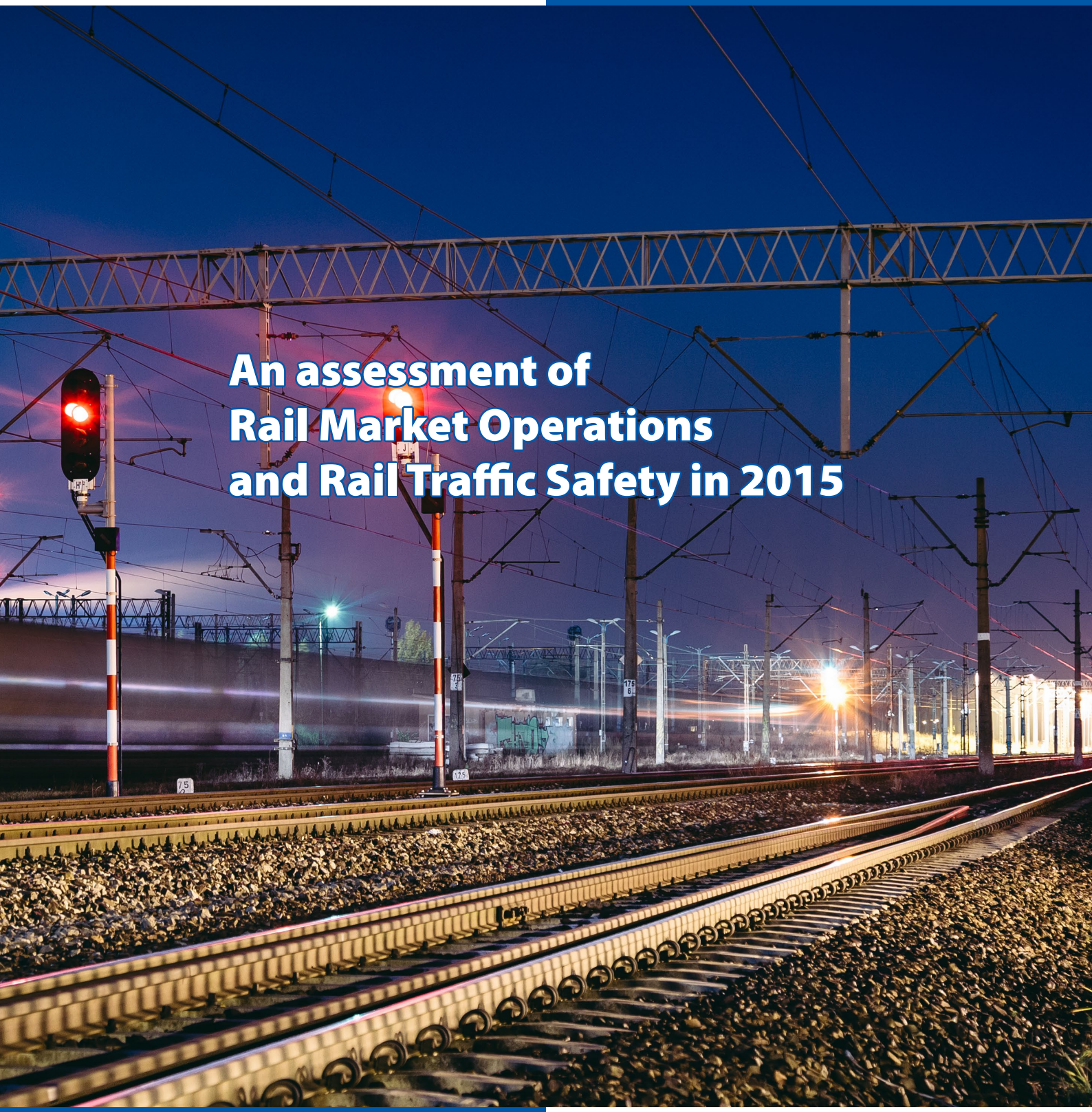
PRZYJAZNY URZĄD



An assessment of Rail Market Operations and Rail Traffic Safety in 2015

URZĄD TRANSPORTU KOLEJOWEGO

The mission of the Office of Rail Transport is to provide safe and competitive conditions for rail transport services in Poland.

Dear Madams and Sirs,

I am pleased to present to you the newest publication of the Office of Rail Transport "An assessment of Rail Market Operations and Rail Traffic Safety in 2015". I am confident that the information it contains will prove useful in your activities. Rail transport is like a system of interconnected vessels, and therefore the study discusses all basic market segments: passenger and freight transport as well as infrastructure. What kind of image of railway is presented in the document? It is certainly a promising sector. With reduced travel times, the number of rail passengers is increasing. Of essence for freight railway undertakings is also the improving infrastructure. In the years to come, one may expect that travel times will be further reduced. However, this is not the only criterion for the return of passengers and cargo on rail. New or upgraded rolling stock, more frequent connections, convenient timetables, service and ticket prices, and greater travelling comfort are also crucial.

As usual, the second part of the document is devoted to rail traffic safety. We are therefore pleased to observe an improvement in this field, largely resulting from a major investment programme. At the same time, safety is a value which needs to be protected on a daily basis. That is why it is so essential that the old and worn-out rail traffic control equipment be replaced with new, fully automated devices. This type of equipment ensures greater efficiency and ease of operation for the personnel responsible for rail traffic safety as well as streamlines the decision-making process.

The market analyses and monitoring as well as transport statistics prepared by us enjoy great interest among rail market participants. I would like to thank everyone for their cooperation with the Office and for sharing information used in our publication. I hope that it will prove helpful in your current activities and be conducive to your decision-making processes.

Wishing you an interesting read,

Regards,

Ignacy Góra

President of the Office of Rail Transport

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Abbreviations

No.	Abbreviation	Full name
1.	IRG-Rail	Independent Regulators' Group – Rail
2.	UIRR	International Union for Road-Rail Combined Transport
3.	Eurostat	Eurostat – Statistical Office of the European Communities
4.	GUS	Central Statistical Office of Poland
5.	UTK	Office of Rail Transport
6.	UIC	Union Internationale des Chemins de Fer (the International Union of Railways)
7.	President of UTK	President of the Office of Rail Transport
8.	Arriva	ARRIVA RP sp. z o.o.
9.	Captrain Polska	Captrain Polska sp. z o.o.
10.	CARGOTOR	CARGOTOR sp. z o.o.
11.	České dráhy	České dráhy A.S.
12.	Ciech Cargo	CIECH Cargo sp. z o.o.
13.	CTL Logistics	CTL Logistics sp. z o.o.
14.	CTL Maczki - Bór	CTL Maczki - Bór S.A.
15.	CTL Rail	CTL Rail sp. z o.o.
16.	CTL Train	CTL Train sp. z o.o.
17.	DB Schenker Rail Polska	DB Schenker Rail Polska S.A.
18.	Die Länderbahn	Die Länderbahn GmbH DLB
19.	DLA	Dolnośląskie Linie Autobusowe Sp. z o.o.
20.	DSDiK in Wrocław or DSDiK	Lower Silesian Roads and Rail Service in Wrocław
21.	Ecco Rail	ECCO Rail sp. z o.o.
22.	Euronaft	Euronaft Trzebinia sp. z o.o.
23.	Euroterminal or Euroterminal Sławków	„Euroterminal Sławków" sp. z o.o.
24.	Eurotrans	EUROTRANS sp. z o.o.
25.	Freightliner PL	Freightliner PL sp. z o .o.
26.	Orion Kolej	F.H.U. "ORION Kolej" Krzysztof Warchoł
27.	Grupa Azoty „KOLTAR"	Grupa Azoty „KOLTAR" sp. z o.o.
28.	GATX Polska	GATX Rail Poland sp. z o.o.
29.	Infra SILESIA	Infra SILESIA S.A.
30.	Inter Cargo	Inter Cargo sp. z o.o.
31.	JSK	Jastrzębska Spółka Kolejowa sp. z o.o.
32.	Koleje Czeskie	Koleje Czeskie sp. z o.o.
33.	Koleje Dolnośląskie	Koleje Dolnośląskie S.A.
34.	Koleje Małopolskie	Koleje Małopolskie sp. z o.o.
35.	Koleje Mazowieckie	„Koleje Mazowieckie – km" sp. z o.o.
36.	Koleje Śląskie	Koleje Śląskie sp. z o.o.
37.	Koleje Wielkopolskie	Koleje Wielkopolskie sp. z o.o.
38.	KP Kotlarnia Linie Kolejowe	Kopalnia Piasku „Kotlarnia" S.A.
39.	Lotos Kolej	Lotos Kolej sp. z o.o.
40.	Lubelski Węgiel Bogdanka	Lubelski Węgiel Bogdanka S.A.
41.	ŁKA or Łódzka Kolej Aglomeracyjna	Łódzka Kolej Aglomeracyjna sp. z o.o.
42.	Majkoltrans	"MAJKOLTRANS" sp. z o.o.
43.	NKN Usługi Kolejowe	NKN Usługi Kolejowe Projektowanie, Budownictwo, Transport sp. z o.o.
44.	Orlen Koltrans	ORLEN KolTrans sp. z o.o.
45.	PKP Cargo	PKP CARGO S.A.
46.	PKP Cargo Service	PKP Cargo Service sp. z o.o.
47.	PKP Energetyka	PKP ENERGETYKA S.A.
48.	PKP Intercity	„PKP INTERCITY" S.A.
49.	PKP LHS	PKP Linia Hutnicza Szerokotorowa sp. z o.o.
50.	PKP PLK	PKP Polskie Linie Kolejowe S.A.
51.	PKP SKM or SKM w Trójmieście	PKP SKM w Trójmieście sp. z o.o.
52.	PMT Linie Kolejowe	"PMT Linie Kolejowe" sp. z o.o.
53.	Pol-Miedź Trans	Pol–Miedź Trans sp. z o.o.
54.	Polzug	Polzug Intermodal Polska sp. z o.o.
55.	PKM	Pomorska Kolej Metropolitalna S.A.

No.	Abbreviation	Full name
56.	POZ BRUK	POZ BRUK sp. z o.o. sp.j.
57.	PUK Kolprem	Przedsiębiorstwo Usług Kolejowych KOLPREM sp. z o.o.
58.	Przewozy Regionalne	Przewozy Regionalne sp. z o.o.
59.	Rail Polska	Rail Polska sp. z o.o.
60.	STK	STK S.A.
61.	SKM Warszawa	Szybka Kolej Miejska sp. z o.o.
62.	Trakcja PRKil	TRAKCJA PRKil S.A.
63.	Transchem	Transchem sp. z o.o.
64.	ZIK Sandomierz	Zakład Inżynierii Kolejowej Leśkiewicz, Kosmala s.j.
65.	ZRK DOM	Zakład Robót Komunikacyjnych – DOM w Poznaniu sp. z o.o.
66.	UBB Polska	UBB Polska Sp. z o.o.
67.	UBB	Usedomer Bäderbahn GmbH
68.	WKD	Warszawska Kolej Dojazdowa sp. z o.o.
69.	ZUE	ZUE S.A.
70.	DB	Deutsche Bahn
71.	GATX	GATX Corporation (GATX concern)
72.	H. Cegielski FPS	H. Cegielski - Fabryka Pojazdów Szynowych sp. z o.o.
73.	PESA	POJAZDY SZYNOWE PESA BYDGOSZCZ S.A.
74.	DB Group	Companies forming part of the Deutsche Bahn concern in Poland
75.	Stadler	Stadler Bussnang AG
76.	WPR licence	Licence for the transport of goods by rail
77.	train-km	train-kilometre
78.	tkm	tonne-kilometre
79.	pkm	passenger-kilometre
80.	MMS System Zarządzania Utrzymaniem	Maintenance Management System
81.	POIiŚ	Operational Programme Infrastructure and Environment
82.	RPRP	The Register of Entity-Specific Risk Parameters
83.	SBL	Automatic block signaling
84.	SMS	Safety Management System
85.	SOK	Railroad Guards
86.	SSP	Automatic Signaling for Level Crossings

Terms

No.	Abbreviation	Full name
1.	Incident	any event other than an accident or serious accident connected with train traffic and affecting its safety
2.	Rail commission	a local or company commission investigating an event; it is tasked with determining the circumstances of the event, its cause and preventive measures
3.	PKBWK	The National Rail Accident Investigation Committee – an independent committee which operates under the Minister in charge of transport, and investigates serious accidents, accidents and incidents
4.	ECM	Entity in charge of maintenance
5.	Serious accident	an accident caused by a collision, derailment or other event of similar nature: - involving at least one fatality or at least five seriously injured individuals, or - resulting in significant damage to the rail vehicle, railway infrastructure or the environment, which can be immediately estimated by the investigating committee as worth at least EUR 2 million
6.	RZK	Rail Event Register kept by the President of UTK based on data stored by responsible entities functioning in the railway sector
7.	Operational difficulty	a railway event which is not a serious accident, accident or incident, and which causes hindrances, e.g. a railway traffic disruption or limitation, not related to its safety
8.	Rail traffic control devices	rail traffic control devices
9.	Accident	an unintentional sudden event or a series of such events involving a rail vehicle and causing negative consequences to human health, property or the environment; accidents include in particular: collisions, derailments, level crossing events, events involving people and caused by a rail vehicle in motion, and fire on a rail vehicle
10.	Rail event	a serious accident, accident or incident on a railway line

Terms used in this document defined in the Rail Transport Act of 28 March 2003 (consolidated text: Journal of Laws of 2015, item 1297, as amended) should be interpreted in accordance with their definitions in the Act.

PART I
AN ASSESSMENT OF RAIL MARKET OPERATIONS IN 2015

Background

The assessment of rail market operations in Poland provides an overview of the situation on the rail market in 2015 in comparison to 2014 and the previous years. The publication also contains an analysis of the functioning of the rail market in Poland as compared to other European countries. The analysis is based on the resources of IRG-Rail, Eurostat, UIC and UIRR.

The analysis of the Polish passenger transport market shows an increase in the number of passengers (of 4%) and transport performance (of 9%) in 2015.

A dynamic growth was recorded in long-distance transport, which was due to an expanded range of services provided by PKP Intercity and reduced travel times, resulting from the completion by PKP PLK of repair and modernisation works along numerous railway lines. PKP Intercity's transport performance was higher than in 2014 by 24%, which was caused mainly by the completion of the modernisation of railway lines linking Warsaw with Gdynia, Kraków, Katowice and Wrocław in December 2014.

On the other hand, a continuously downward trend can be observed for Przewozy Regionalne to the benefit of other local-government railway undertakings.

In the years 2012-2015 the use of railways decreased in 12 out of 16 provinces, which translates into a weakening role of railways in comparison to road transport (only 2% of all trips are made with rail transport, with passenger cars accounting for 73% of transport). This situation does not contribute to the objectives of the White Paper of the European Commission (limiting, by 2030, greenhouse gas emissions in the transport sector by 20% in comparison to 2008 and shifting the majority of medium-distance passenger traffic to railways by 2050).

The freight transport market in Poland changed slightly in terms of the transported weight (a drop of 2%) and transport performance (a growth of 1%). These results were influenced by, i.a., a change in the nature of freight transport – in 2015 freight railway undertakings operated lighter trains for longer distances.

The share of intermodal transport in the total transport volume is growing consistently – in 2015 it accounted for 5% by volume and 7% by transport performance. In Poland freight transport is still based on bulk goods, although their share is decreasing year by year. In 2015 hard coal accounted for 40% of the weight of transported goods.

The length of railway lines used in Poland in 2015 amounted to 19 330 km, which constitutes a growth of 36 km in comparison to 2014. In 2015 a line of Pomorska Kolej Metropolitalna was handed over to operation, linking, i.a., Gdańsk and Gdynia through the airport. Furthermore, authorisations to manage infrastructure were issued to CARGOTOR, which manages services infrastructure in the area of Małaszewicze, and Lower Silesian Roads and Rail Service in Wrocław, which took over the management of two railway lines in Lower Silesia.

FREIGHT TRANSPORT MARKET IN 2015

the number of licensed undertakings providing rail transport services	67,
annual market revenue	PLN 7.780 bn,
annual rail service provision costs	PLN 7.737 bn,
employment	27 908 people,
weight of freight transported	224.8 m tonnes,
transport performance	50.6 bn tkm,
operational performance	74.8 m train-km,
number of locomotives	3 659,
number of freight wagons	90 754.

PASSENGER TRANSPORT MARKET IN 2015

Number of railway undertakings	16
of which the number of timetable operating railway undertakings	13
annual market revenue (sales of services + subsidies)	PLN 5.195 bn
annual rail service provision costs	PLN 5.229 bn,
employment	22 662 people,
number of passengers transported	280.3 m,
transport performance	17.4 bn pkm,
operational perfomance	143.4 m train-km,
number of standard-gauge locomotives	484,
number of electrical multiple units (EMU)	1342,
number of passenger wagons (including EMU)	7157.

INFRASTRUCTURE MANAGERS MARKET IN 2015

number of infrastructure managers	14,
- of which infrastructure providers (managers not being infrastructure providers – PKP LHS and WKD)	12
annual market revenue	PLN 4.68 bn,
annual rail service provision costs	PLN 5.72 bn,
employment	40 596 people,
purchased operational performance	215.22 m train-km,
number of paths sold	2.6 m

1. The passenger transport market

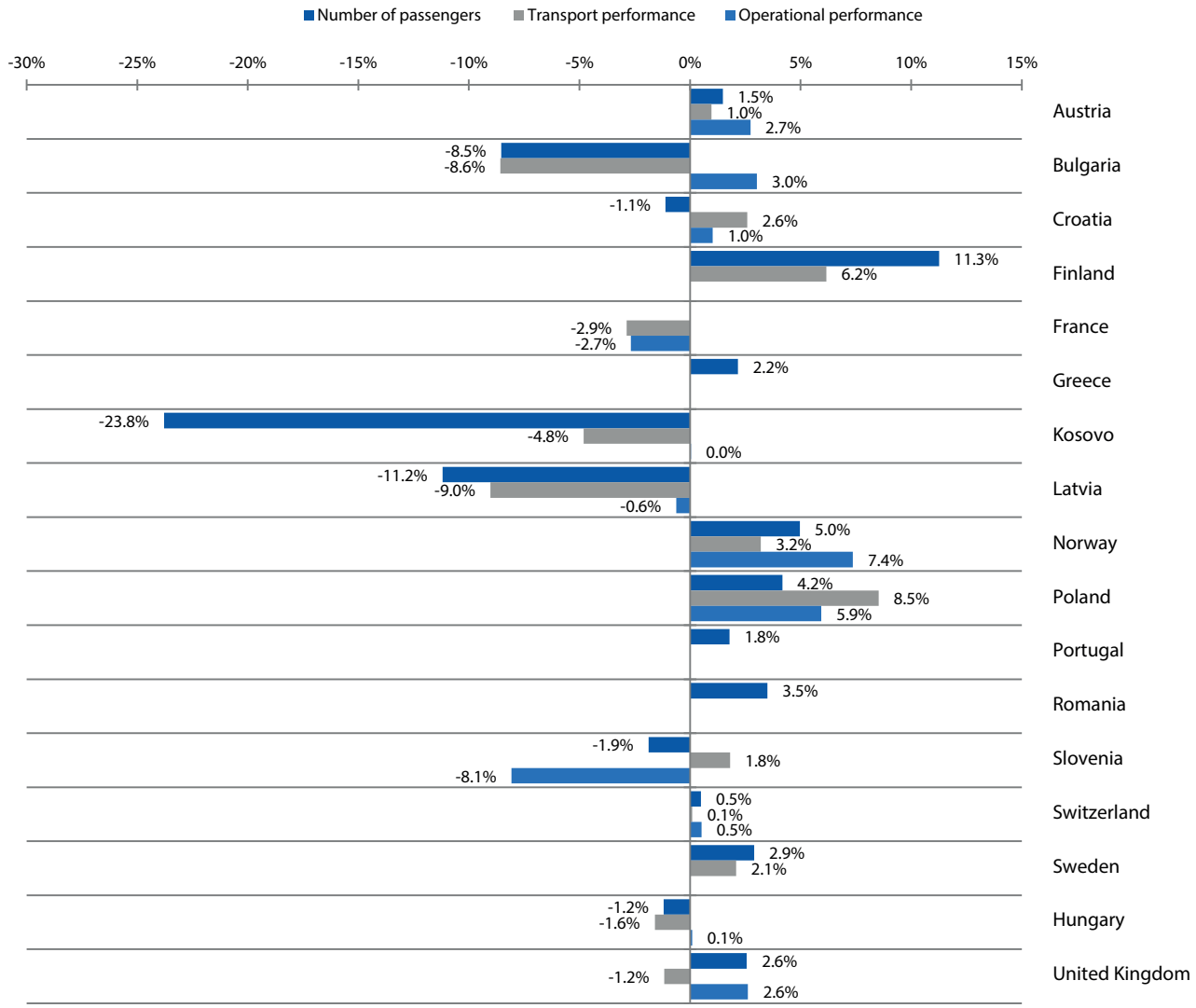
1.1. Trends in passenger transport in Europe

1.1.1. The growth rate of passenger rail transport in 2015

The recent report of the European Commission for the European Parliament and Council on monitoring the development of the rail transport market was published in 2014 and contains data mostly for the years 2011-2012. In 2013, Eurobarometer survey results were published on the satisfaction of EU residents with rail transport. However, the subsequent survey carried out in 2015 concerned municipal transport and the date of the next rail market poll remains unknown. Eurostat as well has not published any statistical data on the rail market in 2016 yet. Therefore, it is difficult to analyse and monitor trends on transport markets in Europe due to the lack of current statistical publications referring to 2015.

