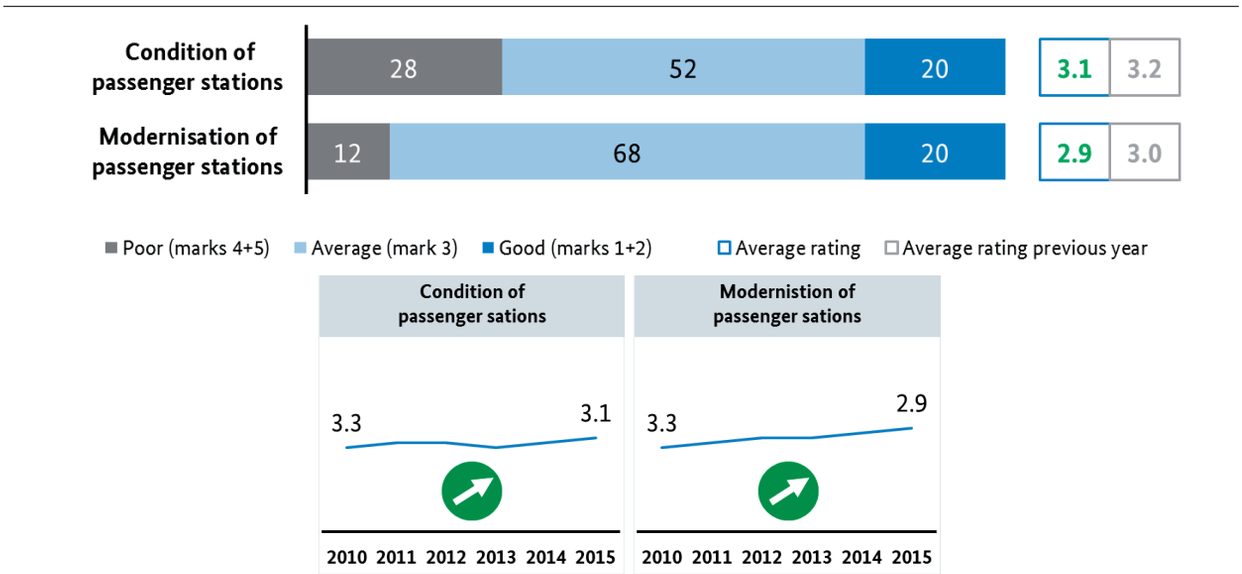
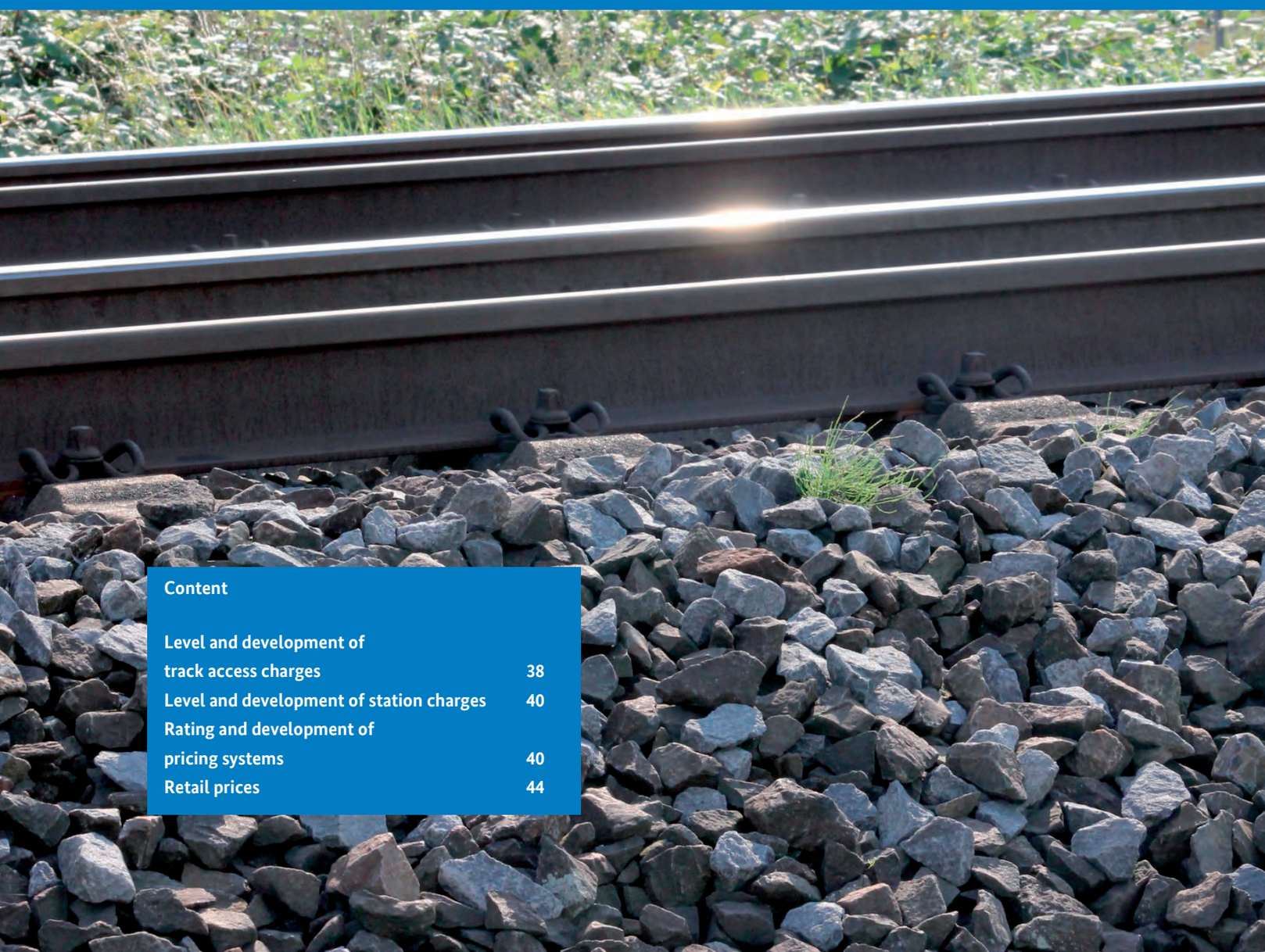


Figure 35: Ratings given by regional transport authorities for the condition and development of passenger stations and stopping points (2010-2015)

Price trends

The Bundesnetzagentur reviews the charges, within the scope of its legal competences, which railway undertakings have to pay infrastructure managers for access to the railway infrastructure. In the following Chapter, these charges will be examined from the market perspective.



Content

Infrastructure access and retail prices

The continuous rise in track access and station usage charges is presenting railway undertakings with major challenges.

In order to cover the costs of operating and maintaining the railway infrastructure, infrastructure managers charge railway undertakings for use of the infrastructure. Considering the fact that approximately one-third of the revenue generated by railway undertakings goes to infrastructure managers, the level of these charges represents an important cost factor for them.

The Bundesnetzagentur examined the pricing system of infrastructure managers within the scope of its legal competences, and managed to bring about improvements for the benefit of parties with access entitlement in many cases. It is essential for rail transport that all parties with access entitlement are treated equally and are charged reasonable usage charges in order to ensure it can maintain its current market position in intermodal competition.

Level and development of track access charges

The track access charges payable to infrastructure managers need to be based on the costs incurred in connection with operating and maintaining the track infrastructure. These costs can vary greatly depending on the configuration of the railway infrastructure. Sections of the railway infrastructure that are used solely for rail freight transport with low-density traffic often incur low operational costs. However, modernisation measures such as bridge restoration can potentially have a long-term impact on track access charges. Important cost factors include not only the age, level of modernisation and condition of the railway infrastructure but also topographical features (bridges/tunnels).

Public funding accounts for a significant part of financing for non-federally-owned infrastructure managers. In some cases, the granting of public funding for necessary infrastructure measures is 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 2014 was €4.36 per train-path kilometre. This represents an increase of more than 3 percent year-on-year. The railway line infrastructure managers levying a mean track access charge above this amount were just about in the majority– with the mean track access charges totalling €4.67 per train-path kilometre.

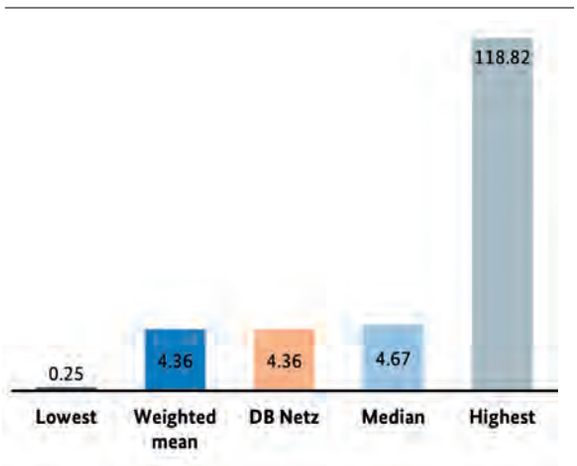


Figure 36: Range of mean track access charges in euros (2014; euros per train-path kilometre)

An examination of the mean track access charges over the past five years shows that they have increased continuously. Since 2010, the track access charges that railway undertakings had to pay increased on average by more than 14 percent and in the long-distance passenger rail segment and by 13 percent respectively in the short-distance passenger

rail segment and the rail freight market. This shows that the track access charges increased on average more than important comparative benchmark indicators such as the consumer price index and the producer price index for industrial products which only increased by 7 percent and 5 percent respectively.

The typical cost structure of an infrastructure manager can be replicated by combining publicly available indices of the Federal Statistical Office.[3] This "railway infrastructure input price index " shows an increase of 6 percent year-on-year and is therefore in between the two above-mentioned benchmark indicators.

The average track access charge in the short-distance passenger rail segment in 2014 was €4.62 per train-path kilometre. The track access charges in the long-distance passenger rail segment were much higher at a median charge of €5.89 per train-path kilometre. In the rail freight market, railway undertakings had to pay €2.83 on average 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
Increase 2002 - 2016	47%	53%	41%	43%
CAGR**	2.8%	3.1%	2.5%	2.6%

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

Sources: DB Netz AG, Bundesnetzagentur

Figure 37: Development of specific DB Netz AG track access charges (2002-2016)

[3] Discussion paper no. 327/November 2009 can be downloaded from: http://www.wik.org/

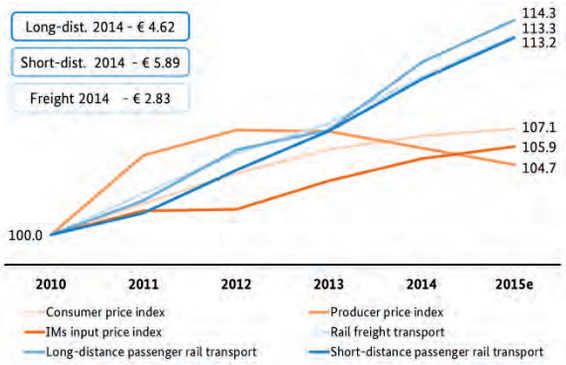


Figure 38: Development of infrastructure manager's average track access charges (2010-2015a; "a" – anticipated values; indexed 2010 = 100)

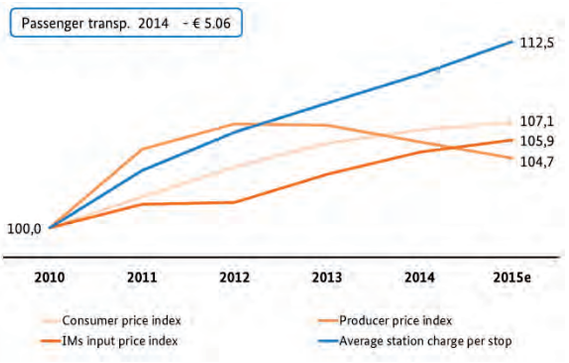


Figure 40: Development of infrastructure manager's average station charges (2010-2015a; "a" – anticipated values; indexed 2010 = 100)

The trend seen for several of DB Netz AG's frequently requested train-path products is shown in Figure 37. The charges for individual train-path products have increased by between 41 percent and 53 percent since 2002. This corresponds to an annual inflation rate of between 2.5 percent and 3.1 percent.

Level and development of station charges

The operators of passenger stations charged on average €5.13 per station stop in 2014. At €2.53 per stop, the median is significantly less. Thus one out of every two passenger station operators charges less than €2.53 per station stop on average. DB Station & Service AG reported an average station charge of €5.37, which is slightly more than the average charge.

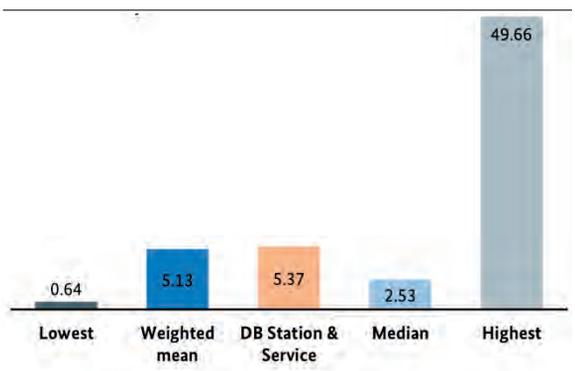


Figure 39: Range of average station charges (2014; euros per stopping point)

The charges levied for train stops at passenger stations have continually increased, parallel to the trend seen in track access charges. The Bundesnetzagentur expects station charges to have increased by an average of 12 percent during the period between 2010 and 2015. By contrast, important benchmark indices indicate increase rates of between 5 percent and 7 percent during the same period.

Rating and development of pricing systems

In addition to assessing the current state of access to railway infrastructure, parties with access entitlement also have the opportunity during the annual market survey to rate the level of non-discrimination and the price-performance of the infrastructure managers' pricing systems.

As in the previous years, the railway undertakings continue to judge issues that directly involve financial aspects more critically than primarily access-related issues. Whereas there was little change in the ratings for charges paid and service provided year-on-year, the ratings for the infrastructure managers' pricing systems' level of non-discrimination were higher in 2015 — with improvements recorded in all areas.

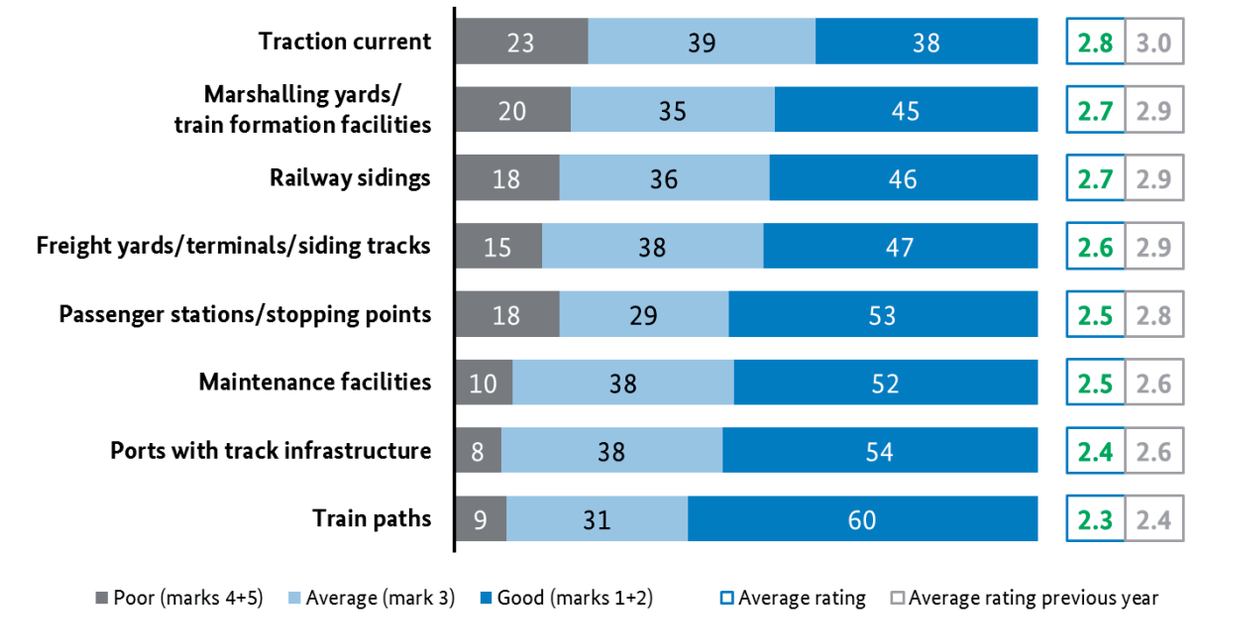


Figure 41: Ratings for the level of non-discrimination in IMs' pricing systems (2015; ratings shares in percent and average marks)

For the first time, infrastructure managers received marginally overall positive ratings not just for train paths but also for ports and maintenance facilities. Railway undertakings continue to see a significant need for improvement in the pricing system for traction current which received the overall rating of 2.8. Railway undertakings were obviously less than enthusiastic about the new pricing system for access to the traction current grid – which is in line with statutory regulations. All things considered, every second participating railway undertaking gave the pricing systems of infrastructure managers a “good” or “very good” rating for their level of non-discrimination.

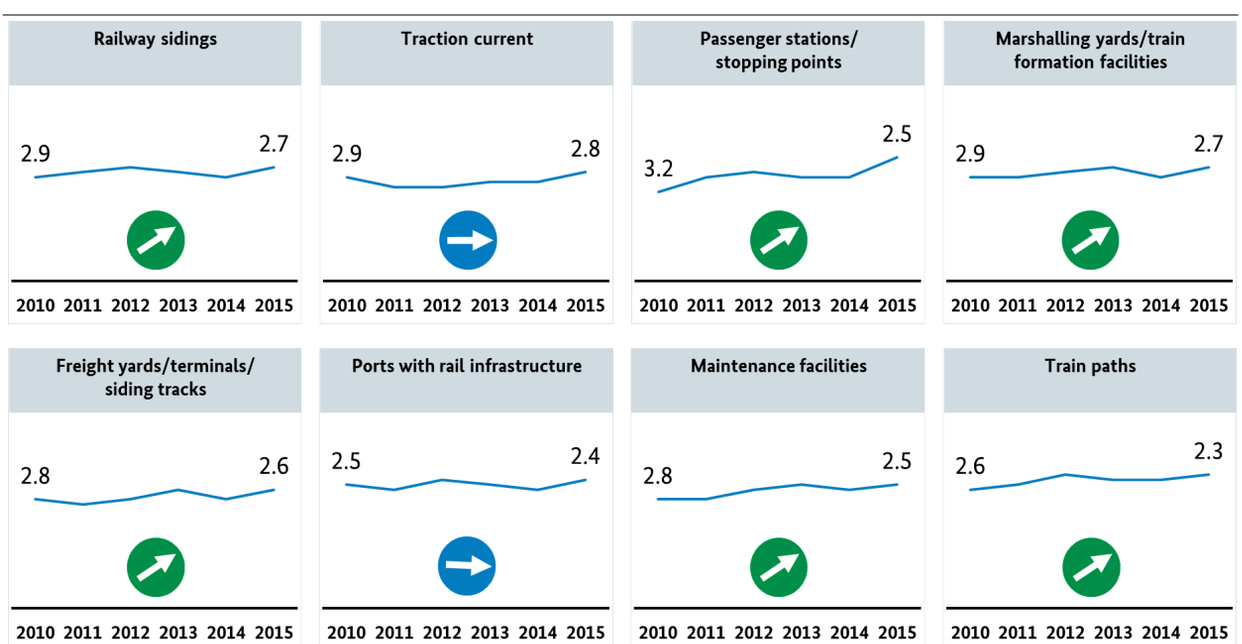


Figure 42: Trend in the ratings for the level of non-discrimination in IMs' pricing systems (2010-2015)