Due to the above, the Office of Rail Transport requested regulatory bodies associated in IRG-Rail, the Independent Regulators' Group – Rail, for basic market data for 2015, as a result of which data from 16 European countries were obtained.

Fig. 1: The growth rate of passenger transport in 2015 in countries associated in IRG-Rail



Source: prepared by UTK based on data from regulatory bodies associated in IRG-Rail

First of all, it should be emphasised that the data presented above are preliminary in nature and can be adjusted in the second half of 2016. Still, it can be assumed that the highest rise in terms of the number of passengers in 2015 took place in Finland, where the number of passengers increased by 11%, and transport performance by 6%, which means that the agglomeration-based transport segment developed around Helsinki benefitted the most. Passenger transport is developing dynamically

in Norway, where considerable increases were recorded in the last year. As far as the last three years are concerned, the number of rail passengers in this country grew by as much as 18%, transport performance by 11% and operational performance – by 14%. This was mainly due to the introduction in 2012 of a new, extensive contract for the provision of collective transport in the Oslo agglomeration, which increased the frequency of trains. The new transport plan was a response to the growing number of residents in the capital-city agglomeration and in other large cities. A similar scale of growth in the number of passengers and operational performance in 2015 was recorded in Poland, with the most prominent increase in transport performance. In 2015 a slightly less dynamic growth was observed in the passenger transport market in Sweden, although in the last three years the number of passengers in this country increased by approx. 10%, while transport performance by 5%, which demonstrates that agglomeration-based and regional transport in Sweden also developed considerably (commuting often necessitates travelling long distances outside agglomerations). In the United Kingdom a slight drop in transport performance was observed in 2015, with an increase in the number of passengers and operational performance (complete data from Northern Ireland have not yet been received). This confirms the trend from the recent years consisting of a growth in the number of passengers due to economic growth, a rise in population and congested roads. Since 2012 the number of passengers has increased by nearly 12%, transport performance by approx. 5%, and operational performance – by 3.5%. The number of passengers in Austria is also growing continuously – in 2012 the number of travelling persons rose there by 8%, of transport performance by 9%, and of operational performance by approx. 2%. This, similarly to the United Kingdom, shows increased transport efficiency. In Austria the growth in transport was caused by, i.a., the construction of high-speed lines between Vienna and St. Pölten, which is an area of competition between private and state railway undertakings. Agglomeration-based transport services have been improved and restrictions on the use of cars in city centres have been introduced. While the passenger market in Switzerland, according to preliminary estimates for 2015, recorded slight growths, the number of passengers has increased by approx. 12% since 2012, with a 4% rise in transport performance and operational performance. Switzerland has one of the largest passenger rail markets, and the number of the country's residents is only approx. 8.2 m. A high population density, synchronised timetables, high frequency of trains and a flexible fare system contribute to the development of rail transport as an attractive alternative to road transport in this country. In Portugal, after a drop in the years 2011-2013, the number of passengers has been growing since 2013, but is still below the level from 2012. The most considerable drop in the number of passengers was recorded in 2015 in Kosovo, where there is a shortage of electrified railway lines and a high proportion of lines is not used in passenger transport. An 11% drop in the number of passengers took place in Latvia, which represents the continuation of the downward trend. Since 2012 this trend has led to a decrease in the number of passengers of 13.6%, transport performance – of 18.5% and operational performance – of 2.6%. It should be borne in mind that the Latvian railway network is dominated by freight transport, and the number of residents has dropped due to emigration following the country's accession to the EU and the financial crisis. In Bulgaria a drop in operational performance was accompanied by a decrease in the number of passengers and transport performance, which indicates declining transport efficiency in the last three years. In Croatia the decrease in the number of passengers in 2015 was slight, although from 2012 the number of passengers in this country had decreased by over 20%, with a decrease in transport performance of 14% and a 15% decrease in operational performance. The causes should be attributed to the limiting of connections, at first of international and then of weekend trains. In Slovenia the number of passengers dropped by 2% in 2015 and by 6% in 2012, with more substantial decreases in operational performance (by 8% and 15%, respectively). In 2014, after the snow storm which seriously damaged the infrastructure, the priority has shifted towards freight transport between the sea port and the country's capital city. The effects of the storm could still be felt in 2015.

In Finland in the last three years the number of rail passengers increased by 18%.

1.1.2. High-speed railways in 2015

High-speed rail (HSR) has been developing consistently both in Europe and internationally. HSR comprises lines with a minimum speed limit of 200 km/h and rolling stock designed to travel at this speed, in line with the definition laid down in Commission Implementing Regulation (EU) No 2015/1100.

Tab. 1: The length of high-speed lines suitable for travel at ≥ 200 km/h in Europe and Turkey – as at the end of 2015 (in km)

	Austria	Belgium	Germany	Spain	France	Italy	Netherlands	Poland	United Kingdom	European Union	Switzerland	Turkey
1985	-	-	-	-	419	224	-	-	-	643	-	-
1990	-	-	90	-	710	224	-	-	-	1 024	-	-
1995	-	-	447	471	1 281	248	-	-	-	2 447	-	-
2000	-	72	636	471	1 281	248	-	-	-	2 708	-	-
2003	-	137	862	1 069	1 540	248	-	-	74	3 930	-	-
2004	-	137	1 159	1 069	1 540	248	-	-	74	4 227	52	-
2005	-	137	1 159	1 090	1 540	248	-	-	74	4 248	52	-
2006	-	137	1 248	1 272	1 540	876	-	-	74	5 147	52	-
2007	-	137	1 248	1 511	1 872	562	-	-	113	5 443	87	-
2008	-	137	1 248	1 599	1 872	744	-	-	113	5 713	87	-
2009	-	209	1 248	1 604	1 872	923	120	-	113	6 089	87	232
2010	-	209	1 248	2 056	1 896	923	120	-	113	6 565	87	232
2011	-	209	1 310	2 146	2 036	923	120	-	113	6 857	87	444
2012	48	209	1 328	2 146	2 036	923	120	-	113	6 923	87	444
2013	48	209	1 328	2 515	2 036	923	120	-	113	7 292	87	444
2014	48	209	1 328	2 515	2 036	923	120	-	113	7 292	87	632
2015	48	209	1 451	2 871	2 036	923	120	85	113	7 856	87	632

Source: prepared by UTK using UIC data

According to the UIC data, the highest number of high-speed lines in 2015 were put into operation in Spain, which surpassed France and became a leader among high-speed lines in Europe already in 2010. In 2015 the operation of a 94-kilometre section between cities of the Galicia region, Vigo and Santiago de Compostela, began, where trains can move at the speed of 250 km/h. Furthermore, since 2015 trains can develop the speed of 200 km/h between Valladolid and Leon and between Olmedo and Zamora. In Germany a 123-kilometre section of the line between Erfurt and Leipzig and Halle, designed for the speed of 300 km/h, has been put into operation.

In many countries the HSR systems are being expanded. At the end of 2015 there were as many as 2785 km of such lines, of which the most in Spain (1262 km). Further 740 km, 368 km, 218 km, 125 km and 72 km were under construction in France, Germany, Austria, Italy and Switzerland, respectively. In Denmark the construction of the first high-speed line was started, with the section of 56 km linking Copenhagen and Ringsted. 469 km of such lines are under construction in Turkey. In Poland the process of adjusting the Central Railway Main Line from Warsaw to Katowice and Kraków to the speed of 250 km/h is under way. However, as at the end of 2015, trains could move with a maximum speed of 200 km/h on an only 85-kilometre section. In 2015 China put into operation over 4 thousand km of lines with the maximum speed limit of at least 200 km/h. Currently, there are over 21 thousand km high-speed lines in operation in this country, and further 10 thousand km are under construction. In Japan a 228-kilometre section of the line adjusted to the speed of 260 km/h was put into operation in 2015.

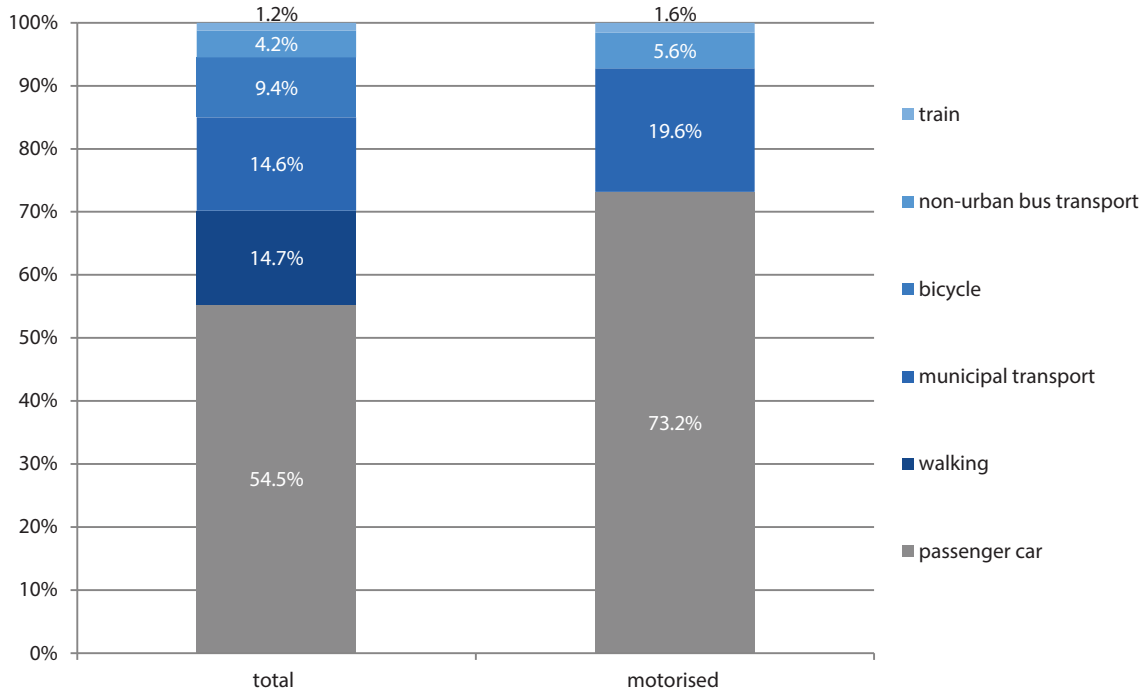
1.2. Intermodal competition on the Polish passenger transport market

In 2015 the Central Statistical Office conducted "The pilot survey on transport behaviour in Poland", co-funded by the EU. The sample consisted of 18 thousand households, including members aged 16 years or more. Eventually, the survey included 13.5 thousand households and 25.6 thousand people provided their answers.

The survey showed that individuals aged 16 years or more take approx. 13 bn trips per year, i.e. 422 trips per person on average.

In 2015 in the European Union there were 564 km more lines adjusted to maximum speed ≥ 200 km/h.

Fig. 2: The share of trips by types of transport according to the GUS survey from 2015



Source: prepared by UTK using GUS data from the survey on transport behaviour

64% of commuters travel to work by car.

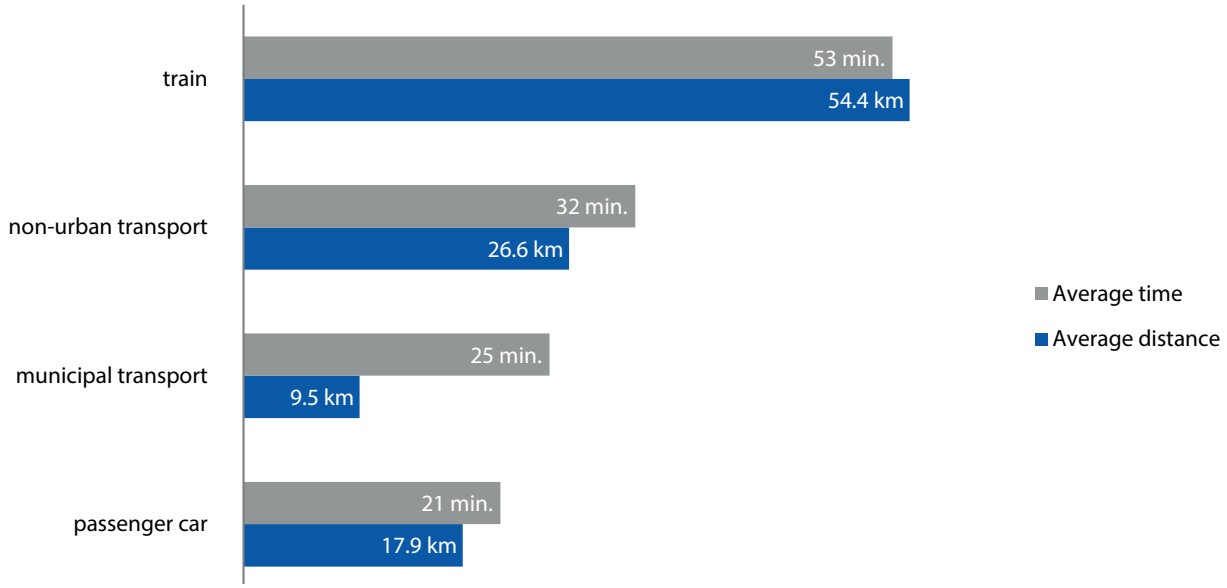
In 2015 nearly 75% of all trips were taken with the use of motorised transport modes (excluding cycling and walking trips), of which 54.5% by car, and 20% by public collective transport, which in the survey was divided into municipal transport, non-urban bus transport and rail transport. The share of rail transport in the total number of trips taken is small and amounts to several percent (1.2% for trains and 3% for trams and trolleybuses; no detailed data on the share of the underground are available). The authors of the survey emphasise that rail transport can be underestimated as households in province capitals and within the distance of 50 km from them are overrepresented in comparison to more distant localities where residents may use rail transport. Public transport is used to the greatest extent in the Pomorskie and Mazowieckie Provinces, and to the least extent – in the Lubuskie and Opolskie Provinces. After excluding cycling and walking trips, the share of road transport in trips in total increases to 73%.

The most (approx. 25%) of trips in total constitute commuting. 64% of individuals commute by cars. The highest percentage of such individuals was recorded in the Podkarpackie Province (75%), and the lowest in the Mazowieckie (57%) and Pomorskie (59%) Provinces. Undoubtedly, such results are determined by the fact that in the Warsaw and Tricity agglomerations, there are undertakings providing high-frequency agglomeration and regional transport services. The main reasons for not using public transport given by the respondents were:

- Too large distance from the nearest public transport stop/station (39%);
- The lack of suitable connection in the public transport timetables (30%);
- Unacceptable public-transport travel times (16%).

In 2015, 10% of the respondents commuted to the nearest public transport stop/station. 65.4% of households had a passenger car, of which 20% more than one.

Fig. 3: The average distance (in km) and travel time (in minutes) per 1 passenger in 2015



Source: prepared by UTK using GUS data from the survey on transport behaviour

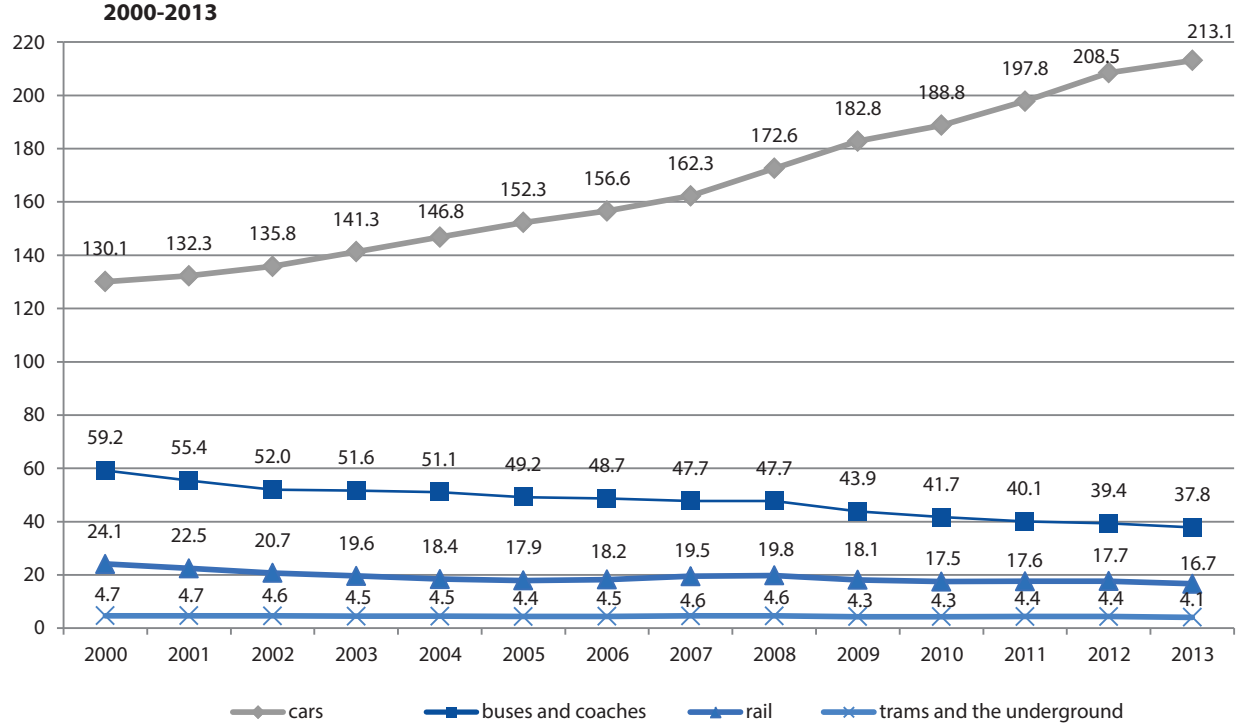
The figure above demonstrates that, on average, train trips account for the largest distances among all transport modes. Rail transport is used for business and tourist trips, which are characterised with the largest average distances (67 km for business trips and 27 km for leisure trips). However, after taking into consideration travel distances, the share of road transport is even higher than in the case of the number of trips and amounts to 68.5% of the total number of pkm. Almost 60% of car trips are within the distance of 30 km. Cars are most often used for commuting to work.

In a breakdown by weekdays and weekends, the average travel times for trains were 76 minutes on weekends and 42 minutes on weekdays. In the case of non-urban coach transport, the respective times were 46 and 23 minutes, and for cars – 15 and 21 minutes. Car trips on weekdays last the longest in, i.a., the Mazowieckie and Pomorskie Provinces, which can be of essence in the selection of transport mode and may result from the road congestion level.

According to the overall GUS data on freight and passenger transport, in 2015 all public transport modes in Poland were used by a total of 703.6 m people, which is a decrease of 0.9% in comparison to 2014 (the data do not include municipal transport). For the first time since the crisis in 2009, a decrease has been recorded in the air transport market (of 6.5% by the number of passengers and 2.4% by transport performance). A growth was observed in inland water transport, which also includes coastal transport (of 11.6% by the number of passengers and 15.8% by transport performance). Transport performance amounted to 52.7 bn pkm and was higher than a year before by 2.4%. The average transport distance rose from 72.3 km to 74.7 km due to an increase in all modes of transport. The average distance in road transport for the first time exceeded 50 km, which translated into a growth in transport performance of 0.9%, with a drop in the number of passengers of 3.5%, showing the development of long-distance coach connections competitive towards rail transport. One should bear in mind, however, that GUS data do not include private transport and companies with a workforce of up to nine people.

Due to the above, intermodal competition in passenger transport is better presented in Eurostat data, which include road transport. The latest data are from 2013.

Fig. 4: Transport performance in passenger transport in Poland in bn pkm, according to Eurostat data for the years 2000-2013

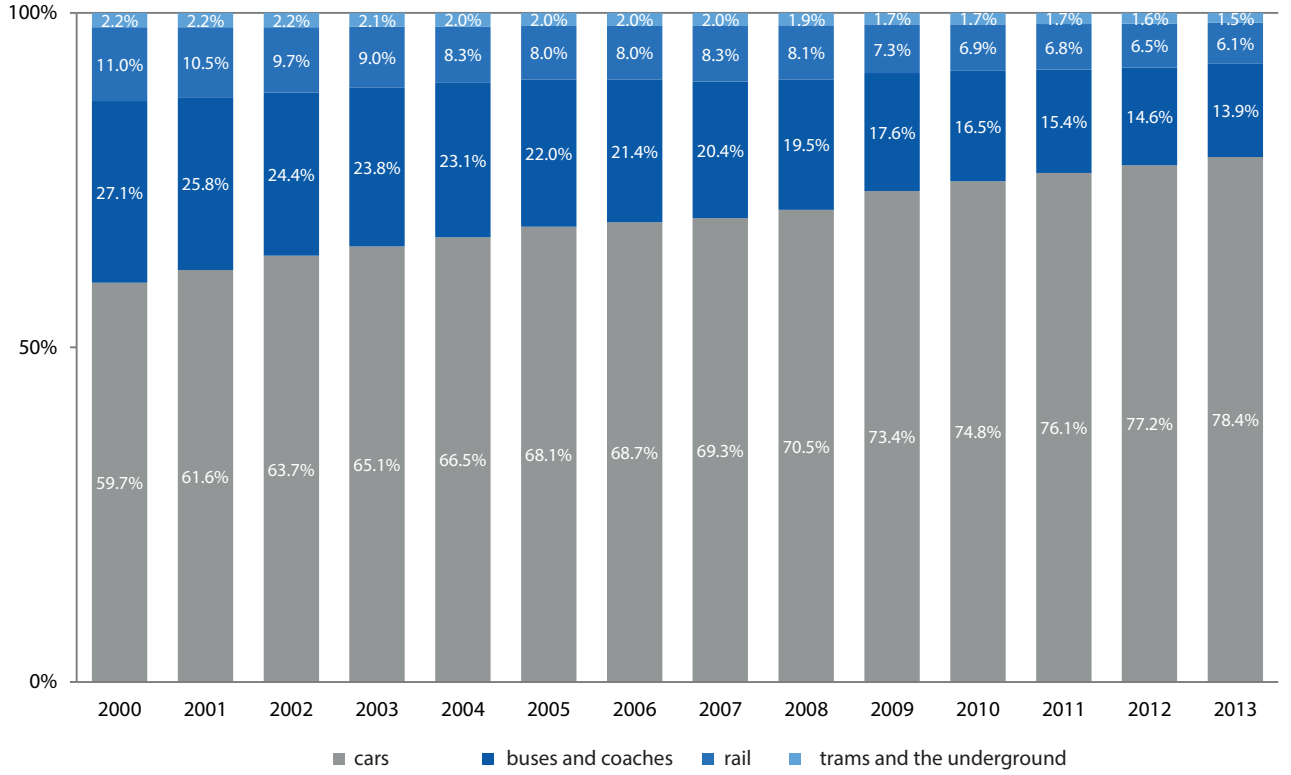


Source: prepared by UTK using Eurostat data

The figure above shows a continuous upward trend of transport performance for road transport. From 2000 to 2013 the increase amounted to 64%. In the same period the number of cars per 1000 residents, according to Eurostat data, rose from 261 to 504, which means an increase of 93% – the highest growth of the motorisation rate among the 28 EU Member States. The motorisation rate in Poland exceeded the average level of new Member States by nearly 100 cars. This rate is also higher than the average for the whole EU and is approaching the average for the "old EU-15" countries.

From 2000 to 2013 the increase of transport performance in road transport equalled 64%. In the same period of time the number of cars per 1 000 residents increased from 261 to 504 (of 93%), which is the highest growth of this indicator among the 28 EU Member States.

Fig. 5: The share of modes of transport by transport performance in passenger transport in the years 2000-2013 according to Eurostat data



Source: prepared by UTK using Eurostat data

The figure above illustrates a considerable increase in the share of individual road transport in the total transport performance from the beginning of the 21st century. Over the same period, the shares of bus and rail transport recorded a nearly twofold decrease.

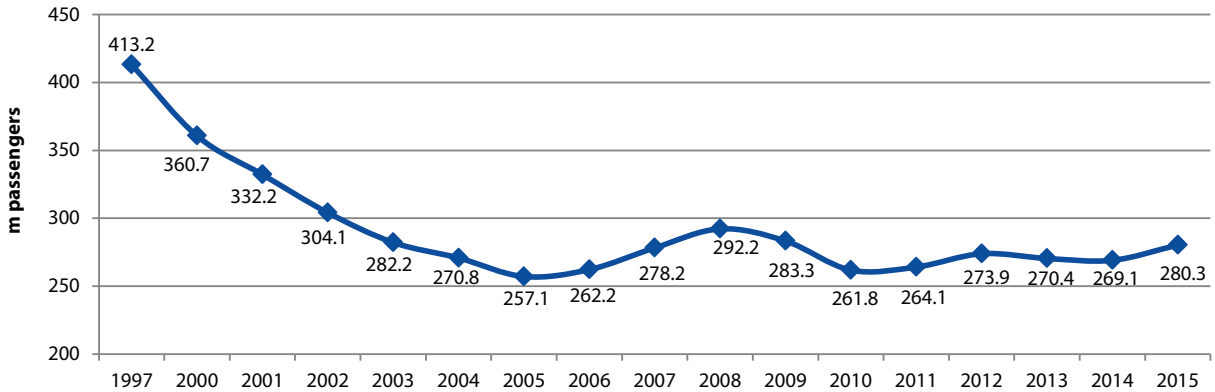
1.3. The Polish passenger rail transport market

1.3.1. The activities of passenger railway undertakings

In 2015 the number of rail passengers grew by 4.2%, and transport performance by 8.5%.

After the successive drops in the number of passengers in the years 2012-2014, the year 2015 saw an increase in the number of passengers of 4.18%. This is caused by the completion of renovations along main paths, due to which railways were able to offer more convenient travel times and more predictable travelling due to improved punctuality. 280.3 m passengers is the best result since 2009, when the number of passengers amounted to 283.3 m.

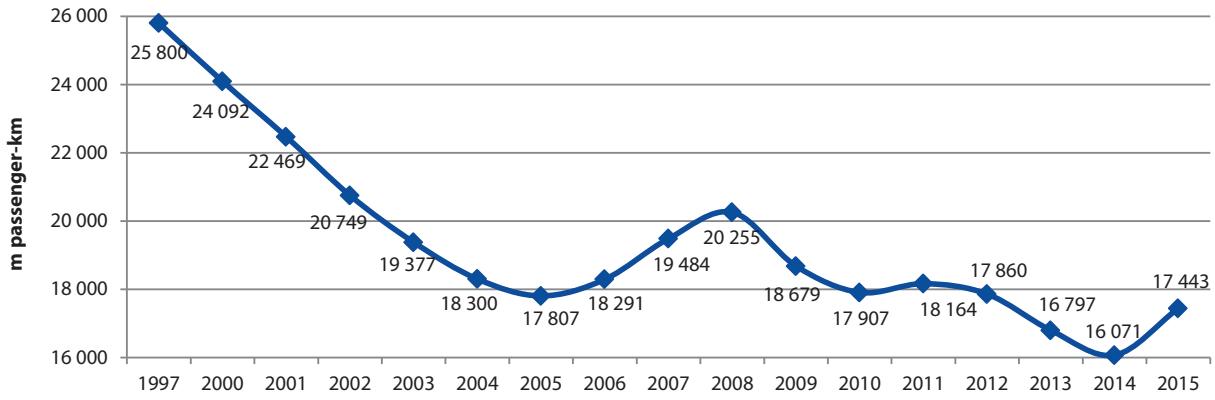
Fig. 6: The number of passengers in passenger rail transport in the years 1997-2015 (standard-gauge transport)



The year 2015 was also the first full year of operation of railway undertakings which launched their services in 2014 – Koleje Małopolskie (in December) and Łódzka Kolej Aglomeracyjna (in June). These companies transported, respectively, 1.8 m and 1.6 m passengers in 2015, recording shares in the number of passengers of 0.64% and 0.58%, respectively.

In 2015, for the first time since 2011, transport performance increased. The increase was higher than the number of passengers, amounting to 8.53%, due to which transport performance was the highest since 2012, reaching 17.4 bn pkm. This means that distances travelled by passengers increased – the average distance travelled per passenger grew by 2.5 km to 62.2 km. An evident growth in the importance of long-distance transport is being observed.

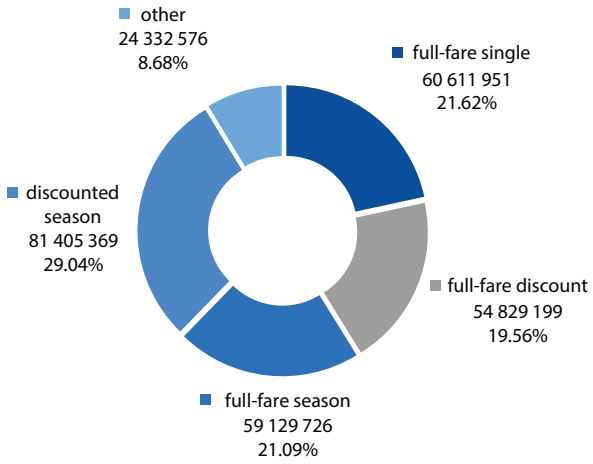
Fig. 7: Transport performance in passenger rail transport in the years 1997-2015 (standard-gauge transport)



In 2015 season tickets (full-fare and discounted) were purchased by 50.13% of passengers (in 2014 – 50.42%). A slight change was also observed for single tickets, which were purchased by 41.18% of passengers (in 2014 – 40.45%). The segment of other tickets, which includes, i.a., tickets sold under agreements with institutions, did not change substantially – at 8.68%, it dropped by 0.44 percentage point.

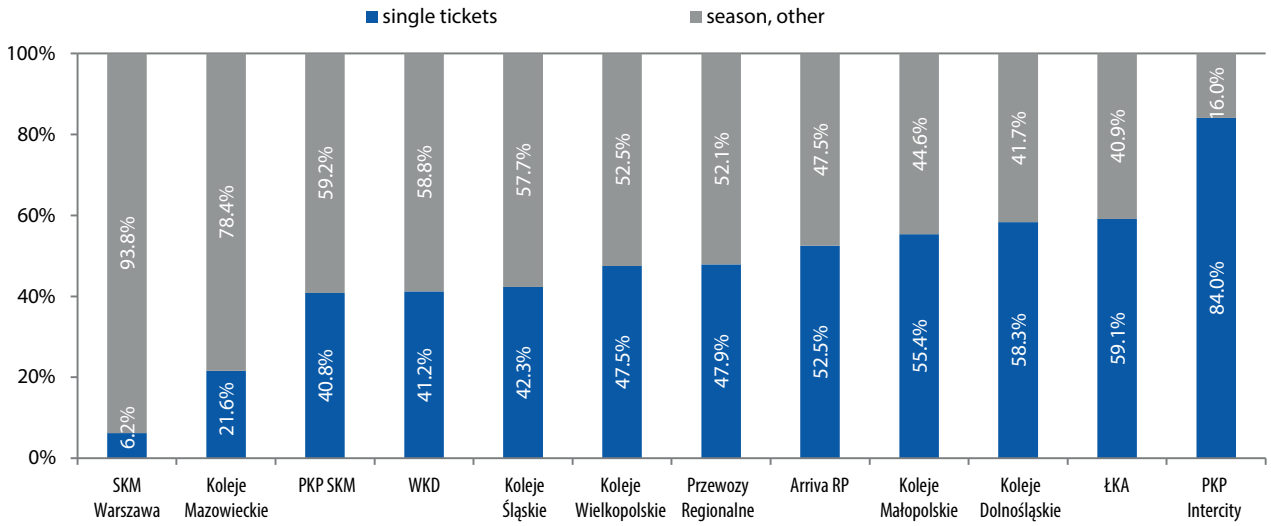
In 2015 the significance of long-distance transport rose significantly.

Fig. 8: The number of passengers with respective types of tickets in 2015



In 2015, the percentage of passengers using full-fare season tickets decreased by 21.09%, i.e. 2.37 percentage points.

Fig. 9: The share of single and season tickets by undertaking in 2015



An analysis of the structure of tickets for the respective railway undertakings allows for the conclusion that season tickets still constituted a considerable majority in companies providing transport services for passengers who travel by rail regularly: SKM Warszawa and Koleje Mazowieckie (93.8% and 78.4%, respectively). Their share did not change in comparison to the previous year.

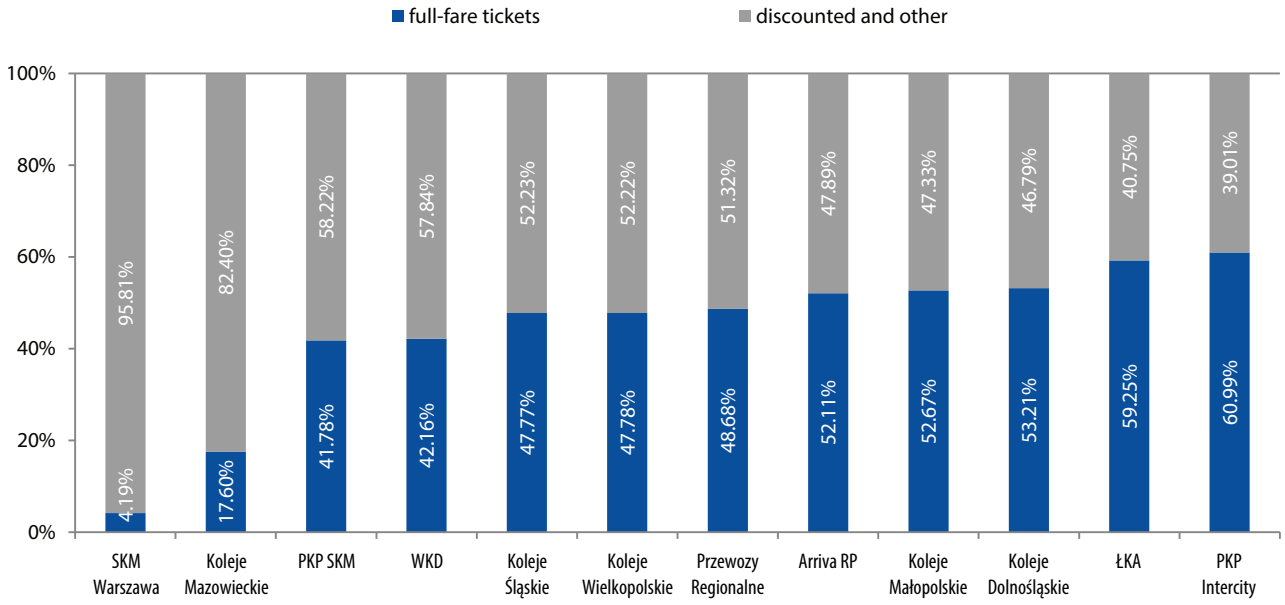
The undertaking with the lowest (15.97%) share of season or other tickets was PKP Intercity, which also recorded a drop of 1.31 percentage points as compared to the previous year in the share of trips with season or other tickets. In 2014 this undertaking also saw a decrease, but it was more substantial – from 26.12% to 17.28% (of 8.83 percentage points).

In 2015 PKP Intercity successfully encouraged its passengers to buy single tickets for long-distance trips, i.a. with Pendolino trains, which offered competitive travel times.

A change in the structure of tickets can be observed in two regional railway undertakings: Koleje Wielkopolskie and Koleje Śląskie. In Koleje Wielkopolskie, the percentage of season tickets dropped by 6.44 percentage points to 52.5%. The change was caused by increased interest among passengers in tourist and recreation transport and a higher number of trips made by commuting extramural students, for whom single tickets are more suitable.

A reverse trend was observed for Koleje Śląskie – in 2015 interest in season tickets grew, whose share was higher in comparison to the previous year by 5.29 percentage points.

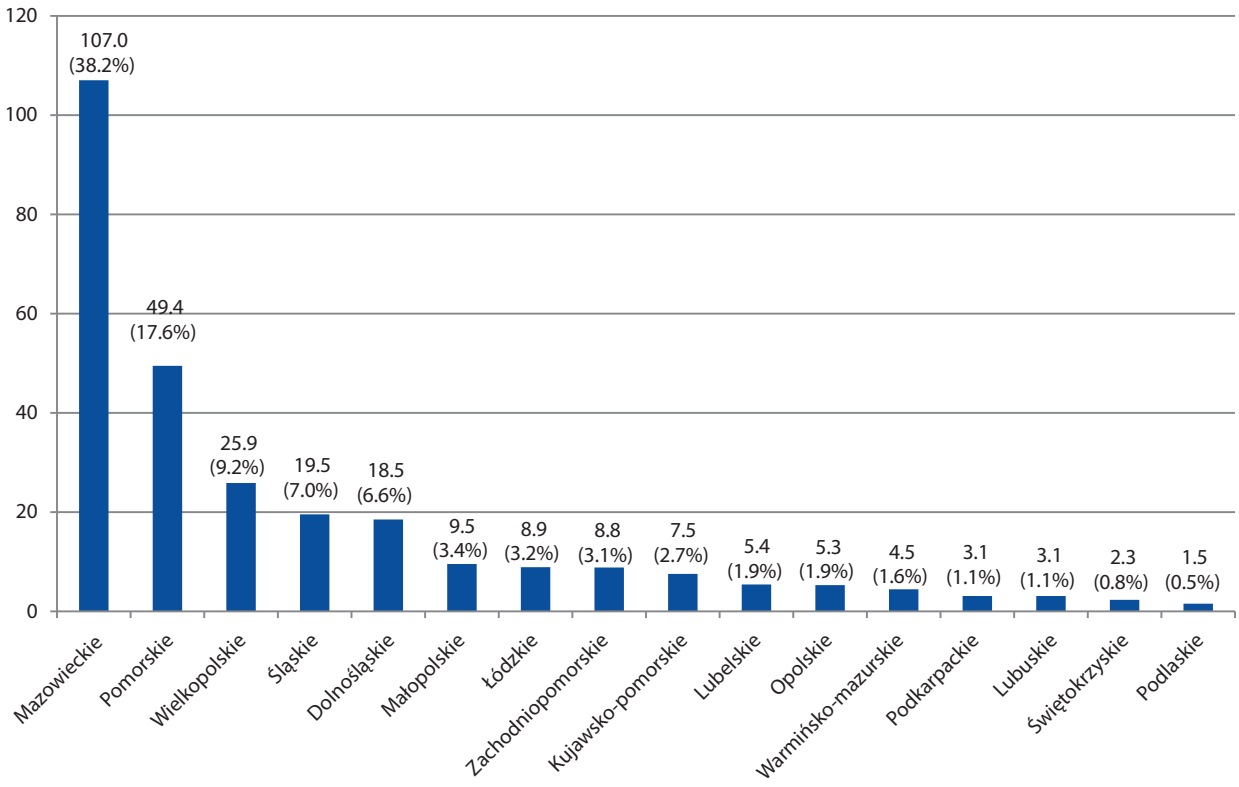
Fig. 10: The share of full-fare tickets by undertaking in 2015



In the full-fare and discounted/other tickets category, the observed rate of changes was lower in 2015. The highest increase in the shares of discounted and other tickets was observed in Koleje Dolnośląskie (of 3.75 percentage points to 51.32%) and in Koleje Mazowieckie (of 2.73 percentage points to 58.22%).

Dynamic year-to-year changes were observed among new railway undertakings: Łódzka Kolej Aglomeracyjna and Koleje Małopolskie. However, the results of these companies should not be compared for the years 2014 and 2015 as they did not operate for the full 12 months in 2014.