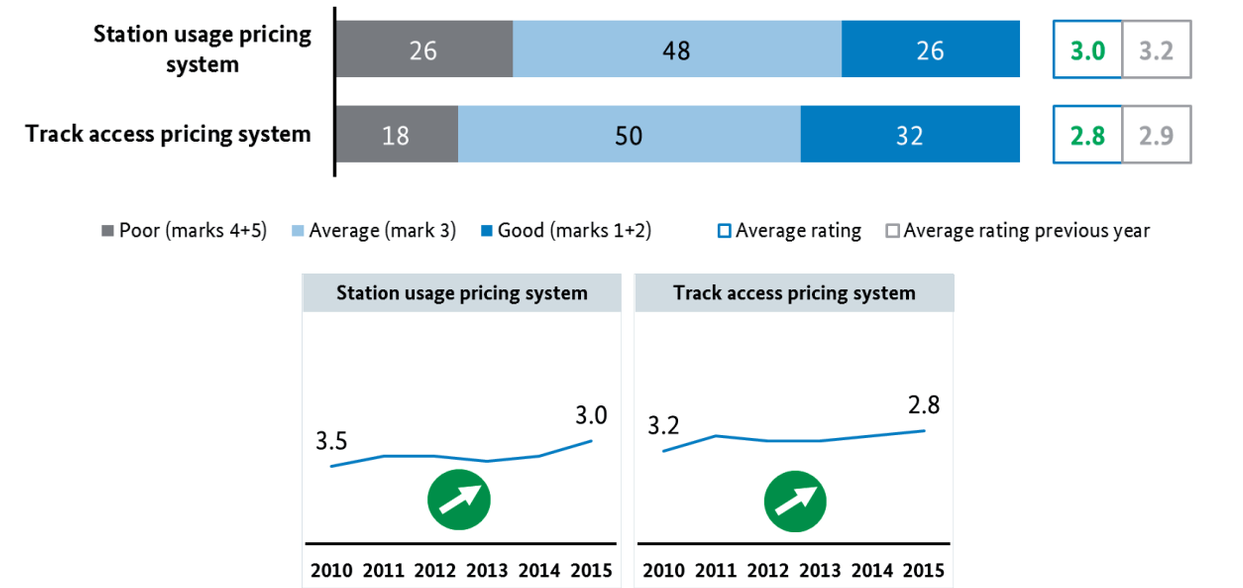


Figure 43: Regional transport authorities' ratings for the level of non-discrimination in pricing systems (2010-2015)

The regional transport authorities gave the level of non-discrimination in the pricing systems for railway infrastructure a satisfactory rating of 2.8 and passenger stations a rating of 3.0. The positive trend seen in recent years is being continued.

Railway undertakings rate the price-performance of infrastructure managers as satisfactory, with ratings once again being less positive than they were in the other areas that are subject to regulation.

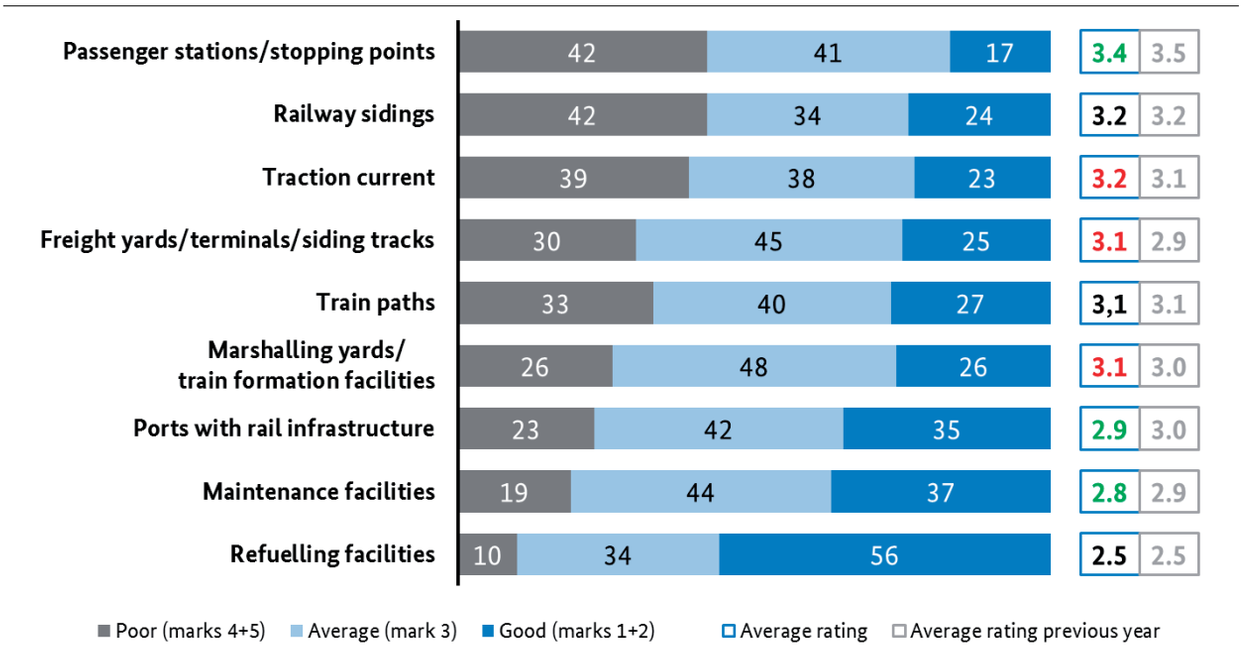


Figure 44: Infrastructure managers' price-performance ratio (2015; rating shares in percent and average marks)

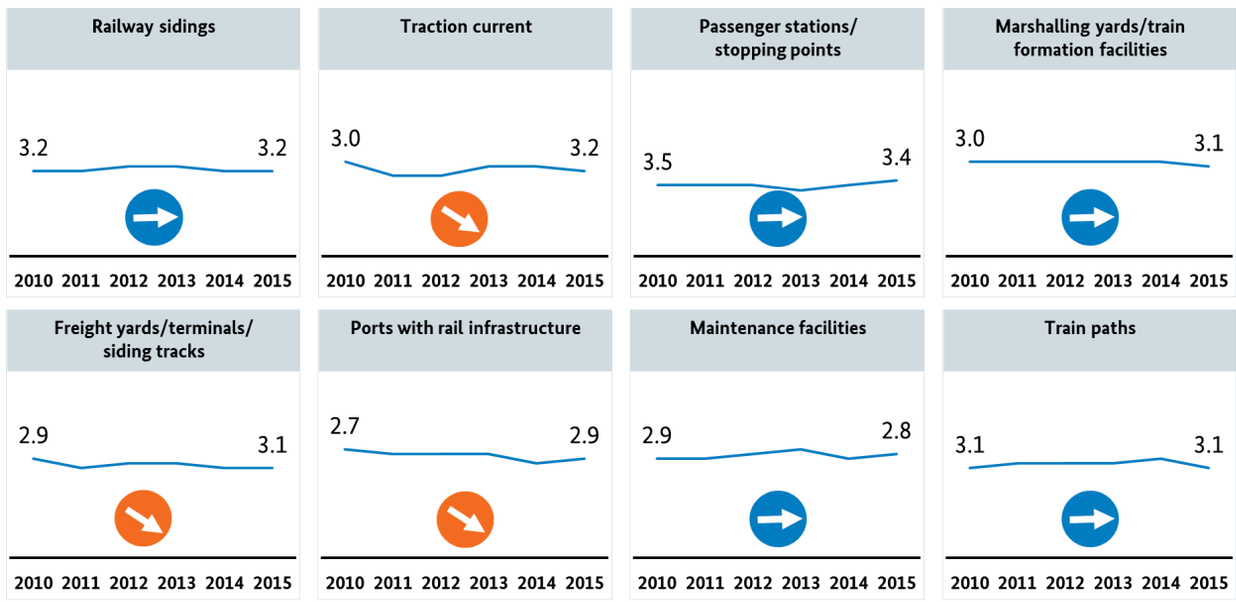


Figure 45: Development of the infrastructure managers' price-performance ratios (2010-2015)

The railway undertakings criticise what is in comparison a particularly poor price-performance and service provided for passenger stations (mark: 3.4), as well as for storage sidings (mark: 3.2) and traction current (mark: 3.2). With the exception of refuelling facilities which received a rating of 2.5, the railway undertakings gave all categories of service facilities a rating that is lower than 2.8.

A comparison drawn over several years shows that the assessments of price-performance have not improved. The railway undertakings did not think that regulation had led to any major improvements in the past few years.

The regional transport authorities were even more critical in their assessments of the infrastructure managers' price-performance. Both the price-performance for train paths and the price-performance for passenger stations/stopping points received an overall unsatisfactory rating. Around two-thirds of regional transport authorities rated the reasonableness of the station charges as "poor" or "very poor".