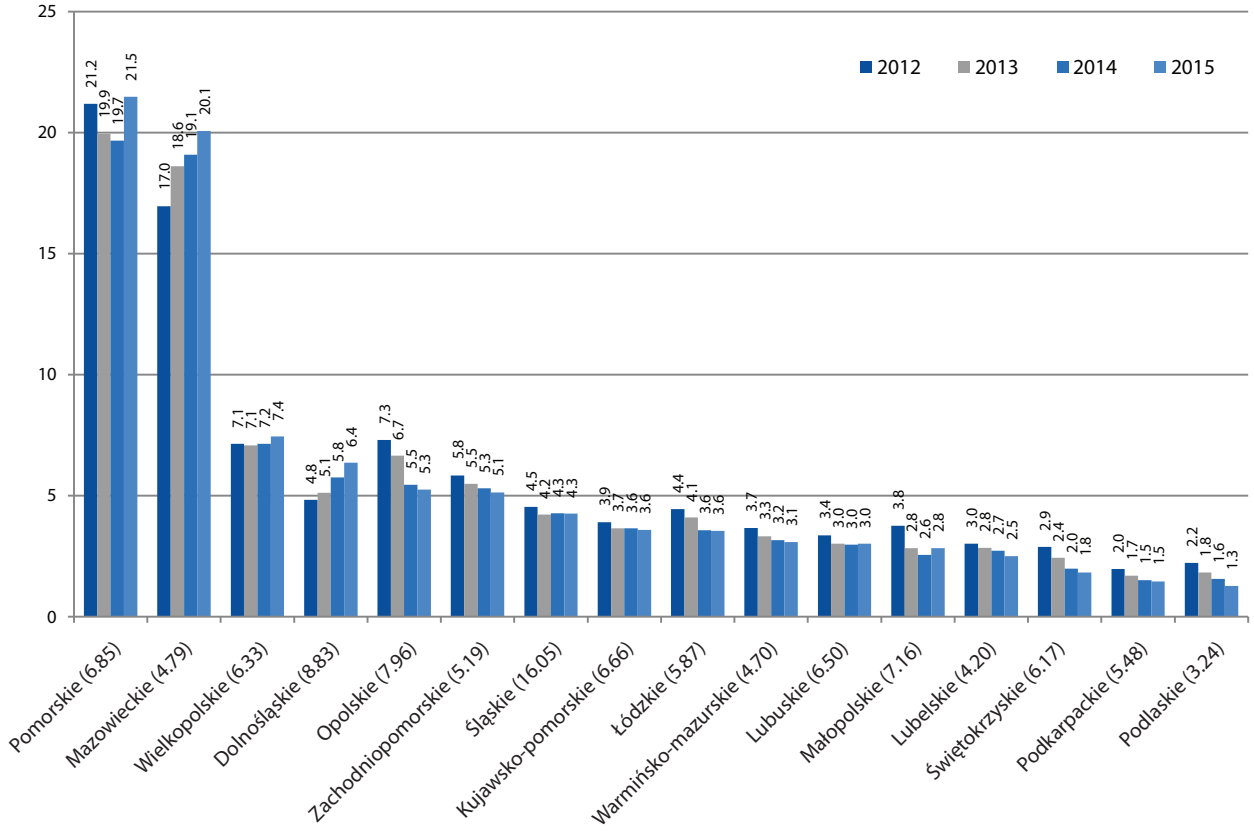
Fig. 11: The number (in m) and share (in %) of checked-in passengers in respective provinces in 2015



In the years 2012-2015 the rail usage rate decreased in 12 provinces.

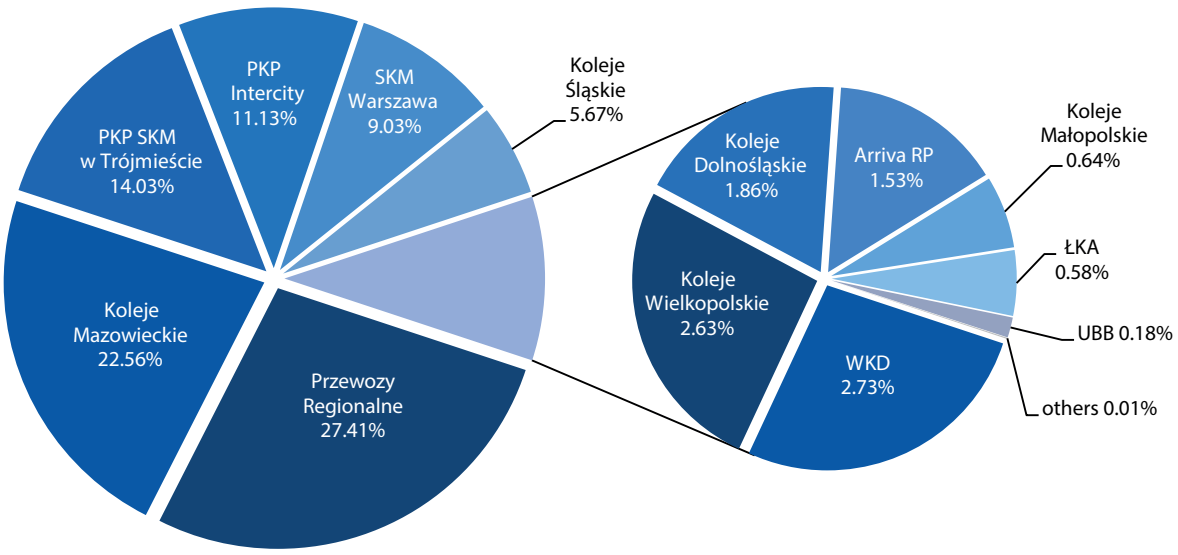
In the Mazowieckie Province, which – as in the previous year – recorded the highest number of passengers in 2015, 107 m passengers checked in (an increase in the share of 0.34 percentage point, to 38.2%). A corresponding situation is observed in the Pomorskie Province, which is the second largest in terms of the number of passengers (a growth of 4.2 m passengers, i.e. of 0.81 percentage point in terms of its share). It should be borne in mind that the increase in the number of passengers in this province is caused partially by a change in the passenger counting methodology by PKP SKM, which for passengers with monthly tickets was 44 passengers per month, instead of 40 in 2014 and the previous years. The Dolnośląskie Province is also exceptional in this field (an increase of 1.8 m passengers, i.e. 0.39 percentage point), as is the Małopolskie Province (a growth of 0.9 m passengers and 0.2 percentage point). The most considerable drops were recorded in the Śląskie Province (of 0.1 m passengers and 0.31 percentage point) and the Lubelskie Province (of 0.5 m passengers, i.e. 0.26 percentage point). The next criterion for assessing the functioning of railways in provinces is the rail usage rate, i.e. the number of trips per 1 province resident.

Fig. 12: The number of trips per 1 province resident in the years 2012-2015 – in brackets the density of railway lines in provinces (km of lines/100 square km) in 2015



In the years 2012-2015 the Pomorskie Province recorded the highest average number of trips per resident, amounting to 20-21 trips per year. For the Mazowieckie Province, which ranked second, the rate was growing consistently from 17.0 trips in 2012 to 20.1 in 2015. Differences between provinces can be analysed in respect of, i.a., the density of railway lines, which amounts to 6.18 km/100 sq. km for Poland at large. In the Pomorskie Province the density is above average (6.85) and for the Mazowieckie Province – much below average (4.79). In the provinces ranked next in terms of the rail usage rate, i.e. Wielkopolskie and Dolnośląskie Provinces, year-to-year growth can also be observed for the rail usage rate by residents, which, however, is lower. In the Wielkopolskie Province in the years 2012-2015 the increase amounted to 4.2% (from 7.1 to 7.4 with the railway network density of 6.33 km/100 sq. m) and in the Dolnośląskie Province – to 31.7% (from 4.8 to 6.4 trips). It is important to mention that the four provinces in question were the only ones to record an increase in the rail usage rate per 1 resident in the years 2012-2015. The remaining provinces recorded decreases, some of which reached several dozen percent (the highest in the Podlaskie Province – of 42.6% and in the Świętokrzyskie Province – of 36.4%) or several percent (e.g. the Kujawsko-Pomorskie – of 8.2%). For the purposes of calculating the aforementioned rate, GUS data on the number of residents in 2014 were used.

Fig. 13: The market share of passenger transport undertakings by the number of passengers in 2015



As in the previous year, the largest 2015 market share in terms of the number of passengers was recorded by Przewozy Regionalne, a local-government company, although it had 2.5 m, or 3.2%, less passengers than a year before, which is its all-time lowest.

An analysis of the number of passengers in regional and agglomeration-based railways allows for the observation that the drop in Przewozy Regionalne was lower than the total increase in the number of passengers in other railway undertakings, amounting to 4.9% (8.1 m passengers). Such a result was mainly influenced by the 3.6 m increase of the number of passengers (of 10.1%) in PKP SKM, caused, among others, by the aforementioned change in the methodology of counting passengers with season tickets. A person using monthly tickets is counted as 44 passengers, unlike in 2014, when such a person was counted as 40 passengers. If the same methodology were to be applied in 2014 and 2015, the increase in the number of passengers would amount to approx. 4.5% (approx. 1.7 m). A considerable increase in the number of passengers was also recorded in Koleje Dolnośląskie – of 44.9%. For another year in a row, a rise was observed for Koleje Mazowieckie (of 1.1%, i.e. 672 thousand passengers) and Koleje Wielkopolskie (of 1.7%, i.e. 125 thousand passengers).

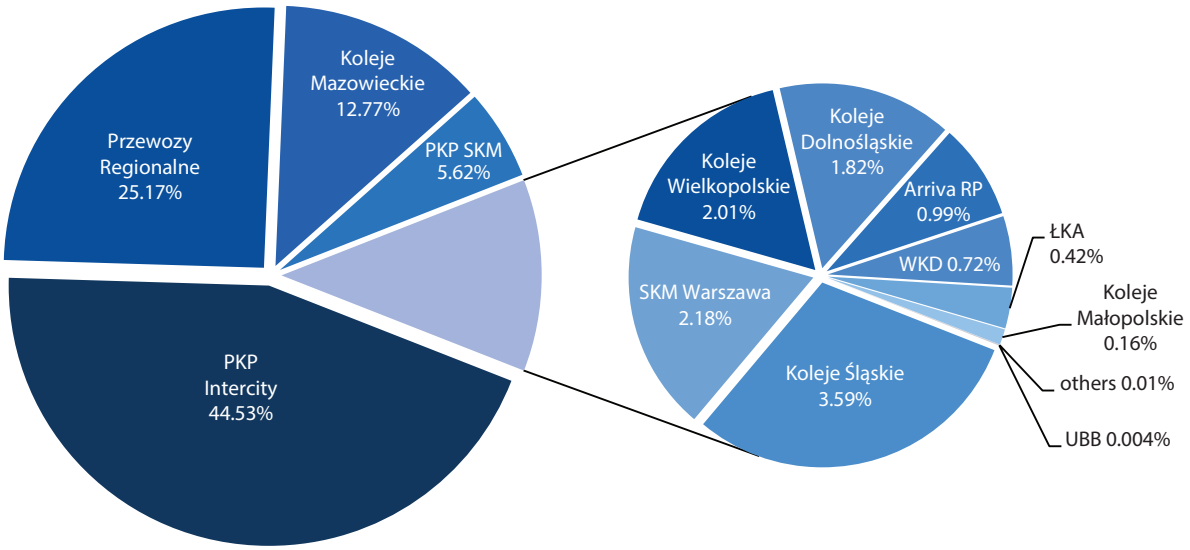
Slight decreases were observed for Koleje Śląskie (of 0.9%, i.e. 126 thousand passengers) and two agglomeration companies: WKD (of 3.6%, i.e. 286.1 thousand passengers) and SKM Warszawa (of 1.1%, i.e. 281 thousand passengers), which was due to renovation works on railway lines in Warsaw.

An analysis of the situation of long-distance services allows for the observation that in 2015 PKP Intercity regained 5.7 m passengers (a rise of 22.1%), achieving the best result by the number of passengers since 2012, and the first increase since 2009. Passengers took advantage of the new package of services, reduced travel times and new Pendolino rolling stock.

In 2015 PKP Intercity regained 5.7 m passengers.

The results of transport performance confirm the trend observed for the number of passengers. An increase can be observed for PKP Intercity (of 24.2%, i.e. 1.5 bn pkm) and in companies with an agglomeration and regional range of operations (in total of 6%, i.e. 288.4 m pkm), as well as a drop in Przewozy Regionalne (of nearly 9%, i.e. 432.3 m pkm). Similarly to the number of passengers, transport performance increased in several undertakings providing regional and agglomeration-based services. In the case of PKP SKM a growth of 14%, i.e. 120.4 m pkm was recorded due to the completion of repair works on the operated lines, an increase in the frequency of trains, the operation of a newly opened PKM (Pomeranian Metropolitan Rail) line, and the previously mentioned change in passenger-counting methodology. The growth of 54.9%, i.e. by 112.3 m pkm observed for Koleje Dolnośląskie, can be attributed to the extension of the existing connections and relaunching of the operation of some lines. Koleje Wielkopolskie recorded a 0.8% growth.

Fig. 14: The market share of passenger railway undertakings by transport performance in 2015



The share of the largest railway undertaking by transport performance – PKP Intercity – increased from 38.9% to 44.5% (of 5.6 percentage points). The company ranking second – Przewozy Regionalne – recorded a decrease in market share from 30.0% to 25.2%. For Przewozy Regionalne such a substantial decrease was caused by, i.a., discontinuing the service of long-distance Interregio connections. Due to a high average distance of inter-provincial and international connections, PKP Intercity reached the highest share of transport performance, amounting to 249.1 km (a rise of 4.2 km). For Przewozy Regionalne the average transport distance was 57.2 km (a drop of 3.6 km). In local-government companies, the average transport distance dropped in 2015 from 43.2 km to 41.6 km. The decrease in this indicator was caused by, i.a., a low average distance for Koleje Małopolskie, for which 2015 was the first full year of operation, amounting to 15.8 km.

1.3.2. Polish passenger railway market structure

Passenger railway undertakings operating on the market provide transport services in various segments. The analysis of the current range of services offered by railway undertakings allows for the identification of three categories of transport:

- provincial – with paths usually beginning and ending in the same province. According to the definition under Article 4 (1) (25) of the Act of 16 December 2010 on public collective transport (Journal of Laws of 2011 No. 5, item 13) provincial passenger transport is passenger transport provided in the framework of public collective transport within the administrative borders of at least two districts and within the borders of one province, and in the case of rail-transport lines, also transport to the nearest station in the neighbouring province allowing for a transfer to continue the trip or for the technical change of the train's direction and a return trip; other than commune, district, district-commune, metropolitan and inter-provincial transport. This definition matches trains of most railway undertakings; these trains do not cross the borders of one province (WKD, Łódzka Kolej Aglomeracyjna, Koleje Małopolskie, PKP SKM in Tricity and SKM Warszawa, which provides transport services within the Warsaw agglomeration). The definition also includes trains crossing province borders and reaching the nearest station in a neighbouring province, where a transfer or a change of the train's direction can take place, e.g. the trains of Koleje Mazowieckie to Dęblin (Lubelskie Province), to Skarżysko Kamienna (Świętokrzyskie Province), to Skierniewice (Łódzkie Province) and Działdowo (Warmińsko-Mazurskie Province), the trains of Koleje Śląskie to Oświęcim (Małopolskie Province), the trains of Koleje Wielkopolskie to Kutno and the trains of Koleje Dolnośląskie to Rawicz (Wielkopolskie Province). Arriva RP, which operates in the Kujawsko-Pomorskie Province, provides passenger transport services to Chojnice and Czersk in the Pomorskie Province and to Sierpc in the Mazowieckie Province. In this category Przewozy Regionalne has specific REGIO trains;

- inter-provincial – with paths crossing province borders. According to the definition from the Act on public collective transport, inter-provincial passenger transport means passenger transport within public collective transport which involves crossing province borders; other than commune, district, district-commune, metropolitan and province transport. Taking the above into consideration, passenger transport to stations in other provinces which are not the nearest stations for a transfer to continue the trip or for the change of the train's direction for technical purposes constitute inter-provincial transport. In the "inter-provincial" category, railway undertakings distinguish three types of trains:
  - inter-provincial stopping trains – examples are the "Słoneczny" train of Koleje Mazowieckie, which in 2015 ran from Warsaw to the Tricity, the "Dragon" train of the same railway undertaking, running along the path between Warsaw and Kraków, and the trains of Koleje Dolnośląskie running to Zielona Góra (Lubuskie Province). Until August 2015 Przewozy Regionalne offered a number of long-distance and medium-distance connections under the name InterREGIO;
  - inter-provincial express trains – only PKP Intercity offers two brands in this category:
    - TLK, i.e. "Twoje Linie Kolejowe" ("Your Railway Lines"), characterised by low ticket prices, an extensive discount package, an optimum frequency of trains and of intermediate stops, often using older wagons with a lower degree of upgrading;
    - InterCity (IC), established in November 2014 – offers trains consisting of new and upgraded trains. New investments were co-financed by the European Union. The InterCity brand's focus is on modern, comfortable and safe trains;
- inter-provincial express trains – trains of this type are also defined by PKP Intercity. Generally, they operate on a commercial basis. The railway undertaking distinguishes:
  - the Express InterCity (EIC) brand, which is to ensure a high comfort of travelling, providing facilities for passengers (i.a. Wi-Fi, catering, business compartments) and trains with exclusively pre-booked seats. EIC train sets are composed of the newest rolling stock and reach speeds of 160 km/h on most paths;
  - the Express InterCity Premium (EIP) brand, which is meant to be the most comfortable category of trains, with twenty ED250 (Pendolino) trains. EIP trains link the Tricity and Warsaw with southern agglomerations (Kraków, Katowice, Wrocław, Gliwice, Bielsko-Biała and Rzeszów). The modern ED250 trains sets are electrical multiple units, which reach the speed of 200 km/h in selected sections within Poland;
- international, which involve state border crossing. Here, according to the definitions provided for in the Act on public collective transport, a distinction is drawn between:
  - international transport involving passenger transport in the framework of public collective transport, which involves the crossing of the border of the Republic of Poland, excluding transport services covering cross-border areas. Only PKP Intercity provides transport services of such type through:
    - international fast trains, which provide all-year-round day and night transport along paths from Warsaw, Katowice and Kraków to Prague, Vienna, Bratislava and Budapest, from Warsaw to Moscow, Kiev, Sofia and Belgrad, from Warsaw and Wrocław to Lviv;
    - EuroCity (EC) trains – with a superior standard, air-conditioned, with a restaurant wagon. The railway undertaking operates these trains along the paths from Warsaw to Vienna (EC "Sobieski" and "Polonia"), Prague (EC "Praha" and "Porta Moravica"), Budapest

(EC "Varsovia") and Berlin, and also from Gdynia to Berlin and Vienna (EC "Sobieski").

- EuroNight (EN) trains – the only train with this symbol, "Jan Kiepura", runs from Warsaw through Poznań, Berlin and Cologne to Oberhausen;

- cross-border transport, which takes place in the zone defined in the Act on public collective transport as an area of at least one commune, district or province where a public collective transport operator offers public collective transport services, located in the immediate vicinity of the state border of the Republic of Poland, and the area of the respective administration unit located outside the border of the Republic of Poland on the territory of a neighbouring state. In 2015 cross-border transport was provided by four undertakings: Przewozy Regionalne, with trains running to Frankfurt (Oder), Berlin Lichtenberg and Forst (Germany), to Ústí nad Orlicí in the Czech Republic and from Terespol to Brest (Belarus). The trains of Koleje Dolnośląskie run to Germany: from Zielona Góra to Görlitz and from Wrocław through Görlitz to Dresden and to the Czech Republic: from Szklarska Poręba to Liberec and from Jelenia Góra to Trutnov. Starting from the 2015/2016 season, Koleje Śląskie run to Bohumín in the Czech Republic.

  In addition, UBB provides transport connections along the path from the Świnoujście Centrum station to Stralsund in Germany. The section between Świnoujście Centrum and Ahlbeck State Border with a length of 1.4 km is managed by UBB Polska, a railway infrastructure manager, owned by the German UBB company, part of the DB corporation. Due to the fact that the railway undertaking is not a public collective transport operator, passenger transport provided by it is not classified as cross-border transport but as international passenger transport;

- occasional – occasional transport supplements the above categories. These are usually passenger transport services based on special orders within individual paths, outside the timetable. In 2015 this category accounted for 0.05% of the total number of passengers. Occasional transport was most often provided by PKP SKM and PKP Cargo and NKN Usługi Kolejowe.

ED250 Pendolino train sets in selected sections in Poland reach the speed of 200 km/h.