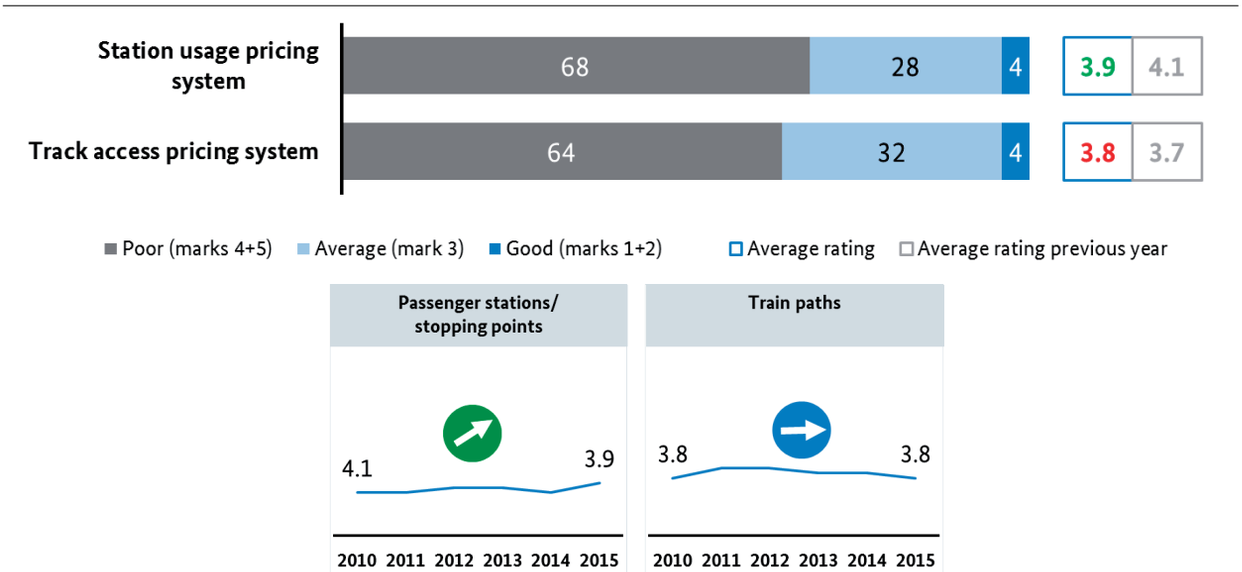


Figure 46: Regional transport authorities' rating of the infrastructure managers' pricing systems (2010-2015)

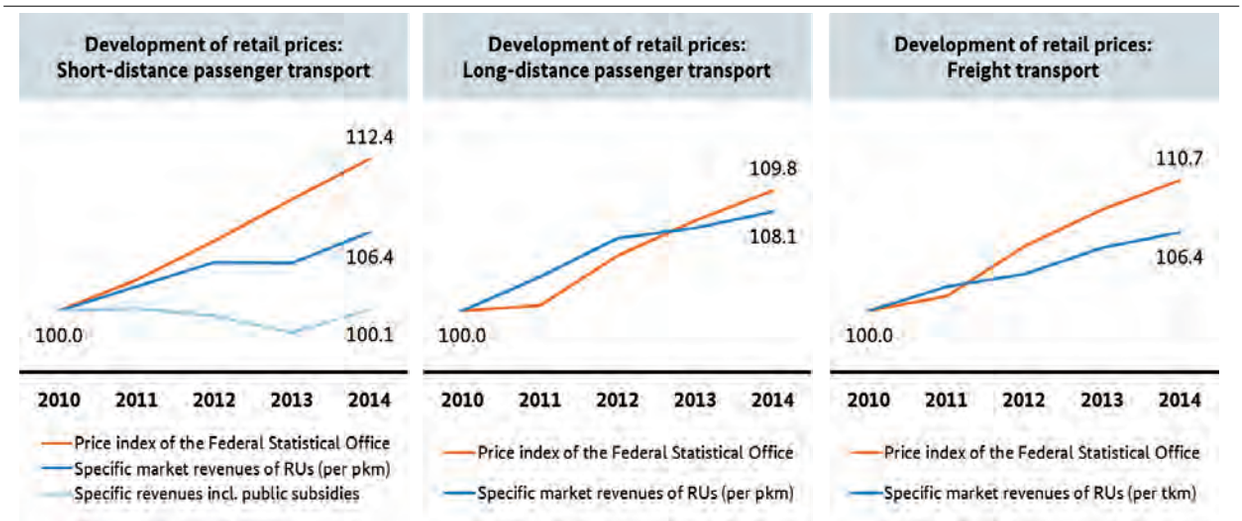


Figure 47: Development of retail prices (2010-2014; indexed 2010 = 100)

Retail prices

The Bundesnetzagentur's regulatory activities in the railway sector do not directly affect prices for passengers of railway undertaking as the regulated usage charges comprise only part of the retail price. However, ticket prices - alongside convenience and the range of offerings - are very important for end customers when assessing how attractive passenger rail services are. The same applies to transport charges in the rail freight market. The trend in price depends ultimately on the intermodal and intramodel stiffness of competition which also depends on the success of railway regulation.

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 differences in the trends seen in the Federal Statistical Office's indices and the specific market revenues can be attributed to the fact that the indices published by the Federal Statistical Office show the price development for precisely-defined services in combination with a fixed quantity structure, whereas the average revenue per tonne kilometre or passenger kilometre is additionally influenced by shifts in the quantity structure.

For example, changes in the use of rail passes or discount offers such as special prices or the Bahncard (railcard) can lead to a drop in specific market revenues.

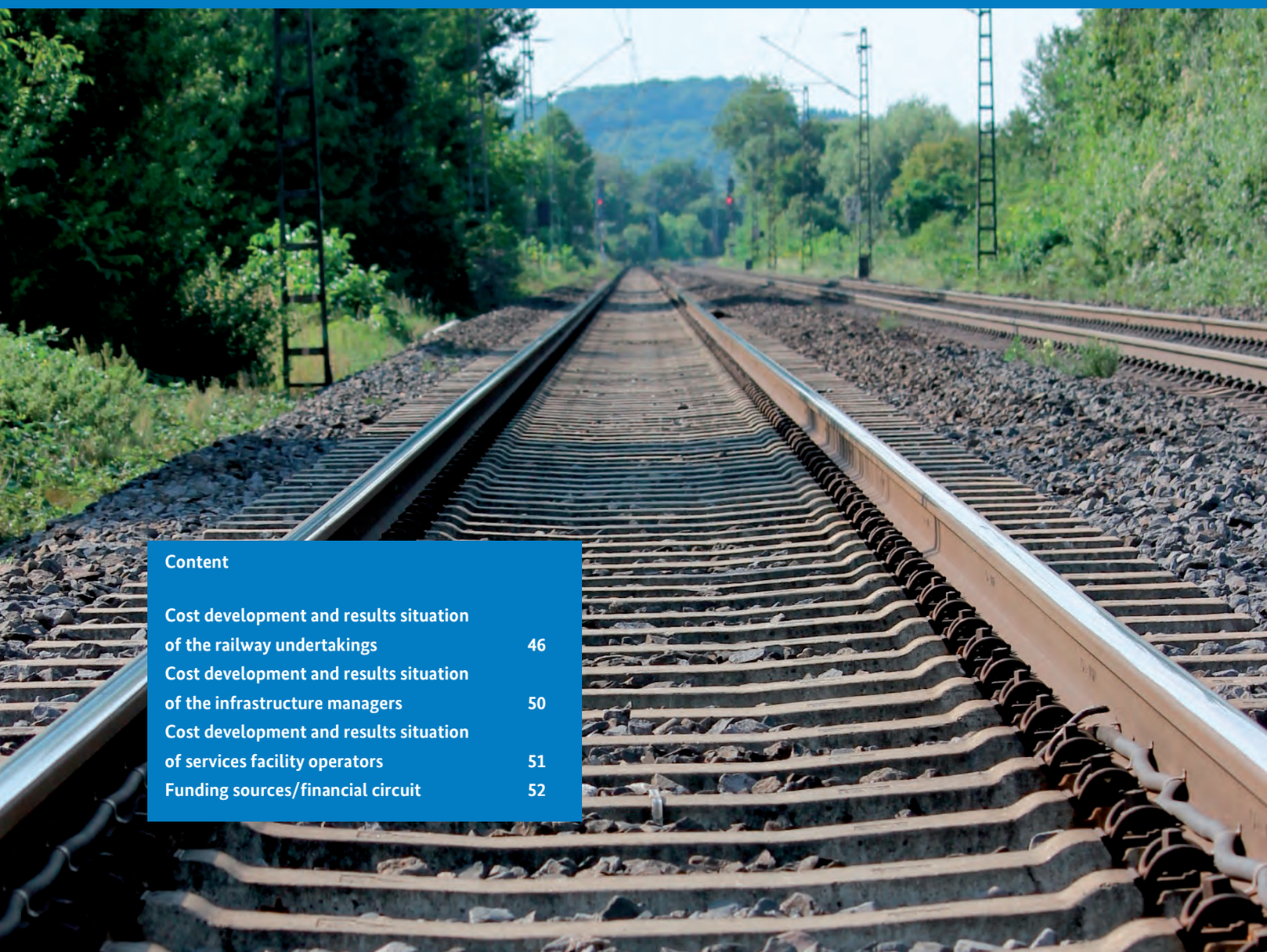
This explains why the price indices published by the Federal Statistical Office are more inclined to reflect the perspective of end customers who monitor price trends for a specific service. By contrast, examining specific charges allows for a more precise assessment of the revenue development from the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

The slight decline in the upward trend seen in the short-distance passenger rail transport segment in 2012 and 2013 did not continue in 2014. The specific revenue generated in the long-distance passenger transport segment and in the rail freight market increased too. This shows that railway undertakings succeeded in increasing their prices in the market.