Tab. 2: The range of services of railway undertakings by categories and types of transport in 2015

Category	Types of transport	Railway undertakings						
		PKP Intercity	Przewozy Regionalne	Koleje Mazowieckie	Koleje Dolnośląskie	Koleje Śląskie	UBB	Others: PKP SKM, SKM Warszawa, WKD, Arriva RP, Koleje Wielkopolskie, Koleje Małopolskie, ŁKA, others
Provincial	slow		✓ REGIO	✓	✓	✓		✓
Inter-provincial	slow		✓ Inter Regio	✓"Słoneczny", "Dragon"	✓			
	fast	✓ TLK, IC						
	fast	✓						
	fast	✓ EIC, EIP						
International	cross-border and stopping		✓		✓	✓	✓	
	long-distance	✓ express, EC, EN						
Occasional	-							✓

An analysis of individual market categories shows an increase in the provincial, inter-provincial and occasional categories.

Tab. 3: The number of passengers (in thousand) in total within particular categories in 2014 and 2015

category	2014	2015	change [%]
provincial	236 734	244 336	3.2%
inter-provincial	29 447	33 367	13.3%
international and cross-border	2 766	2 455	-11.3%
occasional	121	151	24.6%
total	**269 069**	**280 309**	**4.2%**

Of particular note is the increase in the "inter-provincial" category – 3.9 m more passengers were transported in 2015 than in 2014. Of 33.4 m passengers transported in this category in 2015, almost 90% were PKP Intercity passengers. Compared to 2014, the number of passengers for this company increased by more than 25%.

PKP Intercity recorded an increase in particular in the category of express trains, as it launched the ED250 Pendolino trains.

International transport decreased by 11.3%. A particularly notable decrease in the number of passengers, by 242 thousand, was recorded by PKP Intercity.

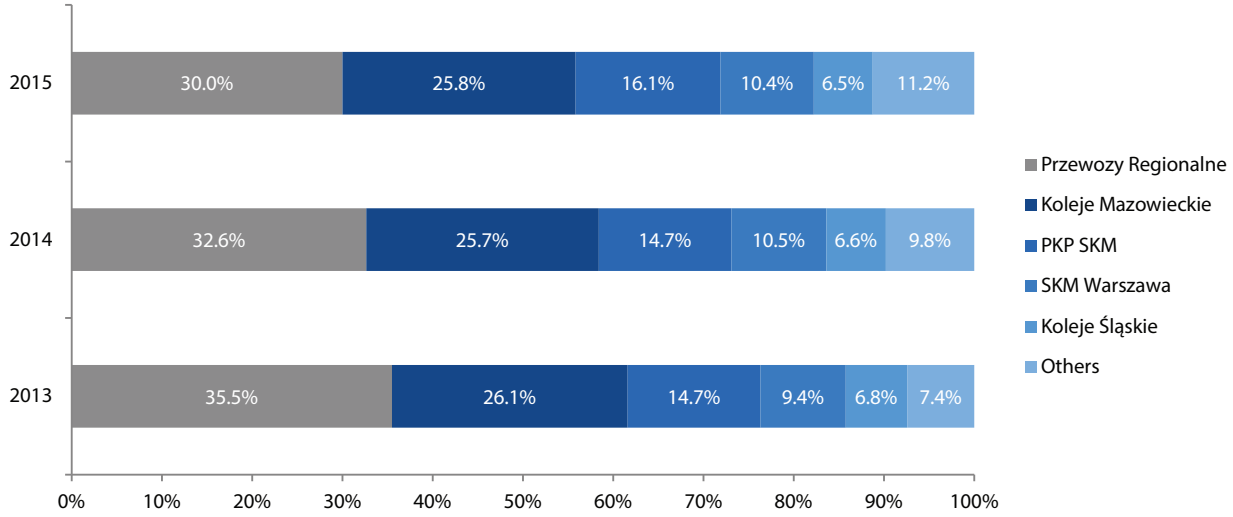
The UBB railway undertaking provides international transport in Poland only on a 1.4-kilometre-long section.

Cross-border and international passenger transport also dropped compared to 2014 (725 thousand passengers in 2014 against 656 thousand passengers in 2015 – a 9.6% decrease).

In 2015 the dominant category of passenger provincial transport increased from 236.7 m passengers to 244.3 m passengers in 2015 (a 3.2% increase). Provincial transport in 2015 was provided by 11 railway undertakings: Przewozy Regionalne, Koleje Mazowieckie, PKP SKM, SKM Warszawa, WKD, Koleje Śląskie, Arriva RP, Koleje Dolnośląskie, Koleje Wielkopolskie, Koleje Małopolskie, ŁKA.

Five of these undertakings combined had a nearly 89% market share in the number of passengers transported.

Fig. 15: The market share of passenger railway undertakings in provincial passenger transport in the years 2013-2015



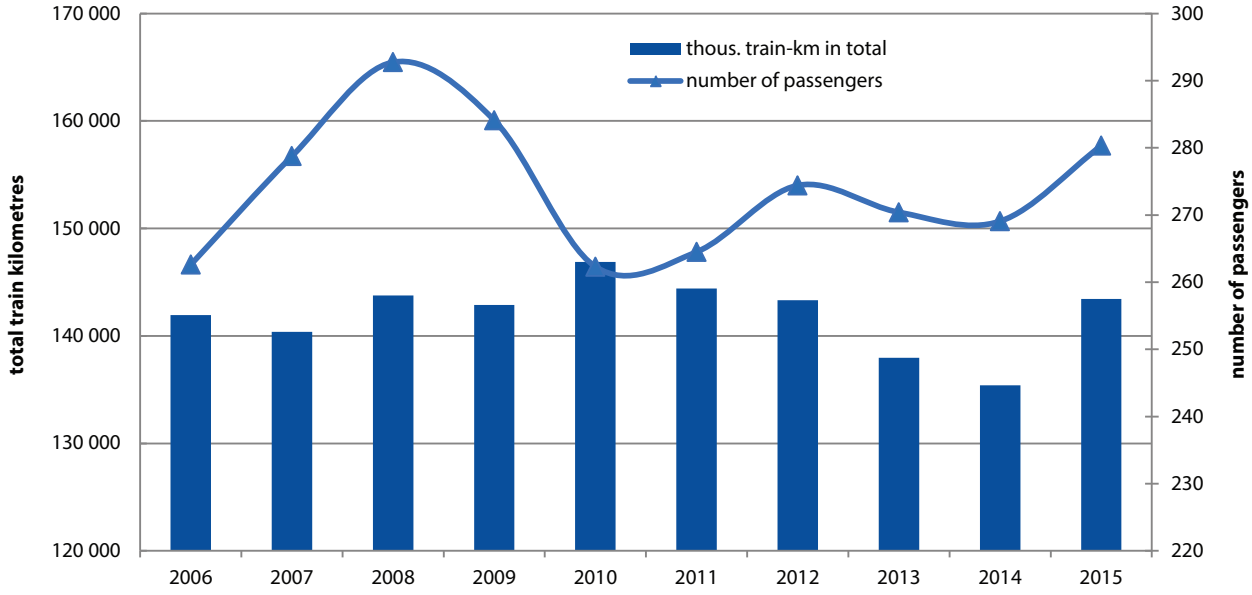
Przewozy Regionalne has lost some of its share in the number of passengers in passenger provincial trains. In 2013 it still had a 35.5% share. This share decreased by 5.5 percentage points in 2015. In absolute terms Przewozy Regionalne lost 11.5 m passengers over two years. Koleje Mazowieckie achieved a slightly higher market share. PKP SKM in the Tricity recorded a 1.4% increase, while SKM Warszawa and Koleje Śląskie experienced a slight drop in their market shares.

Other railway undertakings – WKD, Arriva RP, Koleje Dolnośląskie, Koleje Wielkopolskie, Koleje Małopolskie and ŁKA – increased their combined market share in passenger provincial transport from 9.8% to 11.2% in 2015. Of particular note is the increase in the number of passengers of Koleje Dolnośląskie – from 3.6 m to almost 5 m in 2015 (a 39% increase).

In this group of undertakings, not all companies recorded an increase in passengers. Arriva RP, a private undertaking and part of the DB group, operating mainly in the Kujawsko-Pomorskie Province, recorded a 12% decrease in the number of passengers.

Total train kilometres in passenger transport increased in 2015 by 5.9% to reach 143.4 m train-km.

Fig. 16: The operational performance of all railway undertakings compared to the number of passengers in the years 2006-2015



In 2015 passenger railway undertakings recorded a total of 143.4 m train-km. Compared to 2014, this figure grew by 5.9%, which means that the trains of passenger railway undertakings travelled 8 m km more. Over this period, the total number of passengers grew by 4.2% (from 269.1 m to 280.3 m passengers). This means that the 2015 downward trend in passenger transport was overcome.

In 2015 the number of passengers in international and cross-border trains decreased by 11.3%.

1.3.3. International passenger transport

In 2015 international passenger transport (including local cross-border transport) was provided by 5 railway undertakings:

- PKP Intercity – long-distance trains (including Eurocity, EuroNight);
- Przewozy Regionalne – local cross-border trains and InterRegio;
- UBB – trains on the Świnoujście Centrum – state border – Ahlbeck (Germany) path;
- Koleje Dolnośląskie – local cross-border trains and the train to Dresden;
- Koleje Śląskie – local cross-border trains to Bohumin.

It should be noted that on 13 December 2015 Koleje Dolnośląskie started new paths, which can be used to travel in the cross-border area to Germany and the Czech Republic. These paths are operated in cooperation with foreign undertakings (Die Länderbahn and České dráhy). Koleje Śląskie also launched train paths to Bohumin.

In 2015 international and cross-border trains transported a total of 2.455 m passengers, which is 311.8 thousand less than in 2014 (an approx. 11.3% decrease). The transport services provided involved 536.7 m pkm, which is 98 m less than a year before (an approx. 15.5% drop). The average distance travelled by a passenger using cross-border and international trains decreased to 219 km (10 km less than in 2014).

Fig. 17: The number of passengers of international and cross-border trains in the years 2013-2015 in thousand

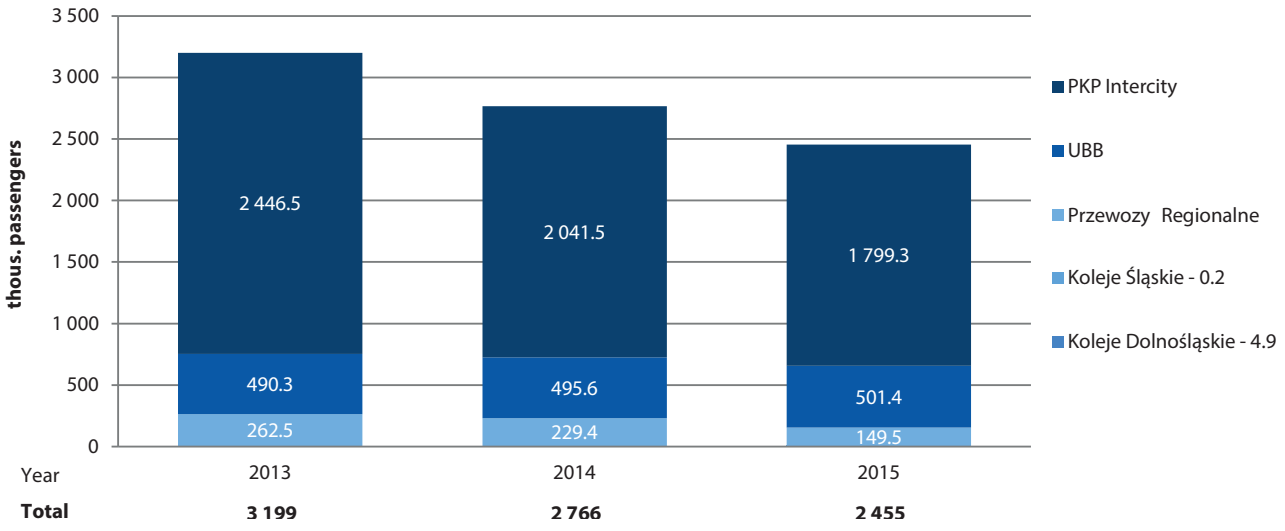
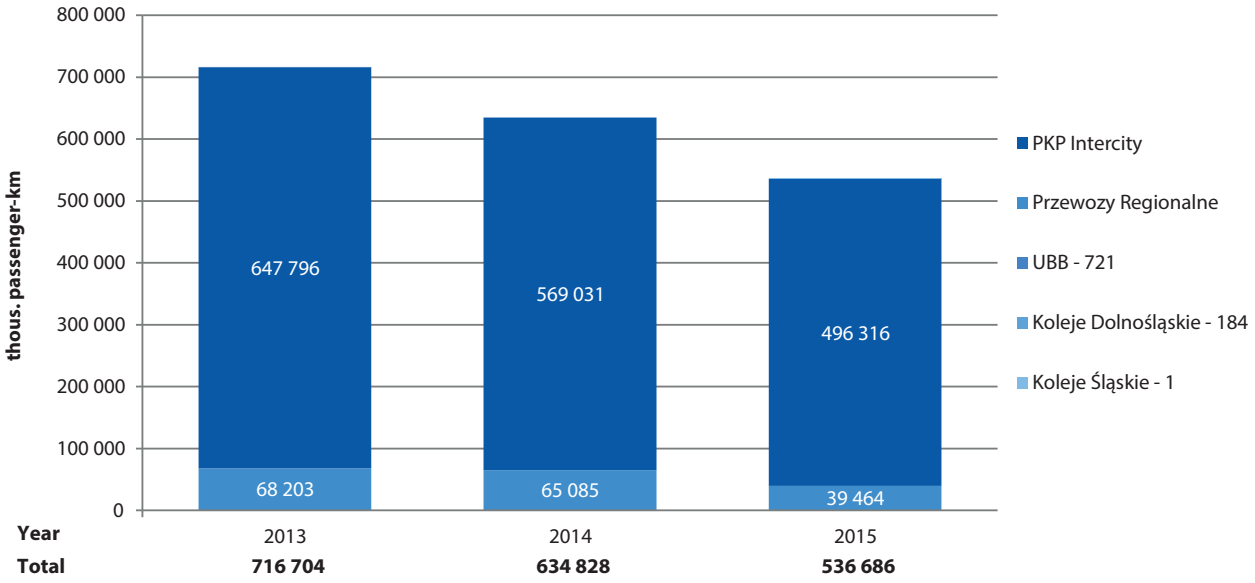


Fig. 18: The transport performance of international including cross-border trains (in thousand pkm) in the years 2013-2015



In 2015 both PKP Intercity and Przewozy Regionalne had less passengers and lower transport performances in international and cross-border transport. The number of passengers crossing borders on Przewozy Regionalne trains decreased by nearly 80 thousand, from 229.4 thousand in 2014 to 149.5 thousand in 2015 (a 35% drop). In the same period PKP Intercity recorded an almost 11.9% decrease in the number of passengers in international trains, with the trains of this company being used by 242 thousand passengers less than a year before.

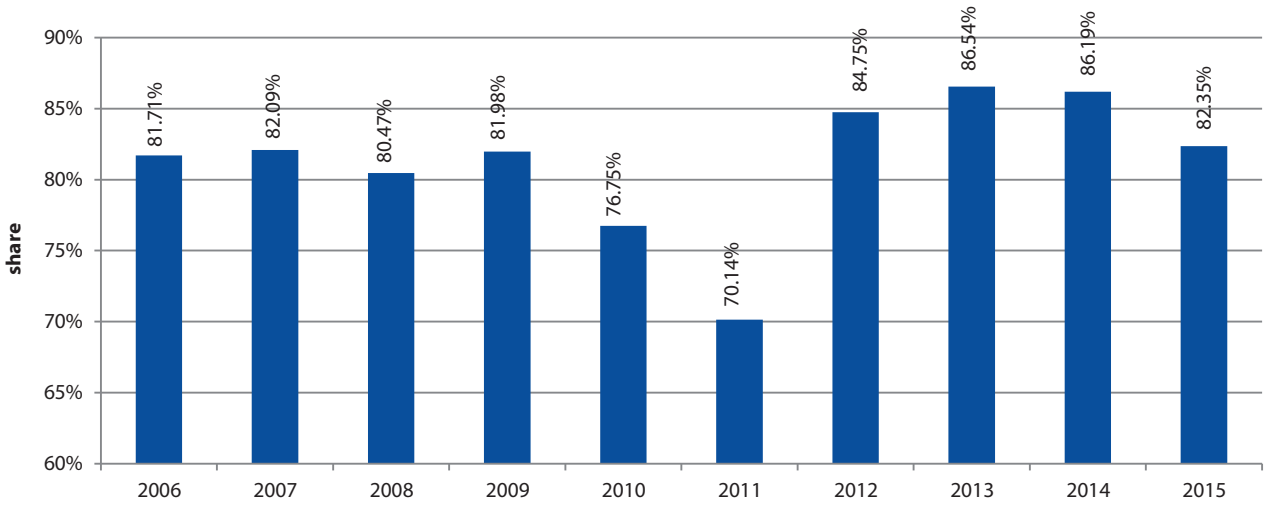
Przewozy Regionalne experienced an over 25 m pkm decrease (of 39%) in transport performance. PKP Intercity's transport performance, put in by EuroCity and EuroNight trains, was lower by more than 72 m pkm. Overall in 2015, the market lost over 21% compared to 2014. UBB, the German railway undertaking, recorded a small increase, but the volume of cross-border transport provided by this railway undertaking did not change significantly compared to previous years, as its services have an unchanging nature.

In 2015 the most passengers crossing borders used UBB's trains, which travelled across the Świnoujście – Ahlbeck border. This was a 1.2% increase in the number of passengers compared to a year before. The Terespol-Brest border checkpoint, which has played a major role in international transport for many years, is now ranked third in terms of the number of border-crossing passengers. Compared to last year, the number of passengers crossing the Terespol-Brest border checkpoint decreased by nearly 23%. These decreases were caused by the reduced number of paths to countries on the eastern border of the Republic of Poland, as well as issues related to ensuring proper connections for the existing paths. The overall decrease in the number of border-crossing passengers was less significant on the western and south-western border. The lower interest in international paths among passengers has been, however, a general trend.

1.3.4. Public-service passenger transport

The large majority of passenger transport in Poland is provided under agreements between public rail-transport organisers and competent local government units or the minister in charge of transport. The share of public-service passenger transport in the overall volume of transport performance was 82.4% in 2015 (compared to 86.2% in 2014). In total in 2015, public-service passenger transport agreements accounted for 14 364 m pkm. The corresponding figure for 2014 was 13 851 m pkm (a 3.7% increase).

Fig. 19: The share of transport performance under public-service agreements with public transport organisers in the overall market in the years 2006-2015



The increase in the transport performance of public service transport in 2015 corresponds to the growth in the transport performance of the market as a whole. Commercial transport continues to be additional business for railway undertakings, as they largely provide public-service transport (PKP Intercity – 67.0%, Przewozy Regionalne – 89.2%, Koleje Mazowieckie – 98.3%).

PKP Intercity increased its transport performance under public services by only 5%, and the overall increase (all trains of the railway undertaking) in this figure was 22%. This means that PKP Intercity increased its transport performance in 2015 mainly due to commercial trains, i.e. EIP, EIC, TLK trains on the Łódź-Warsaw line and Berlin-Warszawa-Express express trains.

Situation looks different for Przewozy Regionalne, whose transport performance in public-service transport decreased by only 0.5%, while the overall loss in this respect was 3.2%. This means that the decrease in the transport performance of Przewozy Regionalne was caused by the almost complete termination of use of its commercial Interregio trains.

Koleje Mazowieckie's transport performance in public-service transport decreased by 0.4%, but its overall transport performance increased by 0.6% in total. This means that Koleje Mazowieckie provided commercial transport involving large distances, which reflects the nature of its commercial train called "Słoneczny", which connects Warsaw with the Polish Coast (Tricity, Ustka). Among other factors, this was influenced by the completion of the years-long upgrade works on the Warsaw-Gdynia path.

Most transport in Poland is provided as a public service.

1.3.5. The structure of the rolling stock available to passenger standard-gauge railway undertakings

The quantitative structure of passenger rolling stock did not change significantly in 2015. The number of electric multiple units increased. At the end of 2015, railway undertakings had 1 342 electric multiple units (21 more than in 2014). The number of wagons in electric multiple units increased from 4 214 to 4 408 (a 4.6% increase). The total number of wagons (including in electric multiple units) increased from 229 to 7 157 (an over 3% increase). The number of diesel engine vehicles available to passenger railway undertakings increased by 16 – at the end of 2015, their total number was 253, including 93 single-unit railbuses (an increase of 2). The total number of locomotives also decreased, from 510 to 484, including a drop of 31 in the number of electric locomotives (from 363 to 332), with an increase by 7 in diesel engine locomotives (from 145 to 152).