When the subsidies from the regional transport authorities are taken into account, the revenue generated specifically in the short-distance passenger rail transport market has shown a primarily downward trend since 2010. This is due, inter alia, to the steadily rising average number of passengers per train until 2013.

Cost development and revenue situation of companies

The Bundesnetzagentur monitors the economic situation of enterprises involved in the railway market. As such, it takes company-specific and time-related developments into account.



Content

Economic situation of enterprises operating in the railway market

In the year under review, the economic situation of companies operating in the rail transport market deteriorated slightly compared to the previous year. All things considered, however, the financial and economic situation of the railway market is stable.

The Bundesnetzagentur has asked railway undertakings and infrastructure managers to provide detailed business information for the third year in a row now. Whereas in the last two reports, initial conclusions were drawn about the economic structure and financial stability of the German railway market and were presented in the Market Analysis, this report focuses on trends observed over several years for the first time. The following assessments are therefore based first and foremost on the feedback received by the Bundesnetzagentur.

The responses given by the market participants undergo a simple plausibility check. Notwithstanding this, the quality of the statements made here is largely determined by the answers provided by the market players. As such, it must be borne in mind that not all railway undertakings had completed their annual financial statement by the time the market survey was carried out. Measured against the train-path kilometres travelled in 2014, this equals a response rate of 85 percent for the railway market as a whole. For the business analyses, the calculations in those analyses that focus on a specific segment included only those undertakings that operate exclusively in that particular segment.

Cost development and results situation of the railway undertakings

71 percent of the railway undertakings reported positive operating results for the year 2014. This is a poorer result for the overall market compared to last year's 73 percent. The detailed analysis of the individual transport services shows that the number of railway undertakings reporting positive operating results is higher than those reporting negative operating results.

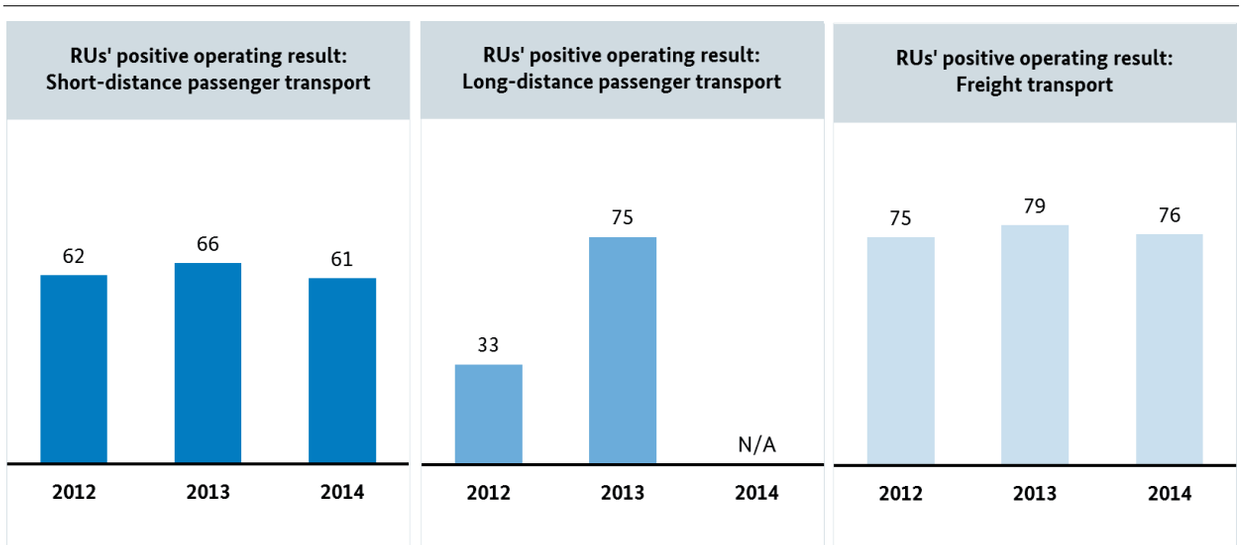


Figure 48: Market overview of railway undertakings' operating results (2012-2014; percentage)

In the past three reporting years, railway undertakings operating in the short-distance passenger rail transport found it the most difficult to generate a positive operating result (cf. Figure 48). The share of railway undertakings that generated a positive operating result rose initially from 62 percent to 66 percent but fell back to 61 percent in fiscal 2014. 75 percent of the railway undertakings operating in the rail freight market managed to generate a positive operating result in 2014. There is not sufficient data available for 2014 to make any statement about the market as a whole, without drawing conclusions about individual railway undertakings. The share of railway undertakings with a positive operating result in the rail freight market was 76 percent, a slightly poorer result than the previous year.

In relation to ordinary activities, i.e. not including net interest income and net results from investments, 72 percent of all railway undertakings generated a positive result. Looking at results from ordinary activities, it is evident that they are more or less the same as the results indicated in Figure 48.

The slight deterioration in the situation on the market as a whole is mirrored in the bandwidth of profits and losses (Figure 49). The highest positive operating result achieved was approximately €611m in 2012. This had declined to €503m by 2014. Notwithstanding this, on average, railway undertakings managed to generate a steady increase in profits. At the same time, the maximum loss climbed to €86m. In fiscal 2013, maximum losses reached €43m. The average loss fluctuated between €5m and €2m.

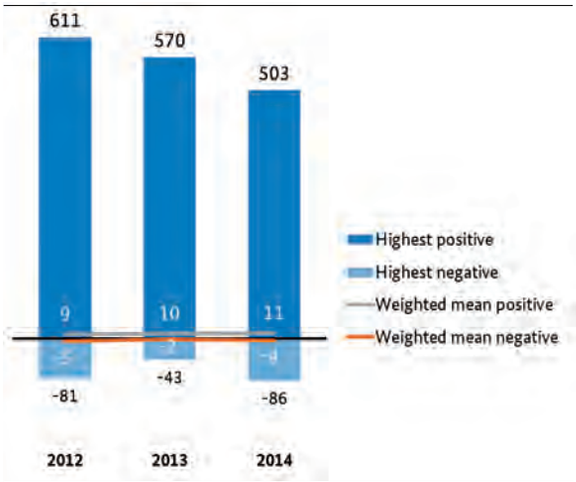


Figure 49: Range of railway undertakings' operating results (2012-2014; in € million)

All things considered, the economic situation of railway undertakings is deemed to be sound as 75 percent managed to generate a positive operating result and the sum of the positive operating results also exceeds the losses many times over.

To further analyse the railway undertakings' cost structure, the infrastructure access charges were considered in relation to the revenues generated. Infrastructure usage charges as a percentage of the revenues generated vary considerably, depending on the type of transport service provided, but continue to be stable within the respective category. The share of infrastructure usage charges rose by 1 percent in short-distance and long-distance rail passenger transport. Infrastructure access charges currently account for 38 percent of the revenues generated in the short-distance passenger rail transport segment and 24 percent in the long-distance passenger rail transport segment. The share of infrastructure access charges in revenue is far lower in the rail freight segment, having decreased by a further percentage point to 17 percent.

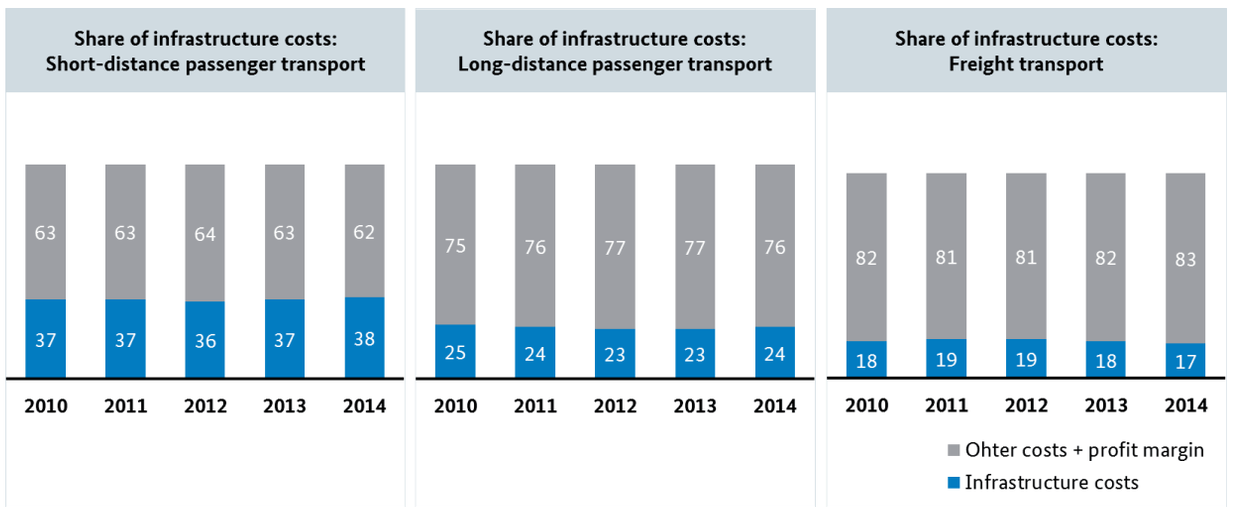


Figure 50: Share of infrastructure access charges as a percentage of railway undertakings' revenue, by mode of transport (2010-2014; shares in percent)