Tab. 4: Locomotives and wagon rolling stock managed by passenger railway undertakings in the years 2011-2015

type of rolling stock	year				
	2011	2012	2013	2014	2015
locomotives in total	554	557	535	510	484
of which electric locomotives	380	412	394	363	332
of which diesel engine locomotives	174	145	141	145	152
electric multiple units	1 248	1 216	1 263	1 321	1 342
single electric engine wagons	8	8	10	8	8
diesel engine vehicles	228	227	246	237	253
of which single diesel engine wagons	70	91	97	91	93
total passenger wagons	7 864	7 313	6 906	6 928	7 157
of which only in electric multiple units	3 890	3 814	3 987	4 214	4 408

The average age of wagons and electric multiple units (EMUs) in 2015 was 28.0 years (29.1 in 2014) and 26.5 years (31.1 in 2014), respectively.

It should be noted that of 1 342 EMUs available to railway undertakings, as many as 252 were less than 5 years old. This figure represents 19% of all electric multiple units. However, rolling stock which is more than 10 years old amounted to as many as 1 048, including as many as 903 rolling stock units of more than 30 years (67.3% of all EMUs). Nearly 93% of electric multiple units older than 30 years are the EN57 model – however, over the recent years these units underwent numerous and often extensive upgrades (including individual upgraded versions: KM, AKM, AMW, AL). The maximum design speed of these kinds of electric multiple units, including of the upgraded rolling stock, does not exceed 110-120 km/h. The maximum operating speed for as many as 86.6% of EMUs is 120 km/h or less.

Among diesel engine vehicles, 36.8% are vehicles with an average age of less than 5 years, while vehicles older than 30 years make up only 5%.

It is important to note that the statistics on wagon rolling stock do not factor in the dates of upgrades and temporary and permanent out-of-operation periods.

To purchase new rolling stock in 2015, railway undertakings spent a total of PLN 2 777.9 m, of which 78% was spent by PKP Intercity and 15.2% by Koleje Mazowieckie. Investment in new rolling stock was also made by Koleje Dolnośląskie (PLN 115.3 m) and Łódzka Kolej Aglomeracyjna (PLN 76.5 m). A total of PLN 454.3 m in rolling stock upgrades was spent in 2015.

Railway undertakings spent a total of almost PLN 2.8 bn to purchase new rolling stock in 2015.

Tab. 5: The value of rolling stock investment in 2015

Railway undertaking	Investment in 2015		
	Total	Purchase	Upgrade
	PLN m	PLN m	PLN m
PKP Intercity	2 376.4	2 157.1	219.4
Koleje Mazowieckie	516.0	421.1	95.0
Koleje Dolnośląskie	115.7	115.3	0.4
Koleje Śląskie	0.0	0.0	0.0
SKM Warszawa	0.0	0.0	0.0
Przewozy Regionalne	138.5	0.0	138.5
PKP SKM	1.1	0.0	1.1
Arriva RP	0.0	0.0	0.0
Koleje Wielkopolskie	0.0	0.0	0.0
WKD	8.0	8.0	0.0
ŁKA	76.5	76.5	0.0
Koleje Małopolskie	0.0	0.0	0.0
Total	**3 232.2**	**2 777.9**	**454.3**

1.3.6. The employment and business performance of passenger railway undertakings

In 2015 the passenger transport sector employed 22 662 persons. Compared to 2014, this was a decrease by 0.5%. The decrease rate was, however, much smaller than in previous years.

Fig. 20: Employment in the passenger transport sector in the years 2008-2015

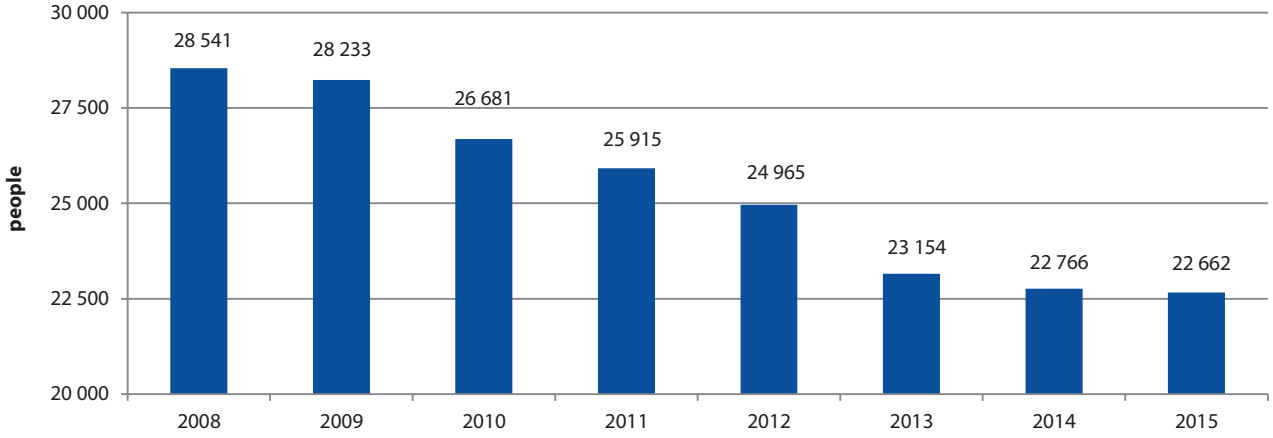
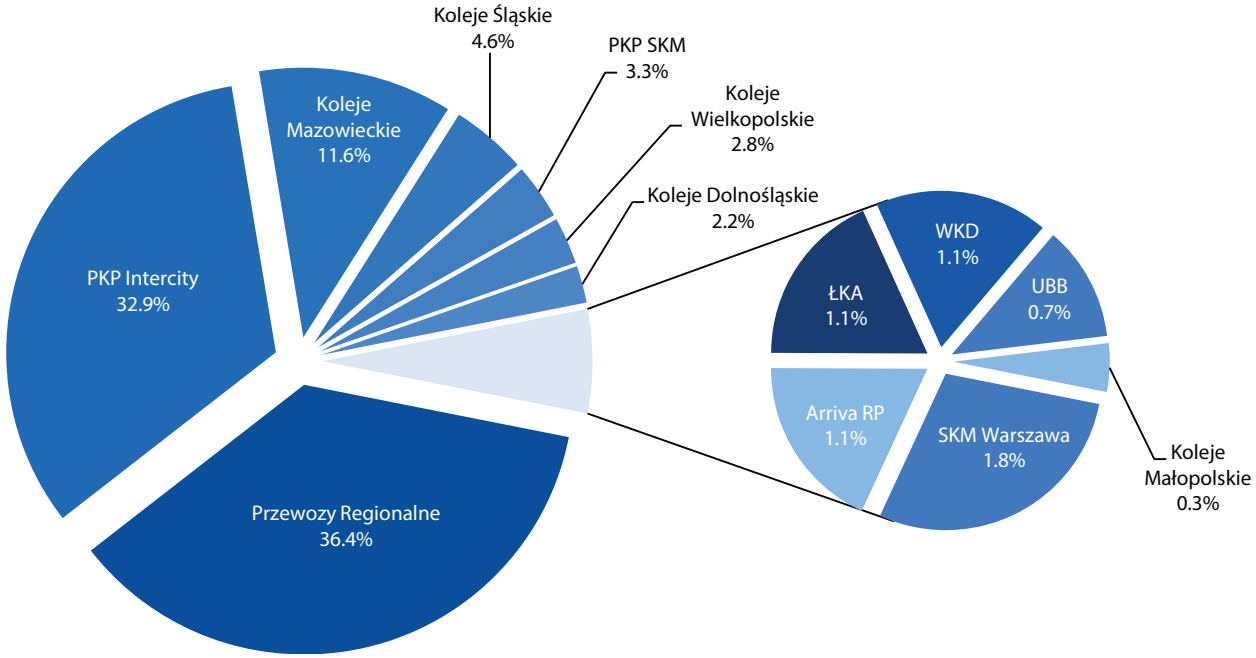


Fig. 21: Employment structure at passenger railway undertakings in 2015

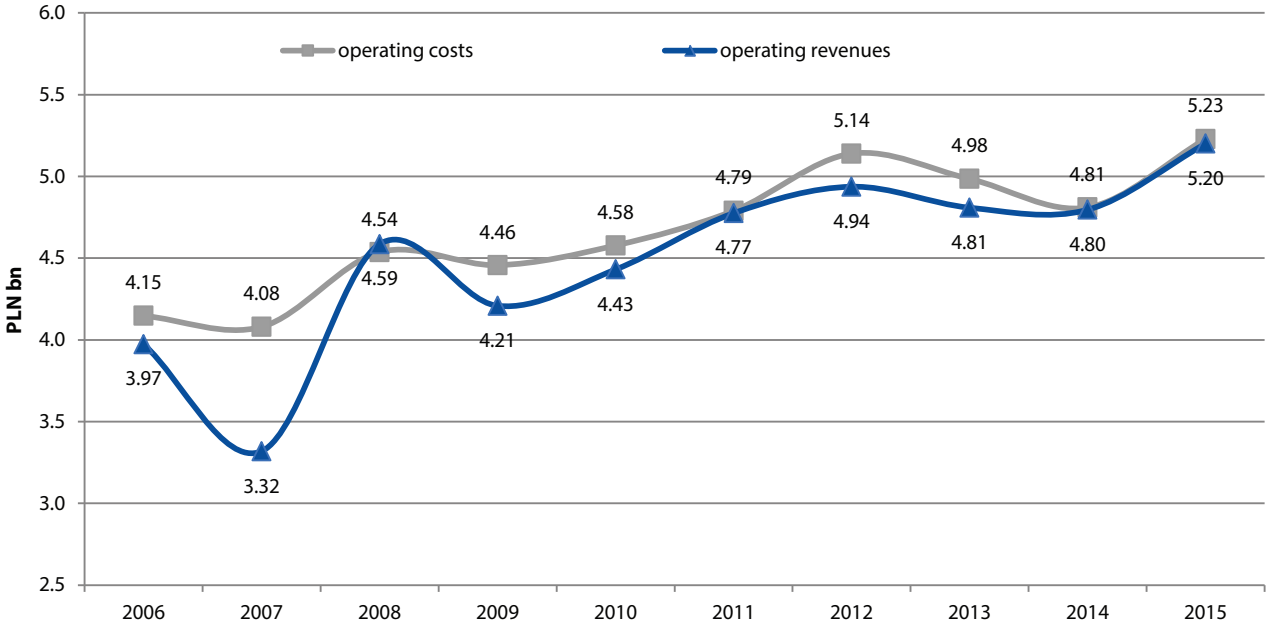


One of the companies whose employment dropped the most is Przewozy Regionalne. In 2014 this company employed 9 017 persons. At the end of 2015 the employment level went down to 8 247 (an 8.5% decrease).

An analysis of individual companies providing regular (time-table-based) passenger transport leads to the conclusion that two thirds of employees work at Przewozy Regionalne and PKP Intercity. PKP Intercity expanded its range of transport services, which led to a 4.4% increase in employment compared to 2014. Another vigorously developing company that increased its employment is Koleje Dolnośląskie.

Employment level at Przewozy Regionalne dropped by 8.5% and increased by 4.4% at PKP Intercity.

Fig. 22: The business performance of passenger railway undertakings (in PLN bn) in the years 2006-2015



In 2015, due to an increase in the basic parameters of the passenger transport market, the revenues and costs recorded by the railway undertakings increased as well. It is worth noting that the achieved level of revenue (PLN 5.20 bn) is the largest revenue recorded so far. The operating costs of passenger railway undertakings increased as well, to PLN 5.23 bn. The difference between the revenues and costs of the market represents a loss of about PLN 30 m.

The punctuality rate was 92.4% in 2015 which means an increase of 1.3 percentage point.

Ticket sales is the main source of revenue for railway undertakings. Revenues of railway undertakings also included subsidies, including subsidies from the State budget and local government intended for public services or to compensate for the deficit related to statutory reliefs.

The total market revenue, calculated as the sum of revenues from the sales of services and subsidies, increased in 2015 to PLN 5.195 bn. Compared to 2014, this is an 8.3% increase (from PLN 4.796 bn). In 2015, public-service subsidies accounted for almost 46% of all revenues and subsidies to statutory reliefs (48% in 2014 and 44% in 2013). An increase was recorded for both subsidies (from PLN 2.290 bn to PLN 2.378 bn – a 3.8% increase) and revenues from the sales of services (from PLN 2.506 bn to PLN 2.817 bn – a 12.4% increase).

1.3.7. The evaluation of the quality of rail transport services

One of the most important determinants of the quality of transport services is the level of punctuality. Trains that reach the final station on time or with a 5-minute delay are considered punctual. The ratio of punctuality on arrival is the quotient of the number of trains that reach the final station on time (including those with a 5-minute delay) and the number of all trains launched by railway undertakings. In 2015, the punctuality of trains on final stations reached 92.4%, which means an increase in comparison to the previous year by 1.3 percentage point from 91.1%. In 2015, licensed railway undertakings launched a total of 1.6 m trains, i.e. approx. 6% more than in the previous year (an increase of 90 thous.). The percentage of all trains delayed on arrival (including those delayed up to 5 minutes) reached 22.9% in the analysed period, which is a decrease of 2.8 percentage points compared to 2014. Total delay time amounted to 50 985 hours, i.e. 2124 days (a decrease of 9 382 hours, i.e. 15.5%).

The average delay time, except for delays of up to 5 minutes, amounted to 19 minutes and 50 seconds. (lower by 1 minute 52 seconds). Including trains delayed up to 5 minutes, the average delay time was 8 minutes 23 seconds. (i.e. lower by 1 minute).

Trains delayed by up to 5 minutes represented the largest percentage – 66.6% (in 2014 – 65.2%). Trains delayed by 5 to 60 minutes accounted for 31.8% (32.9% in 2014), by 1 to 2 hours for 1.2% (1.4% in 2014) and by more than 2 hours for 0.37% (0.44% in 2014). However, there was a 3.6% increase in the number of cancelled trains (2 298 cancelled trains compared to 2 219 in 2014).

Tab. 6: The punctuality of passenger railway undertakings in 2015

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	2015	2014
Total	94.47%	93.30%	89.94%	91.92%	92.36%	91.08%
PKP Intercity	85.52%	82.57%	75.86%	79.45%	80.71%	76.35%
Przewozy Regionalne	94.59%	93.36%	89.51%	91.91%	92.32%	91.95%
Koleje Mazowieckie	92.60%	91.03%	85.67%	88.02%	89.34%	87.25%
PKP SKM w Trójmieście	99.61%	99.23%	98.98%	98.99%	99.16%	98.77%
SKM Warszawa	96.72%	95.13%	90.65%	95.19%	94.42%	90.93%
WKD	98.10%	99.25%	98.80%	99.59%	98.94%	99.06%
Koleje Dolnośląskie	91.92%	92.21%	90.26%	88.85%	90.76%	91.45%
Koleje Śląskie	92.62%	91.02%	86.40%	88.30%	89.56%	87.24%
Koleje Wielkopolskie	96.34%	94.37%	92.17%	90.94%	93.42%	94.44%
Arriva RP	94.45%	94.02%	90.93%	89.50%	92.24%	92.89%
Łódzka Kolej Aglomeracyjna	98.23%	98.07%	96.04%	96.13%	97.02%	96.75%
Koleje Małopolskie	98.73%	99.46%	99.19%	97.86%	98.73%	99.81%

Compared to 2014, when individual undertakings' punctuality decreased by up to several percentage points, these decreases in 2015 were much less significant. The largest decrease in 2015, by 1 percentage point, was recorded by Koleje Wielkopolskie (from 94.4% in 2014 to 93.4%), Koleje Dolnośląskie (0.7 percentage point), Arriva RP (0.7 percentage point) and WKD (0.1 percentage point).

PKP Intercity achieved the most notable improvement in punctuality (4.4 percentage points), SKM Warszawa (3.5 percentage points), Koleje Śląskie (2.3 percentage points), Koleje Mazowieckie (2.1 percentage points), with poorer improvement by PKP SKM and Przewozy Regionalne (0.4 percentage point). Improved punctuality is attributable primarily to fewer obstacles related to infrastructure upgrades.

1.3.8. The protection of passengers' rights

In accordance with Regulation (EC) 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passengers' rights and obligations (OJ L of 3 December 2007), since the rail passenger is the weaker party to the transport contract, passengers' rights in this respect should be safeguarded. The European Parliament and Council also note that in the framework of the common transport policy, it is important to safeguard users' rights for rail passengers and to improve the quality and effectiveness of rail passenger services in order to help increase the share of rail transport in relation to other modes of transport.

Pursuant to Article 13 (14a) of the Railway Transport Act (consolidated text: Journal of Laws of 2015, item 1297, as amended, "the Railway Transport Act"), the President of UTK supervises compliance with Regulation 1371/2007/EC, including:

- monitoring whether railway undertakings, infrastructure managers and train-station owners or managers comply with their obligations related to the disabled;
- issuing orders to rectify irregularities related the observance of passengers' rights;
- handles complaints related to breaches of Regulation 1371/2007/EC.

With regard to the above, the President of UTK received a total of 1 625 complaints in 2015. Notably, the number of complaints slightly increased compared to 2014 (1 625 in 2015 compared to 1 608 in 2014), with a notably better case clearance rate (1 701 in 2015 compared to 1 453 in 2014).

The two main problems reported by the passengers in 2015 involved the inability to obtain refunds (560 cases in the entire year) and improper performance of the transport agreement (486 cases).

The rail passenger is the weaker party to the transport contract, so passengers' rights should be protected

The main categories of complaints filed by passengers in 2015 were the following:

- ticket distribution – 321 complaints;
- hygiene, comfort and service quality – 486 complaints;
- information and signage – 201 complaints;
- timetables – 338 complaints;
- other – 279 complaints;

Passengers complained mainly about delayed trains, the lack of information on train times and paths, the lack of appropriate announcements or information in station buildings, at stations, stops, and in trains, as well as travel conditions (temperature, cleanliness, toilet availability, overcrowded trains). Complaints were also related to the increasingly popular online ticket sales and the related numerous refund claims made by the passengers due to cancelled or changed transport agreements.

A new category emerged in 2015, accounting for a substantial number of complaints. This involved the lack or untimely payment of the funds due by railway undertakings (to passengers returning unused tickets or passengers whose claims were accepted). UTK received more than 200 such complaints between 1 January and 14 June 2015.

Other notable passenger's rights protection measures taken by the President of UTK in 2015 included:

- an intervention related to changing the rules on ticket-inspector fees charged for changing the transport agreement – UTK analysed the rules and regulations and asked all railway undertakings to adopt uniform and lawful procedures for cases where transport agreements are changed in a train. Before that, some railway undertakings in such situations charged the so-called ticket-inspector fees, although these were not provided for by the law in force. The possibility to change the transport agreement should not require additional operating costs. After the intervention, individual railway undertakings introduced appropriate changes in their rules and regulations and internal procedures. The ticket-inspector fee is no longer charged when a passenger changes the transport agreement while in the train;

- monitoring the availability of contact for the disabled – under EU laws, persons with reduced mobility (the disabled) who wish to be assisted while getting on and off the train, or while going around the station or platform, should report such request no later than 48 hours before the scheduled travel. UTK monitored the availability of undertakings' helplines receiving requests to assist persons with reduced mobility. UTK had to intervene with some of the undertakings, and the results are evident, with no new complaints being filed and the undertakings being aware that their helplines are being monitored, which has prompted them to put in place and use appropriate internal procedures to ensure that the communication channels work properly;

- promoting the principles of community life in debt collection – another example of an effective, pro-passenger intervention is the approach taken by one of the railway undertakings, in which debt-collection procedures are discontinued for passengers who by mistake purchased a ticket at an inappropriate discount rate, at prices higher than the required-ticket price (usually this involves buying a ticket at a 50% discount by persons entitled to 51% discounts), with no financial consequences for such passengers. There were cases where a passenger bought a more expensive ticket, except at an inappropriate discount, and despite this had to pay additional fees, which were quite high. While in line with the law, such measures were completely incompatible with the principles of community life, and as such unacceptable. The effort proved to be a complete success – railway undertakings no longer charge extra fees and have made commitments to refund the amounts already paid by the passengers;

- providing support to passengers in having their complaints handled – the main challenge (in terms of the volume of claims) in 2015 was related to the timely processing of the refund claims for returned tickets and to the timely responses to the claims. Each individual case was thoroughly monitored by UTK employees until closure and the payment, if any, of the amount claimed . UTK's recommendations were complied with and a systemic solution was employed to eliminate problems at their source. The problem was eliminated, with no new complaints being filed regarding the timeliness of claims processing;

- promoting an appropriate development of ticket-distribution channels and best practices – based on its own experiences and passenger suggestions, UTK pointed to a number of improvements which had to be done urgently in ticket-sales systems to eliminate numerous inconveniences that the passengers had to endure over many years. Individual improvements suggested by UTK have been successively introduced. Further measures are currently under way to improve the existing solutions. Following UTK's intervention, one of the railway undertakings introduced mobile ticketing, bringing it in line with the standards used by other undertakings providing mobile ticketing. Before the intervention, the rules and regulations of the railway undertaking required the ticket to be printed. Railway undertakings have implemented UTK's recommendation that ticket machines should display a message informing passengers of the consequences of their not having a confirmation that they had paid for the ticket with a card (and the resulting need for a complaints procedure if they want to return/replace their tickets). This change has a positive influence on passenger awareness and has helped them to avoid unnecessary and burdensome procedures;

Passengers with reduced mobility should request assistance no later than 48 hours before the scheduled travel.