The infrastructure usage charges account for the lion's share of overall costs incurred by railway undertakings. However, the total costs vary between the individual transport services. The compilation of infrastructure charges also varies greatly, as shown in Figure 51:

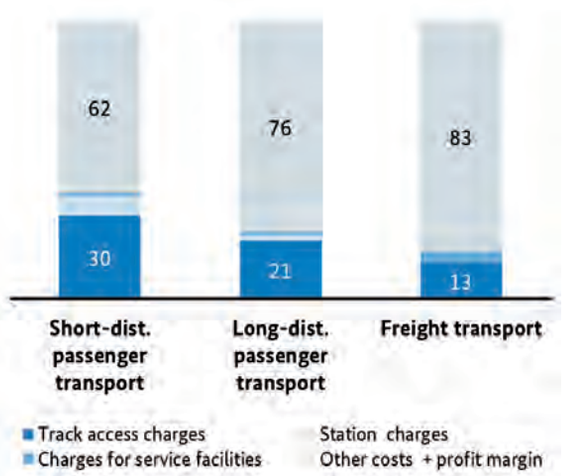


Figure 51: Compilation of infrastructure costs (2014; shares in percent)

In the short-distance passenger rail transport segment, track access charges accounted for 30 percent of revenue. When only non-federally-owned railway undertakings in this segment are observed, track access charges come to as much as 40 percent. Station charges in 2014 were around 7 percent for both DB companies and non-federally-owned companies,

and charges for other service facilities are the source of less than 1 percent of the infrastructure costs.

Track access charges accounted for 21 percent of the revenue in the long-distance passenger rail transport segment. When only non-federally-owned railway undertakings in this segment are observed, they account for 23 percent of revenue. Station charges equalled only 2 percent of revenue, whereas they account for 5 percent of revenue generated by non-federally-owned railway undertakings. Thus, track access charges were lower than in the short-distance passenger rail transport segment since there are far fewer stops in the long-distance passenger rail transport segment than there are in the short-distance passenger rail transport segment. Charges for use of other service facilities accounted for just under 1 percent.

Track access charges are lower overall in the rail freight market. With track access charges accounting for 13 percent of revenue, they are much lower than in the rail passenger transport segment.

For non-federally-owned railway undertakings, track access charges amount to just under 17 percent. However, the share of charges for other

service facilities paid by non-federally-owned railway undertakings at just under 2 percent was lower than in the market as a whole where charges account for 4 percent. This is probably due to the fact that federally-owned railway undertakings use marshalling yards more frequently.

In the year under review, the Bundesnetzagentur once again compared the profit margins of railway undertakings. However, it did not ask any questions about their capital base in the past few surveys which explains why profits margins are still being used as the profitability benchmarks.

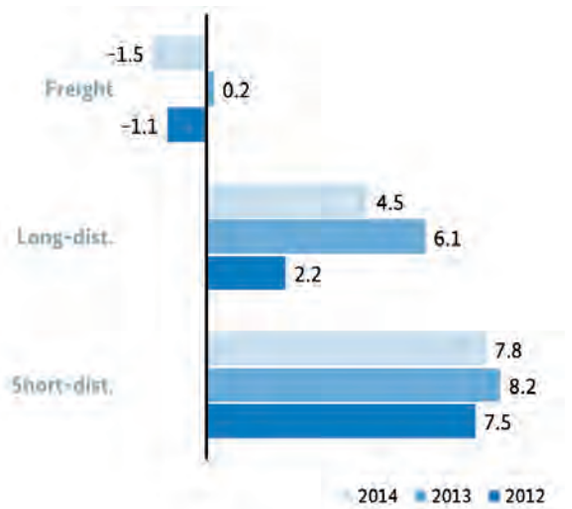


Figure 52: Railway undertakings' profit margins (2012-2014; in percent)

Net margins vary greatly between the individual transport segments. Companies operating in the rail freight market only managed to generate a marginally positive net margin in total in 2013.

In the past few reporting years, the non-federally-owned undertakings in the rail freight market only managed to generate an average net margin of 2.8 percent in 2013 and 2.5 percent in 2014 compared to the market as a whole.

The net margins in the passenger rail transport segments have been positive to date. The short-distance rail passenger transport market in particular generated comparatively high net margins. This can be attributed above all to the profits generated by DB Regio. The non-federally-owned undertakings generated a net profit of just under 1 percent on average.

In order to establish a better basis for comparing the profit situation in the individual transport segments, the operating results are shown in relation to a measure of activity unit (Figure 53), namely train-path kilometres and passenger/tonne kilometres.

This clearly shows that the short-distance passenger rail transport segment generated the highest operating result per passenger kilometre. However, the operating result generated by the non-federally-owned undertakings was much lower, averaging 0.50 cents per passenger kilometre. By contrast, the long-distance rail passenger transport segment generated a slightly higher result of €1.27 per train-path kilometre travelled than the short-distance passenger rail transport segment which averaged €1.23 per train-path kilometre.

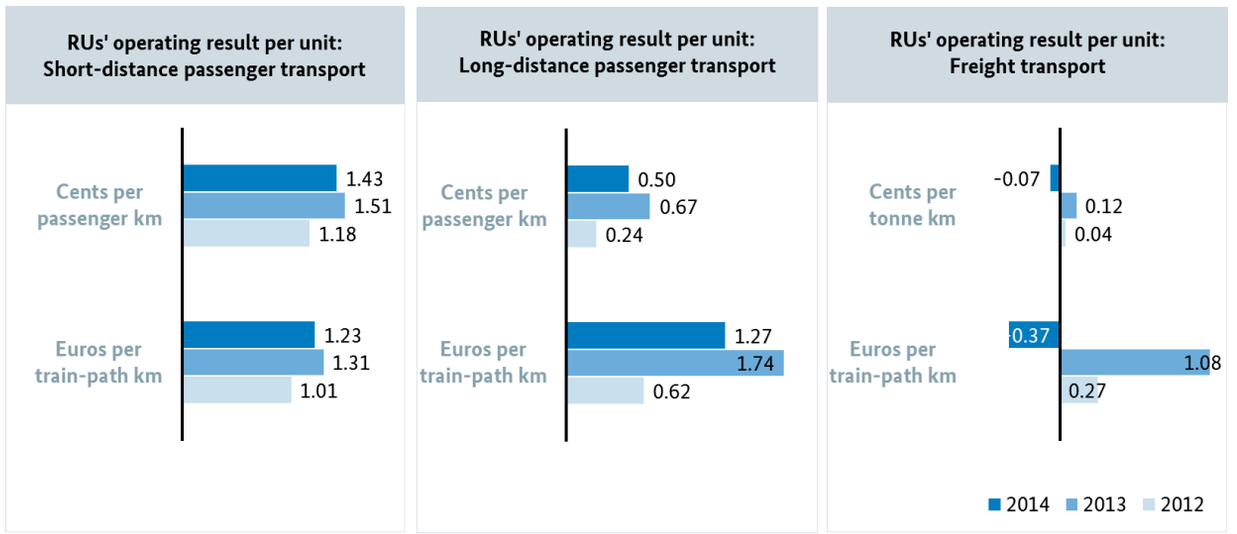


Figure 53: Result per passenger/tonne kilometre by type of transport service (2012-2014; in cents/euros)

In the rail freight market, railway undertakings recorded an average loss of 37 cent per train-path kilometre. When non-federally-owned undertakings are examined separately, this group of undertakings generated positive operating results averaging 41 cent per train-path kilometre. The market as a whole generated a loss of 0.07 cent per tonne kilometre. When non-federally-owned railway undertakings are examined separately, the average profit is 0.07 cent per tonne kilometre.

In conclusion, it is noted that the diagram merely provides an overview of the market as a whole. It does not take the individual undertakings' special effects for the results of the respective business year into account.

Results situation of infrastructure managers

The results situation of the non-federally-owned infrastructure managers improved in the year under review. Although these companies did not generate any profits through their provision of train paths in total, the sum total of losses decreased considerably.

Notwithstanding this, the juxtaposition of cumulative revenue generated from track access charges and cumulative costs shows that the infrastructure managers continue to be dependent on public subsidies. During the previous reporting period, the non-federally-owned infrastructure managers were not able to cover their costs with revenue generated by track access charges.

Looking at financing, it was noted that at 28 percent, the average equity ratio of the non-federally-owned infrastructure managers was slightly less than the approximated equity ratio of the overall market's average of 35 percent.

Operating result of railway line infrastructure operators

In € million	2009	2010	2011	2012	2013	2014
Revenue from track access charges	71.3	73.5	71.3	68.8	59.0	67.9
Expenditure	108.9	106.4	93.3	93.6	78.6	75.7
Result	-37.6	-32.9	-22.0	-24.8	-19.6	-7.8

Figure 54: Revenue, expenditure and result of infrastructure managers, non-federally-owned infrastructure managers only (2009-2014)

Cost development and results situation of service facility operators

The results situation of non-federally-owned service facility operators improved slightly in the year under review. 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 77 percent, the shortfall in 2014 reached the second-highest level since survey began to be carried out within the framework of market analyses.

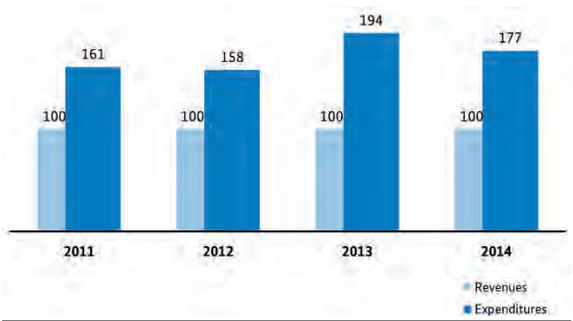


Figure 55: Development of revenue and expenditure of service facility operators (2011-2014; percentages)

Generally it can be assumed that the function of many non-federally-owned service facilities is simply to support the respective company's primary business purpose. This explains why it cannot be automatically assumed that all enterprises are geared to making a profit. Thus, in many cases, railway operations do not constitute a core business activity for these enterprises meaning that any shortfalls are offset by other business units. Notwithstanding this, the further analysis broken down by the type of service facility is intended to provide information about the origin of the negative results (Figure 56).

The non-federally-owned operators of marshalling yards and freight yards/freight terminals generated a positive contribution to their operating results which have not changed significantly vis-à-vis the previous year. The minor deviations vis-à-vis the previous year shown by the operators of marshalling yards can be explained above all by the fact that a different database was used.

The revenue generated by the operators of passenger stations and storage sidings more or less covered the expenditure incurred in the year under review, with the revenue generated by operators of storage sidings showing only very slight changes year-on-year. By contrast, the operators of passenger stations managed to generate a positive result compared to the previous year.

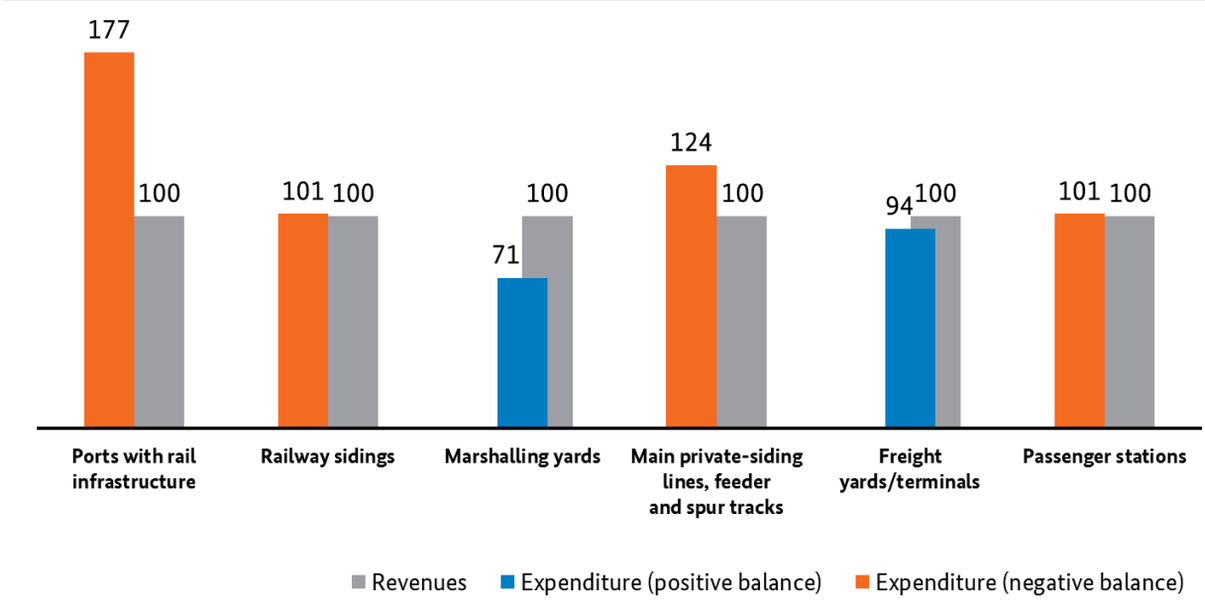


Figure 56: Result by type of service facility of non-federally-owned IMs (2014; percentages)

This means their result situation has deteriorated significantly since the previous year. The largest shortfall arose, as the previous year, in railway infrastructure at service facilities at ports and with factory sidings, feeder tracks and railroad sidings.

Funding sources/financial circuit

While the previous Chapter analysed the use of funds and the results situation of enterprises involved in the railway market, the following Chapter will report on the source of funds for the first time. To this end, the Bundesnetzagentur adopted a structured approach to the funding sources it had requested information on.

Figure 57 shows in the form of a flowchart from what sources enterprises involved in the railway market received funds and how the financial circuit in the railway sector is closed. As such, it used the system of the Service Level and Funding Agreement (Leistungs- und Finanzierungsvereinbarung II or LuFV II) as a basis.

The blue lines represent public funds. They include above all the regionalisation funds for the provision of short- distance rail transport services and funds from the Service Level and Funding Agreement I and II for preservation of the railway infrastructure. In addition, the federally-owned and non-federally-owned infrastructure managers received funding on the following basis:

- Federal Railway Infrastructure Upgrading Act (Bundesschienenwegeausbaugesetz),
- Community Transport Financing Act (Gemeindeverkehrsfinanzierungsgesetz),
- Railway Crossings Act (Eisenbahnkreuzungsgesetz),
- General Railway Act (Allgemeines Eisenbahngesetz),
- Regional Railway Financing Act (Landeseisenbahnfinanzierungsgesetz) ,
- Project funding under the Regional Budget Code (Landeshaushaltsordnung) and
- Subsidies received from local authorities and the federal states.

The orange lines represent reflows of funds to the Federal Government, including dividend payments DB AG made to the Federal Government which has pledged to invest some of the dividends in the railway infrastructure.

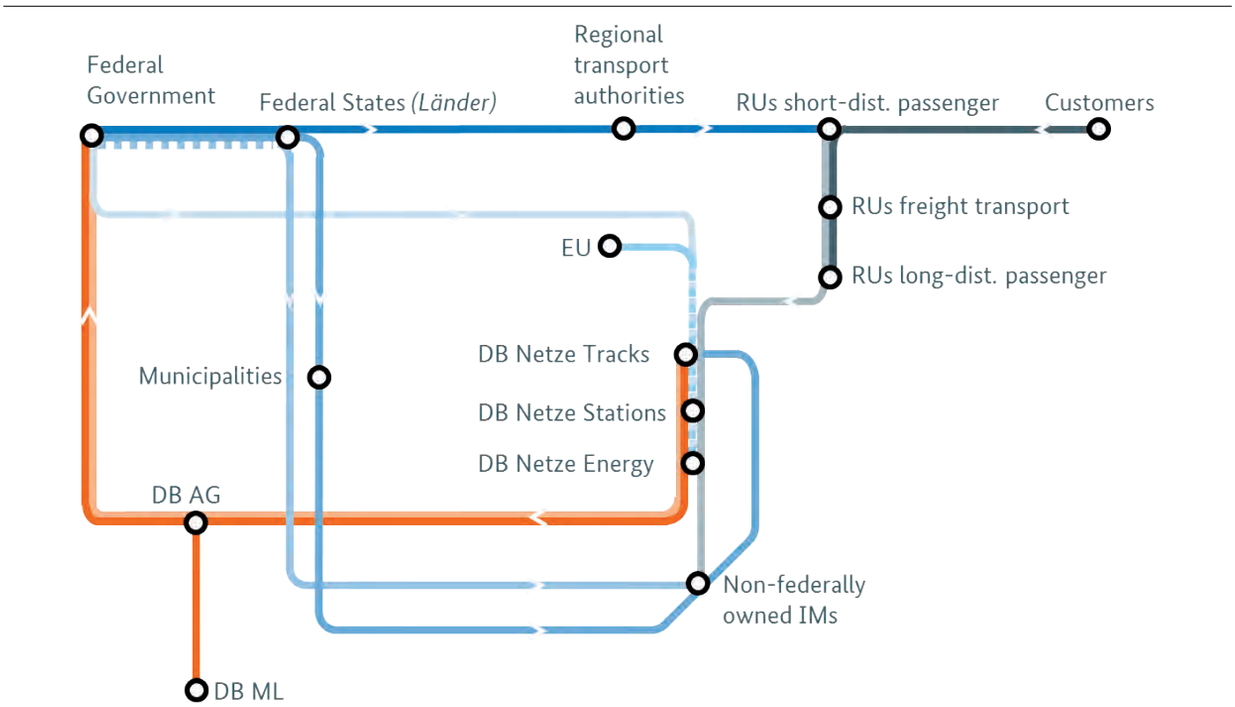


Figure 57: Flowchart of the financial circuit of the railway market

The retail prices paid by passengers represent another, considerable source of finance for railway undertakings. Infrastructure access charges paid to infrastructure managers account for around 50 percent of revenue railway undertakings generate from end customers.

In 2014, the infrastructure managers questioned indicated that they had spent just under €2.5bn of funds received to invest in the existing infrastructure. They also said they spent own resources of just under €0.5bn. The federally-owed infrastructure managers are obliged under the Service Level and Funding Agreement to contribute own resources for investment in the existing infrastructure. They invested €1.8bn funds and just under €0.7bn of their own resources in the modernisation and expansion of the infrastructure.

The funding rate of 73 percent in modernisation and expansion of the infrastructure is below the funding rate of 84 percent for investment in the existing infrastructure.

Funds appropriated by the Federal Government accounted for 82 percent of funding for investment measures, funds received from the federal states and local authorities accounted for 16 percent and funds received from the EU accounted for 2 percent.

In the field of non-investment measures, 45 percent accounted for funds appropriated by the Federal Government, 36 percent accounted for funds appropriated by the federal states and local authorities and 19 percent accounted for EU funds.