- improving the reliability of the undertaking-passenger communication – another systemic intervention of note has led one of the railway undertakings to adopt a policy where all notices regarding rejected complaints (including rejected appeals against orders for payment) are sent be registered mail, despite there being no legal requirement to do so. An analysis of complaints showed that irregularities are often related to mail service, with railway undertakings assuming that if unreturned, letters sent by regular mail have been effectively served. This has occasionally caused trouble for passengers (e.g. exceeded time limits for appeals due to letters with notices not being, presumably, effectively served by regular mail). Following the intervention, this should not be an issue anymore;

- removing advertising foil from the windows and doors of passenger wagons – another issue that UTK has dealt with effectively involved the removal of advertising foil from windows and doors of passenger wagons operated by one

of the railway undertakings, as such advertising caused hindrance for passengers and a real danger to their safety. UTK's reservations as to whether such form of advertising was acceptable were confirmed by the National Headquarters of the State Fire Service, whose opinion stated explicitly that advertising foil placed on windows and doors of passenger wagons might significantly hinder a possible evacuation (e.g. in the case of fire or an accident). As a result of UTK's intervention, the railway undertaking in question decided to remove the mentioned advertising from all wagons, and also legislative work has commenced to pass laws prohibiting such advertising foil from being placed on windows and doors of passenger wagons (the legislative process is still in progress). So far, Polish laws have not explicitly prohibited the use of advertising foil on windows and doors of passenger wagons;

- a new approach of a railway undertaking to lost passenger luggage – a measurable result of UTK's efforts is the decision by a railway undertaking to introduce pro-passenger changes in the transport rules and regulations on the responsibility for lost passenger luggage. Before UTK's intervention, the railway undertaking evaded responsibility for luggage that was stolen despite being kept in a place intended for luggage storage. As a result of UTK's measures, the railway undertaking put a new policy in place where lost luggage is (in specific cases) the undertaking's responsibility and also decided to implement additional safety measures (video surveillance, safety strings);

- increased number of places in trains to Hel – another UTK's achievement in 2015 was its effective intervention related to overcrowded trains, especially in the summer season, serving on the path between Gdynia Główna, Hel and Gdynia Główna. After UTK's intervention, the number of paths increased and capacities of the trains serving on these paths were improved. UTK's efforts helped to increase the capacity by a total of 2 000 new places;

- numerous ad-hoc interventions – in 2015 UTK successfully intervened on numerous occasions to correct errors and defects in ticket sales, passenger information and timetable information systems. These errors and defects have been resurfacing, however, which means that they have not been systemically eradicated by the relevant entities and shows a need for further measures.

As part of its awareness activities, UTK organises regular events with passengers during the Passenger Day (4 campaigns in 2015) to advise them on their rights as passengers. Also, UTK has run an educational campaign for children called "The ABC of Rail". The campaign is addressed to kindergarten, primary school and lower-secondary school children. Carried out in collaboration with the Railroad Guard Headquarters, this initiative has aimed to promote safety principles and models of responsible behaviour in traffic, including especially areas of stations, bus stops and railway crossings. As part of this campaign, representatives of UTK visit kindergartens and schools to educate children and young people about their rights, as well as to make them aware of the safety issues related to travelling by rail (a total of 17 visits to kindergartens and schools across Poland took place in 2015, involving 1 400 participants, about 2 100 minutes of special lessons and 35 public lectures). In addition to hosting public lectures as part of "The ABC of Rail", kindergarten and schools are encouraged by UTK to actively nurture in children the culture of safety. One of such initiatives is called "Przedszkolaki Bezpieczne Dzieciaki – kolej na pociąg"/"Little ones getting big on safety – tracking the trains" (figures for 2015 – 32 contest submissions involving around 400 children, 10 winning kindergartens which hosted dedicated "The ABC of Rail" lectures).

As part of its awareness activities, the UTK organises regular events with passengers.

1.3.9. Licensing railway passenger transport

Due to entry into force of Commission Implementing Regulation (EU) 2015/171 of 4 February 2015 on certain aspects of the procedure of licensing railway undertakings (OJ L 29/3 of 5 February 2015), further referred to as Regulation 2015/171/EU, licensing rules have been changed. A license is now issued in a single copy, based on the template of the license document, as specified in Annexes 1 and 2 to the Regulation, and includes the types of services that an undertaking is to provide (passenger transport and/or freight transport and/or traction vehicles supply).

In 2015 the President of UTK, acting in accordance with Article 10 (1) (2) of the Rail Transport Act, issued three licenses for the provision of passenger rail transport, including two licenses based on the new license document template in line with Annexes 1 and 2 of Regulation 2015/171/EU. The number of licenses issued by the President of UTK in recent years has been consistent, remaining at the level of one to several licenses a year.

Fig. 23: The number of licenses to provide passenger rail transport issued between 2006 and 2015

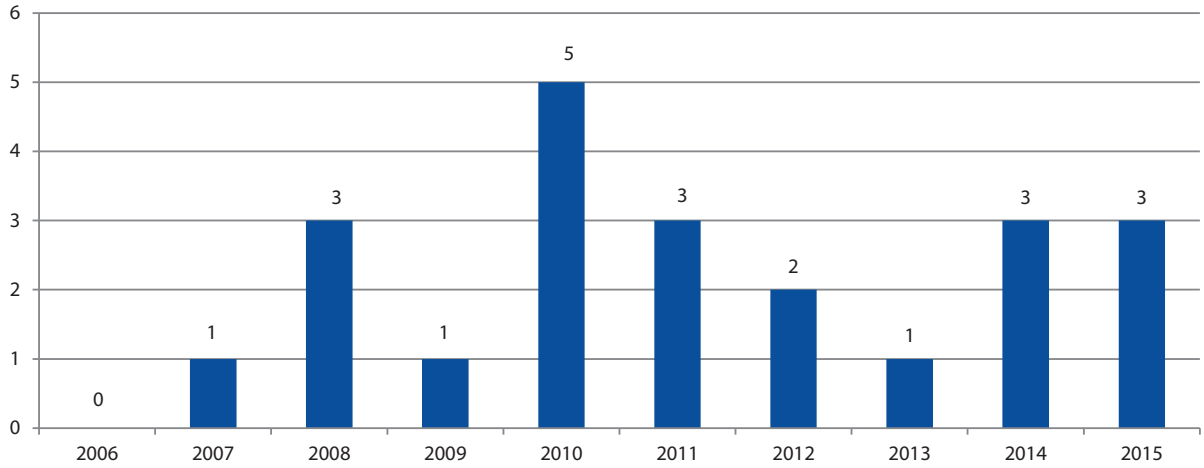
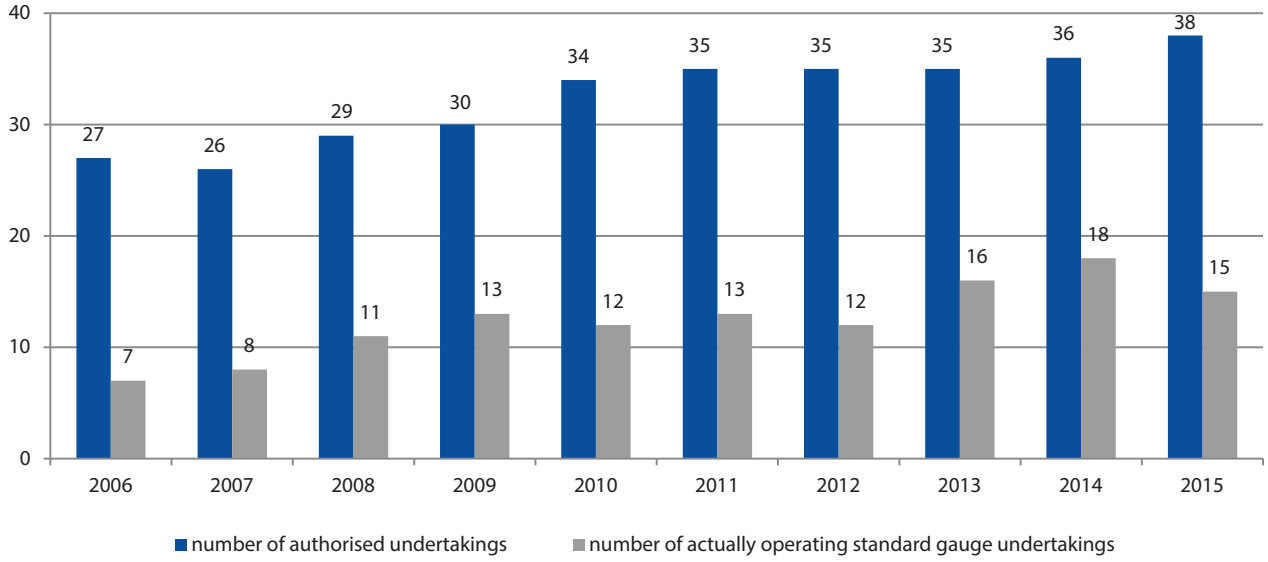


Fig. 24: The number of licensed railway undertakings authorised to provide transport services and actually operating on the railway market in the years 2006-2015



At the end of 2015, 38 railway undertakings had active licences (except for suspended ones) entitling them to engage in activities, 11 of which were owned be narrow-gauge railway undertakings.

As a result of administrative proceedings conducted ex officio and petitioned for in the period from 1 January to 31 December 2015, the President of UTK issued decisions concerning the licensing of railway passenger transport, including:

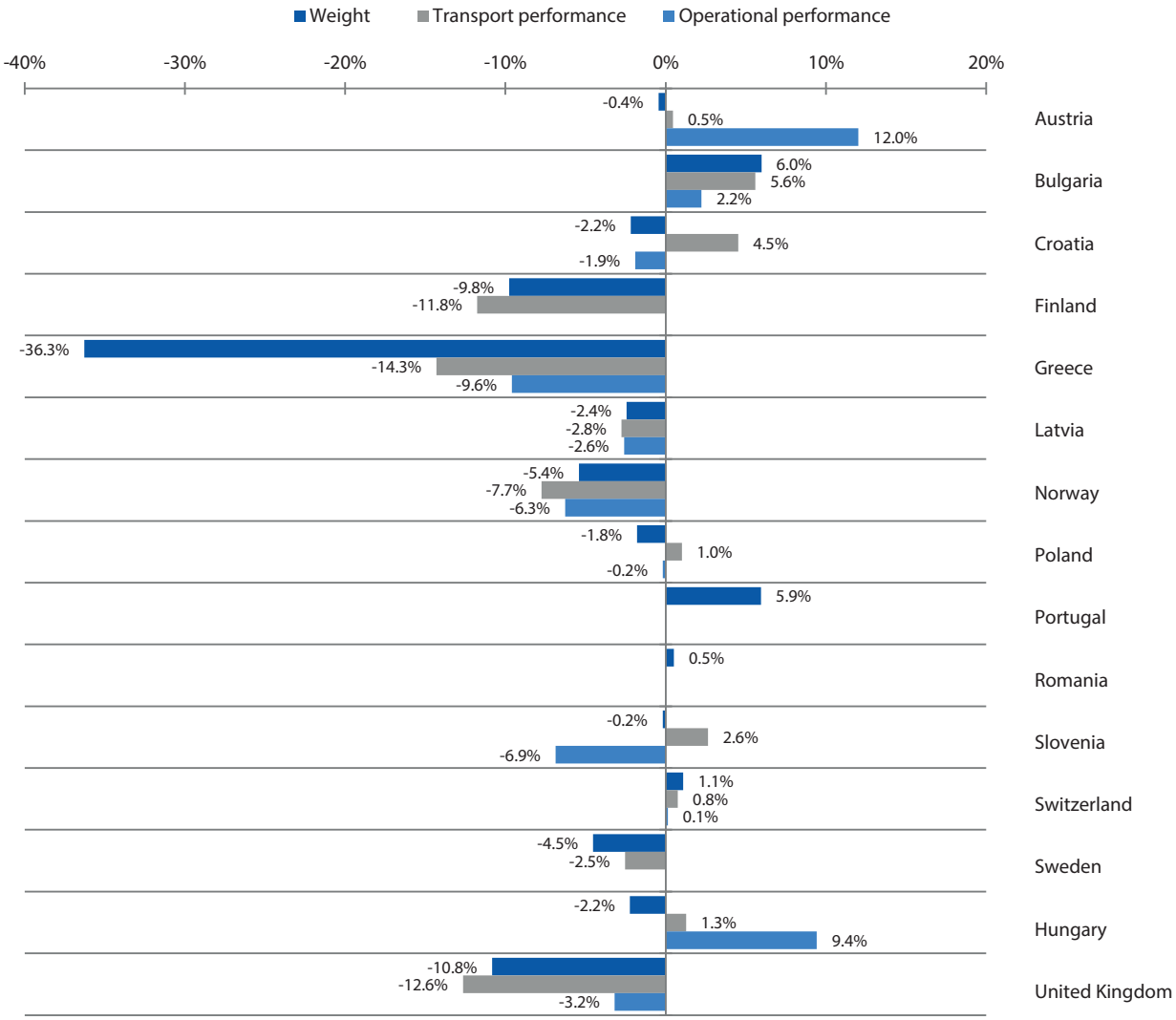
- three licenses to provide passenger rail transport were issued, including two licenses based on the new license document template;
- two decisions were issued refusing the license to provide passenger rail transport;
- one decision was issued to suspend a license to provide passenger rail transport.

2. The freight rail transport market

2.1. Trends in the European freight transport markets

As in the part concerning passenger transport, due to the lack of 2015 data from the European Commission, the data presented below have been provided by IRG-Rail affiliated regulatory bodies.

Fig. 25: Freight rail transport in IRG-Rail affiliated countries – the 2015/2014 trend



Source: prepared by UTK based on data from regulatory bodies associated in IRG-Rail

As can be seen in the figure above, the majority of countries for which data are available recorded decreases in 2015 in terms of rail freight transport, with the largest one in Greece, whose freight transport is still under impact from the economic crisis. An over 10% decrease in transported weight and transport performance was observed in the United Kingdom, but it must be noted that data for that country for 2015 do not include Northern Ireland and are of a preliminary nature. Slightly lower drops, as compared to the United Kingdom, were recorded in Finland. Another country to have observed a marked decrease in the volume of freight transport in 2015 was Norway. A drop of 4.5% in transported weight occurred in Sweden, where the market is still struggling to recover from the crisis, and as a result of lower demand for raw materials from the Asian countries, which led to lower exports. Consequently, freight transport in Sweden in recent years has lost some of its market share to passenger transport. The freight transport market in Latvia in 2015 recorded a 2.5-3% decrease. Relative to 2012, however, weight transported, transport performance and operational performance decreased by as much as 8%, 13.5% and 12%, respectively.

Bulgaria recorded the largest increases in 2015, with weight transported and transport performance increasing by 6% and 5.6%, respectively. Relative to 2012, the weight transported, transport performance and operational performance in this country grew by 9%, 13% and 2%, respectively, indicating a substantial efficiency of transport. In Portugal the value of the

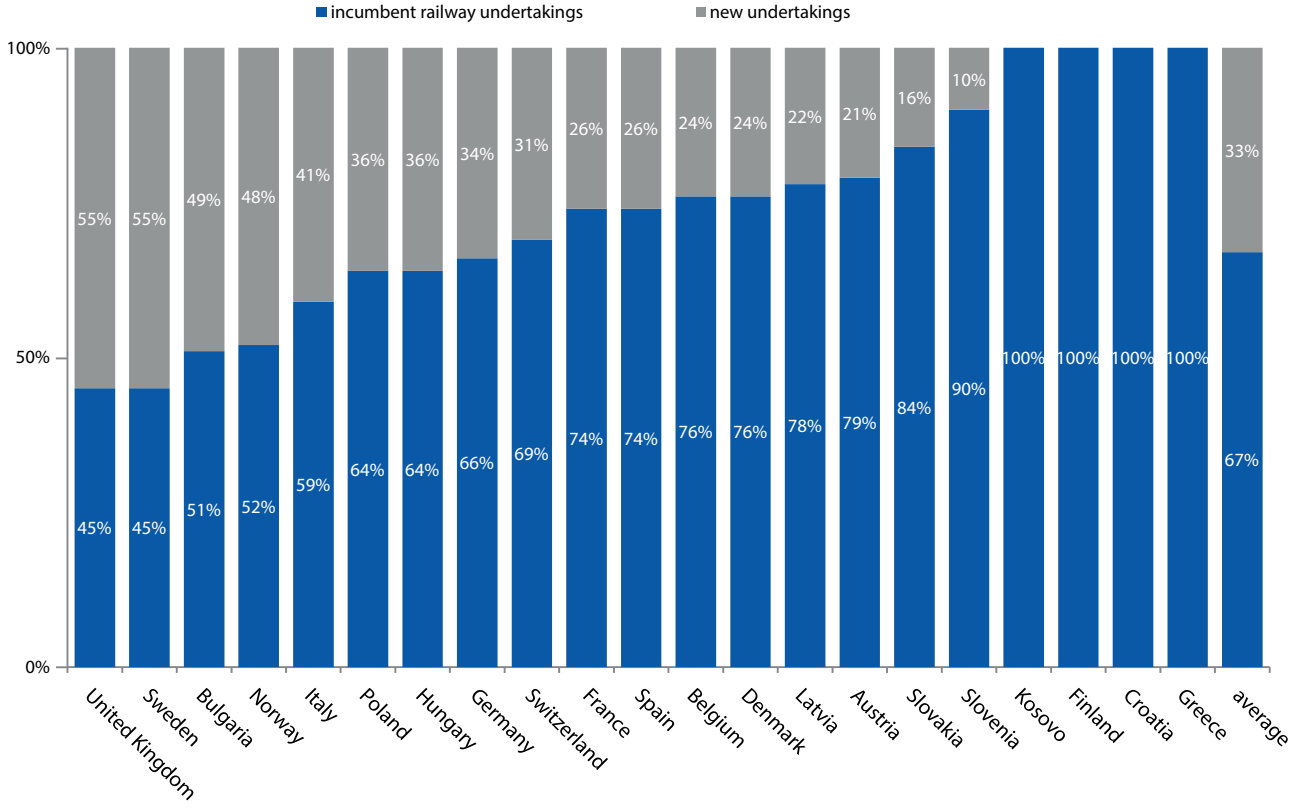
weight transported in 2015 increased by 5.9%, and by 12.5% relative to 2012. Croatia, Slovenia and Poland increased their transport performance, but the other indicators decreased, which means that the average distance covered increased in these countries. Freight transport has enjoyed a very sustainable growth in Switzerland. While growth there was insignificant in 2015, over the last ten years the weight transported in Switzerland grew by almost 10%, with transport performance and operational performance growing by 11% and 8.5%, respectively.

According to the UIRR, intermodal transport performance in Europe increased by 5.2% in 2015.

According to the data of the UIRR organisation supporting road and rail combined transport, the intermodal transport market grew in 2015. The number of transported units grew by 0.75% and transport performance increased by as much as 5.2% following a 3.6% increase in average transport performance, which reached 882 km. Almost half the distances were over 900 km, and over one third was 600-900 km.

One of the most important determinants of whether a rail market is open for new undertakings is the market share of new undertakings and incumbent railway undertakings. These data are taken from the annual report of the IRG-Rail for 2014.