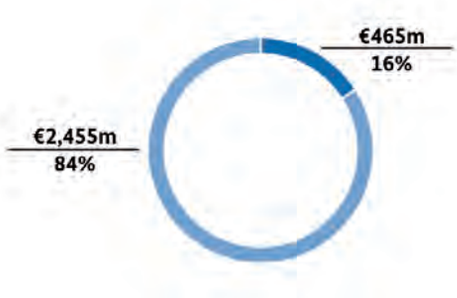


Figure 58: Investment in the existing infrastructure broken down by own resources and subsidies (2014; in million euros/percentages)

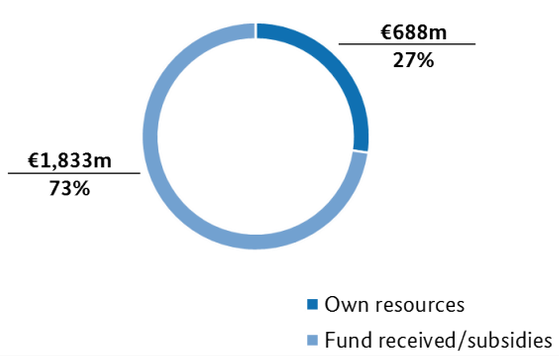


Figure 60: Modernisation and expansion of infrastructure broken down by own resources and subsidies (2014; in million euros/percentages)

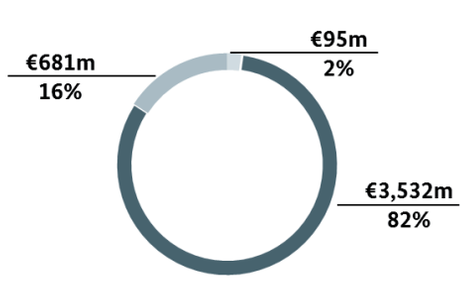


Figure 59:
Funding sources of investment measures (2014; in million euros/percentages)

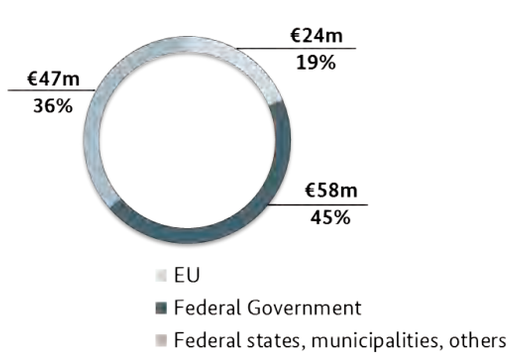
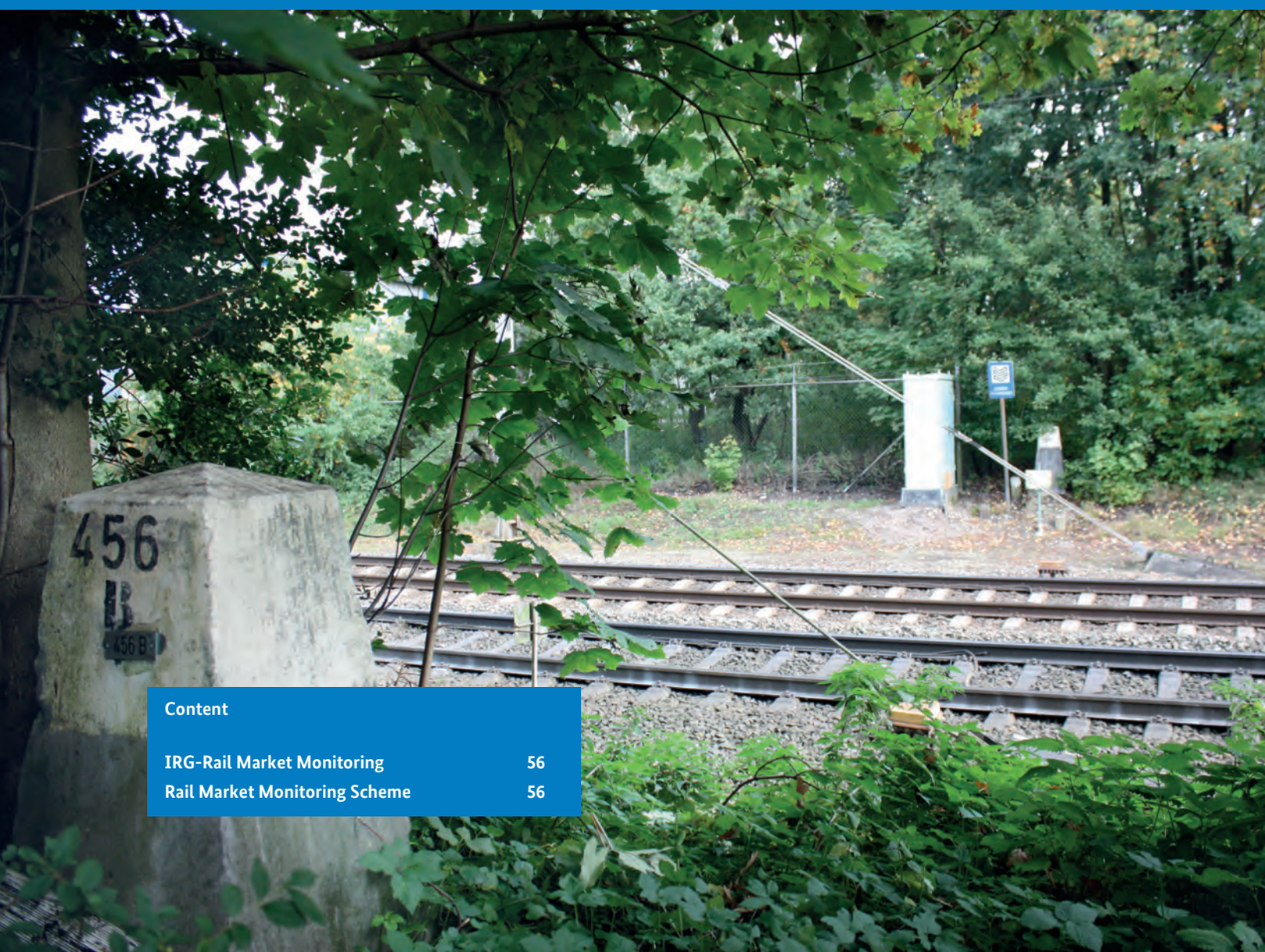


Figure 61:
Funding sources of non-investment measures (2014; in million euros/percentages)

IRG-Rail and the Rail Market Monitoring Scheme

Participation in international market monitoring and issuing an international Market Analysis has become firmly-established in the railway segment. Since 2015, it has been mandatory for the Member States to paricipate in the EU Commission's Rail Market Monitoring Scheme.



Content

International market monitoring

Competition in the European railway markets continued to flourish in the year under review. The competitors of incumbent railway undertakings managed to gain further market shares both in the passenger and the freight markets.

IRG-Rail Market Monitoring

Since it was established in 2011, IRG-Rail (Independent Regulators' Group - Rail) has developed into an important European body which aims to press ahead with harmonisation in the European railway market. This is why the Bundesnetzagentur was once again actively involved in the international Market Monitoring Working Group and in European market monitoring.

A joint report by IRG-Rail has been published on IRG-Rail's homepage and can be downloaded free-of-charge from the following website:

http://www.irg-rail.eu/public-documents/2015/

The joint report covers the tasks and assessment of the railway infrastructure, the passenger rail transport market, the rail freight market and service facilities of the Member States/countries involved in IRG-Rail.

It also provides information about market trends and special measures.

Information about 2014, the year under review, is due to be published in the first quarter of 2016.

Rail Market Monitoring Scheme (RMMS) of the European Commission

Pursuant to Article 15 (4) of Directive 2012/34/EU, the Commission shall report every two years to the European Parliament and the Council on the railway market in Europe.

In terms of content, the report outlines 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 outlines the development of the internal market for service facilities and framework conditions such as investment in the infrastructure, price trends, quality of service, public service obligations, the employment trend and the social environment.

The report of the European Commission can be viewed free-of-charge at the following website:

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

The next report is due to the published in the first half of 2016.

ANNEX

Annex

Method used for rating influencing factors

The Chapter “Ratings for access to the rail infrastructure” and the Chapter “Rating and development of pricing systems” outline the views of railway undertakings and regional transport authorities about key factors that impact the railway market.

The results outlined in the chapters are based on the feedback that railway undertakings and regional transport authorities responsible for short-distance rail transport services submitted within the framework of the annual market survey in which the market players are asked to give their own subjective rating for issues relating to access and non-discrimination. The ratings were on a scale ranging 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. The results published therefore 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 (2015).

DB Netz AG's track access charges, 2002 to 2016

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
NDTAC surcharge **												1,00%	1,50%	2,00%	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 80 percent of the wagons making up the freight train fulfil the requirements of the Technical Specification for Interoperability (TSI) Noise; until 31 May 2014, the surcharge was 1 percent.

List of figures

List of abbreviations

AEG	General Railway Act
AG	Stock company
DB	Deutsche Bahn
EBA	Federal German Railway Authority
EIBV	Rail Infrastructure Usage Regulations
IM	Infrastructure Managers
EU	European Union
GDP	Gross domestic product
Hz	Hertz
IRG-Rail	Indepentend Regulator's Group-Rail
km	Kilometre
kV	Kilovolt
kW	Kilowatt
kWh	Kilowatt hour
LuFV	Service Level and Funding Agreement
pkm	Passenger kilometre
RMMS	Rail Market Monitoring Scheme
RU	Railway undertaking
t	Tonnes
tkm	Tonne kilometre
Trkm	Train-path kilometre
TSI	Technical Specification for Interoperability
V	Volt

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