Fig. 26: The share of incumbent railway undertakings and new railway undertakings in transport performance in 2014 in the IRG-Rail-reporting countries



Source: prepared by UTK based on IRG-Rail data

The United Kingdom and Swedish markets have the largest share in the transport performance of so-called new railway undertakings in the IRG-Rail. New railway undertakings had almost 50% of shares in Bulgaria and Norway, with the former recording an increase in new railway undertakings of 4 percentage points, and the latter seeing a decrease by 2 percentage points. The Polish market is one of the most open markets when it comes to the share of new railway undertakings. The share of new railway undertakings decreased in 2014 in Germany and France. The markets in Kosovo, Finland, Croatia and Greece were 100% comprised of public undertakings.

The Polish market is one of the most open markets when it comes to new railway undertakings.

2.2. Competition between modes on the Polish freight transport market

According to GUS data, in 2015, 1.804 bn tonnes of goods in total were transported in Poland via all modes of transport. Compared to 2014, this is a decrease of 2%. The corresponding decrease in 2014 was 0.5%.

Tab. 7: The weight of goods transported in Poland in the years 2006-2015 (in m tonnes)

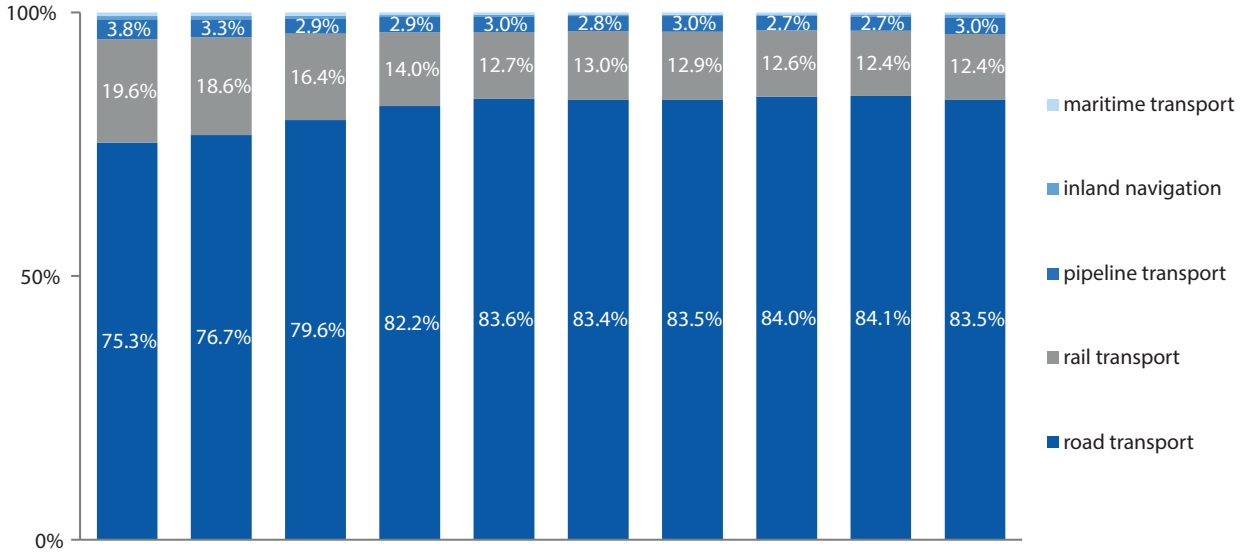
The 2006-2015 goods transport market by weight										
mode of transport	year									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
road transport	1113.88	1213.25	1339.47	1424.88	1551.84	1596.21	1493.39	1553.05	1547.88	1505.72
rail transport	290.30	293.90	276.30	242.98	235.47	249.35	230.88	232.60	227.82	224.32
pipeline transport	55.63	52.87	49.03	50.24	56.21	54.49	52.99	50.66	49.81	54.85
inland navigation	9.27	9.79	8.11	5.66	5.14	5.09	4.58	5.04	7.63	11.93
maritime transport	10.02	11.43	10.45	9.38	8.36	7.74	7.48	6.97	6.78	6.96
total	**1479.10**	**1581.24**	**1638.36**	**1733.14**	**1857.02**	**1912.88**	**1789.30**	**1848.31**	**1839.92**	**1803.78**

Source: prepared by UTK using GUS data

Road transport recorded the largest decrease in the weight transported in 2015 (of 2.7%), with road transport being defined by GUS as both commercial transport involving the provision of transport against payment and own-account transport (accounted for as operating costs). Commercial road transport increased in 2015 by 2% in terms of weight. Inland navigation had the largest increase, with the total weight transported being more than twice as large as in 2014. This means inland navigation recorded a two-fold increase in this respect compared to 2013. Pipeline transport grew by 10% compared to 2014 and had the best performance in terms of weight transported since 2010. Maritime transport grew by 2.7% in terms of weight transported. This is the first time since 2007 that it has seen any growth. It should be noted that maritime transport includes own seagoing vessels and vessels leased from owners. Rail transport performed worse, with the volume of transported goods by weight decreasing for the second consecutive year.

According to GUS data, the weight of goods transported by all modes of transport decreased by 2% in 2015.

Fig. 27: The share of individual modes of transport in the weight of transported goods



Source: prepared by UTK using GUS data

Road transport remains the dominant mode of transport, although its share decreased by 0.5 percentage point in the previous year. The share of this largest mode of transport has grown by more than 8 percentage points over the last 10 years. Rail transport has decreased over the last 10 years from almost 20% to the present 12.4%. Currently, rail transport accounts for nearly 15% of the volume of road transport. With the increased weight of oil, petroleum products and natural gas transported by pipelines in 2015, pipeline transport's share grew back to 3%. Inland and maritime navigation accounted for less than 1% of weight transported. The former's share grew from 0.4% in 2014 to 0.7% in 2015, and the latter's remained at 0.4% as in previous years. Air transport has a marginal contribution to the transport of goods, so this mode of transport was not included in the above calculations.

According to GUS data on transport performance, freight transport by all modes of transport in 2015 grew by 3.6%. In absolute terms this is an increase of 12.6 bn tkm.

Rail transport accounts for nearly 15% of road transport volume.

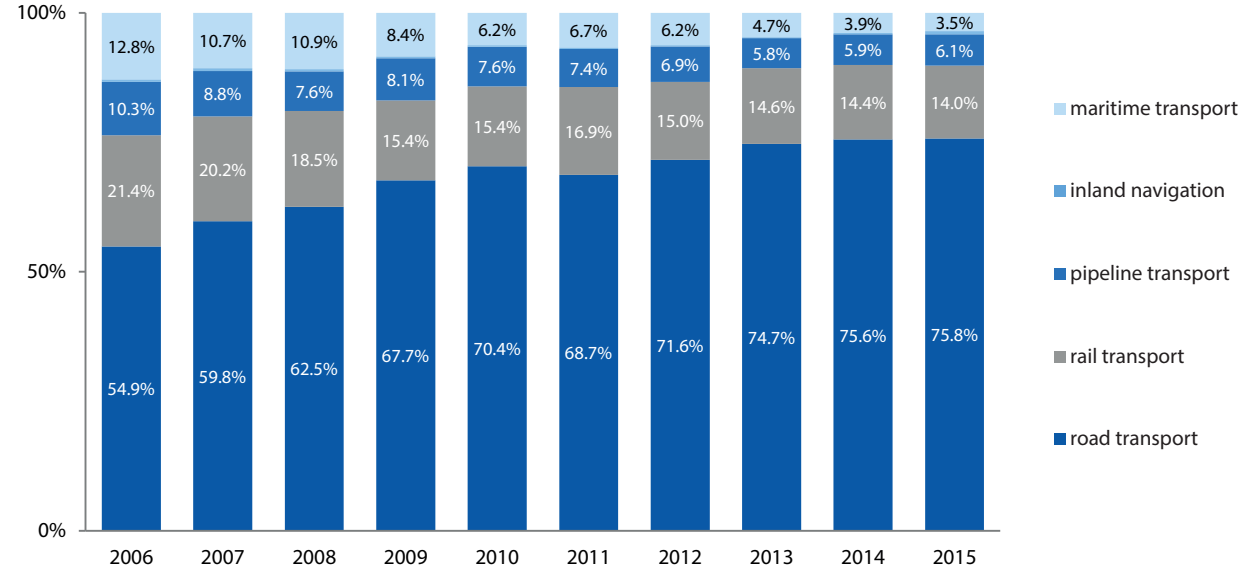
Tab. 8: Transport performance in freight transport in the years 2006-2015 (in m tkm)

The 2006-2015 goods transport market by transport performance										
mode of transport	year									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
road transport	136 416	159 527	174 223	191 484	223 170	218 888	233 310	259 708	262 860	273 107
rail transport	53 291	53 923	51 570	43 601	48 842	53 974	48 903	50 881	50 073	50 603
pipeline transport	25 640	23 513	21 247	22 908	24 157	23 461	22 325	20 112	20 543	21 843
inland navigation	1 245	1 338	1 274	1 020	1 030	909	815	768	779	2 187
maritime transport	31 860	28 580	30 279	23 854	19 773	21 341	20 299	16 299	13 621	12 739
total	**248 452**	**266 881**	**278 593**	**282 867**	**316 972**	**318 573**	**325 652**	**347 768**	**347 876**	**360 479**

Source: prepared by UTK using GUS data

Transport performance increased for all modes of transport except for maritime transport. Given the increase in weight transported by maritime transport, the average transport distance decreased from about 2 thousand kilometres to about 1.8 thousand kilometres. Transport performance by inland navigation increased by almost threefold, which means an increase in the average transport distance by approx. 100 km to approx.180 km. Road transport increased its transport performance by almost 4%. With the decrease in weight transported, this means that the average transport distance grew from approx. 170 km to about 180 km. Rail transport also recorded an increase in the average transport distance. Cargo air transport recorded another increase in transport performance (of 7%), but its role on the market remains insignificant.

Fig. 28: The shares of individual modes of transport in transport performance in the years 2006-2015



Source: prepared by UTK using GUS data

Rail transport's share in the transport performance of all modes of transport decreased from 21% to 14% over the last 10 years.

The increase in the share of road transport over the last 10 years has been much more noticeable in terms of transport performance than in terms of weight transported. This share decreased only once and throughout the entire analysed period it grew by more than 20 percentage points. In the same period the share of rail transport decreased from over 21% to 14% in 2015. The economic transformations have changed the market roles of individual modes of transport. Road transport has been growing in importance because of its advantages in terms of prices, travel times and "door-to-door" capability, the latter being a key factor behind customers' choice of the mode of transport. Compared to some EU Member States, river transport plays a minor role in Poland, with its share being only 0.6%, although it grew last year by 0.4 percentage point. Maritime and pipeline transport shrank substantially over the last 10 years, with the latter experiencing growth between 2013 and 2015. Air transport has a marginal market share, so it was not included in the above calculations.

2.3. The Polish freight rail transport market

2.3.1. Freight railway operators' activity

In 2015 freight railway undertakings transported 224.8 m tonnes of freight. Compared to 2014, this corresponded to an increase in the transported weight of 1.78%.

A small increase (of 1%) could be observed for transport performance by freight railway undertakings. In 2015 this transport performance amounted to 50.6 bn tkm. This is reflected by the slightly higher average distance covered in 2015, which amounted to 225.1 km (6.8 km more compared to 2014).

Fig. 29: Freight rail transport in Poland in 1997-2015 (by weight)

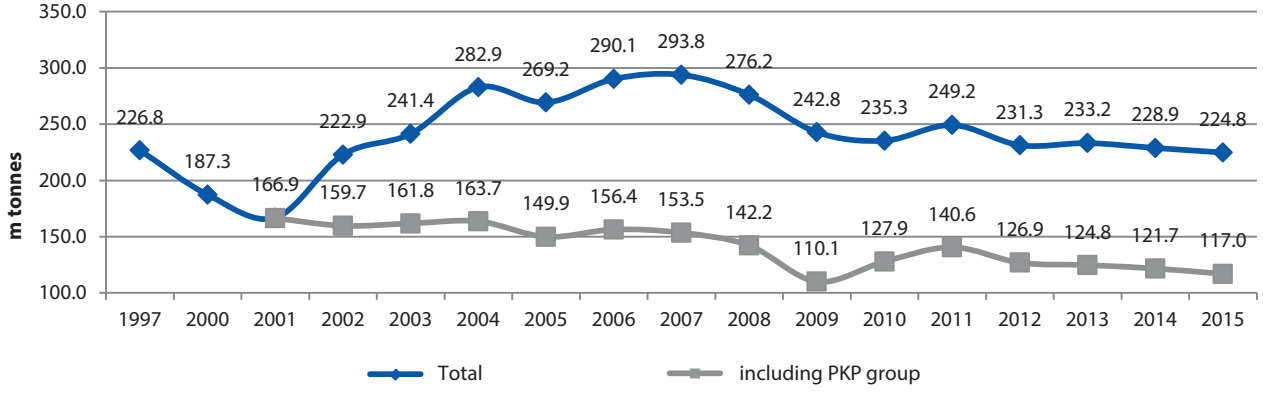
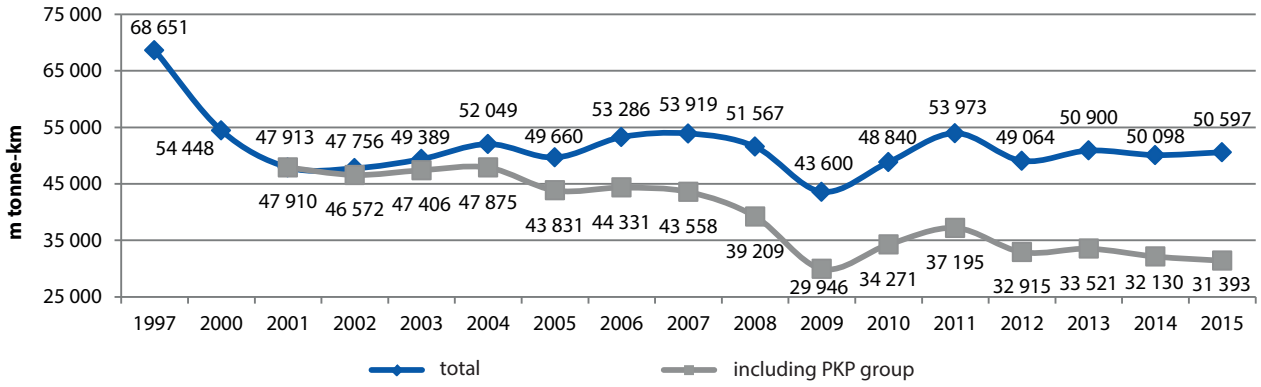


Fig. 30: Transport performance in freight rail transport in Poland in 1997-2015



PKP Group had a 52.0% share in the weight of transported freight and a 64.0% share in transport performance in 2015 (both figures decreased by 1.2 and 2.1 percentage points, respectively). PKP Cargo alone recorded an over 50% share in weight transported and a 60% share in transport performance for the last time in 2012. The corresponding figures in 2015 are 47.5% and 55.7%, respectively, which means a decrease of 0.7 percentage point in terms of weight (2.7%) and by 1.0 percentage point in terms of transport performance (0.8%). The company transported 106.7 m tonnes, which is 28.2 bn tkm in transport performance.

In 2015 the weight of goods transported by rail decreased by nearly 2%, while transport performance increased by 1%.

DB Schenker Rail Polska recorded a decrease of 6.3% in terms of weight transported, while increasing its transport performance by 2.4%. Average transport distances also increased for Freightliner PL, PUK Kolprem, STK, KP Kotlarnia and Ciech Cargo. The weight transported by CTL Logistics and Lotos Kolej and their transport performance grew proportionally.

The disproportion between trends in weight transported and transport performance has become more prominent than in previous years. This means that the 2015 transport trend involved lighter freight and larger distances.

Fig. 31: The share of the largest railway undertakings by weight of transported goods in 2015

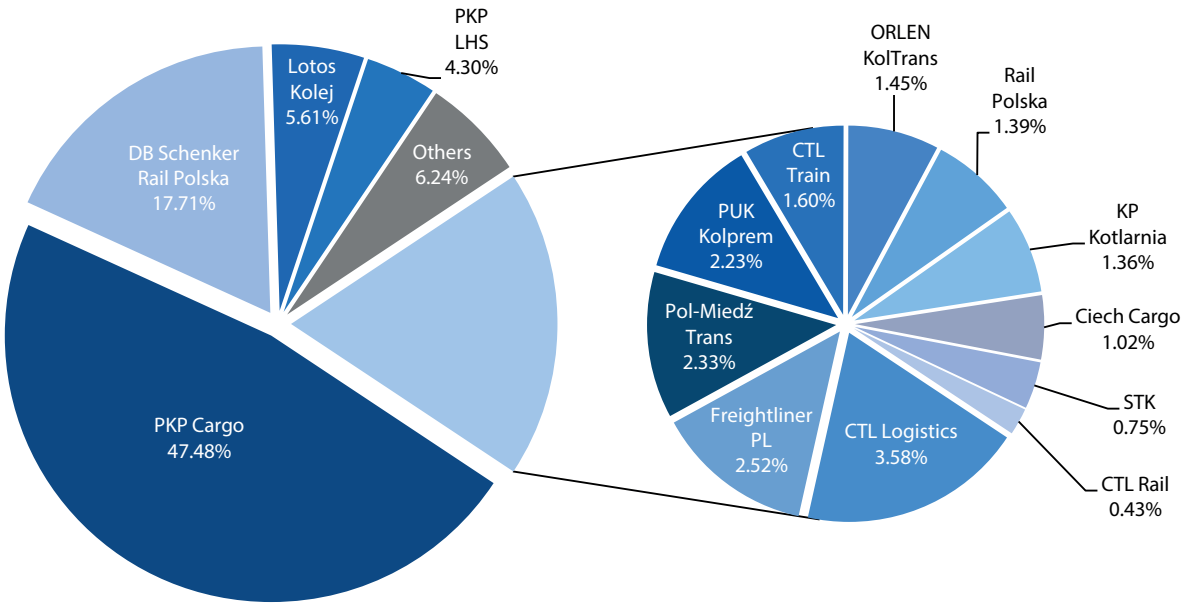


Fig. 32: The market share of the largest railway undertakings by transport performance in 2015

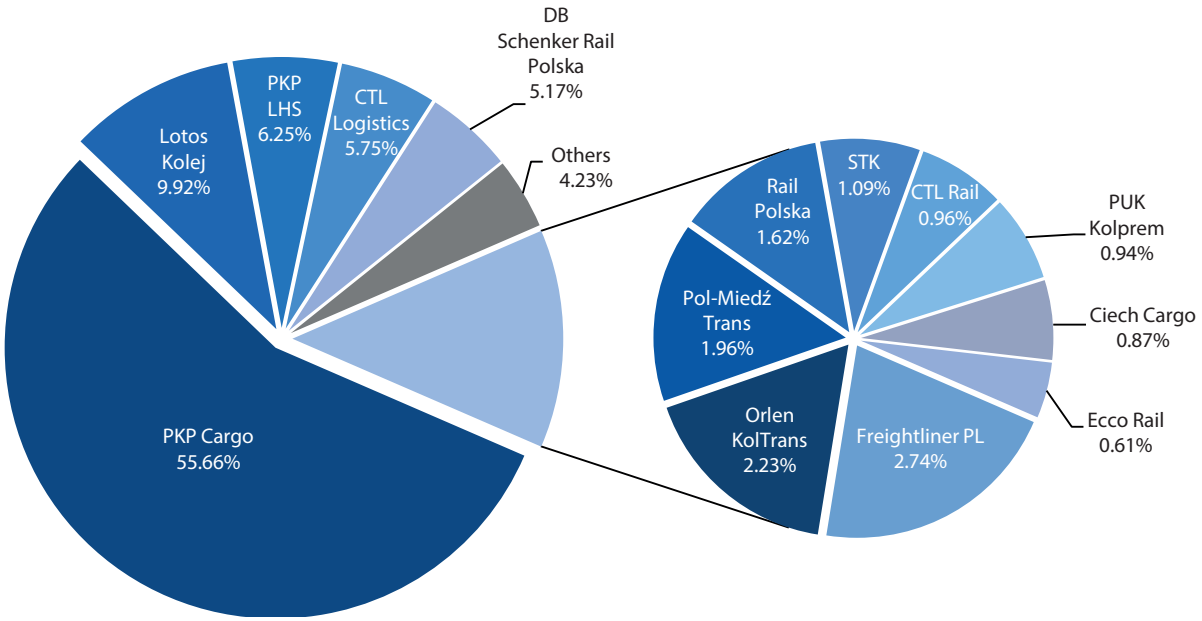


Fig. 33: Changes in individual modes of transport by freight weight (year-to-year trend) between 2009 and 2015

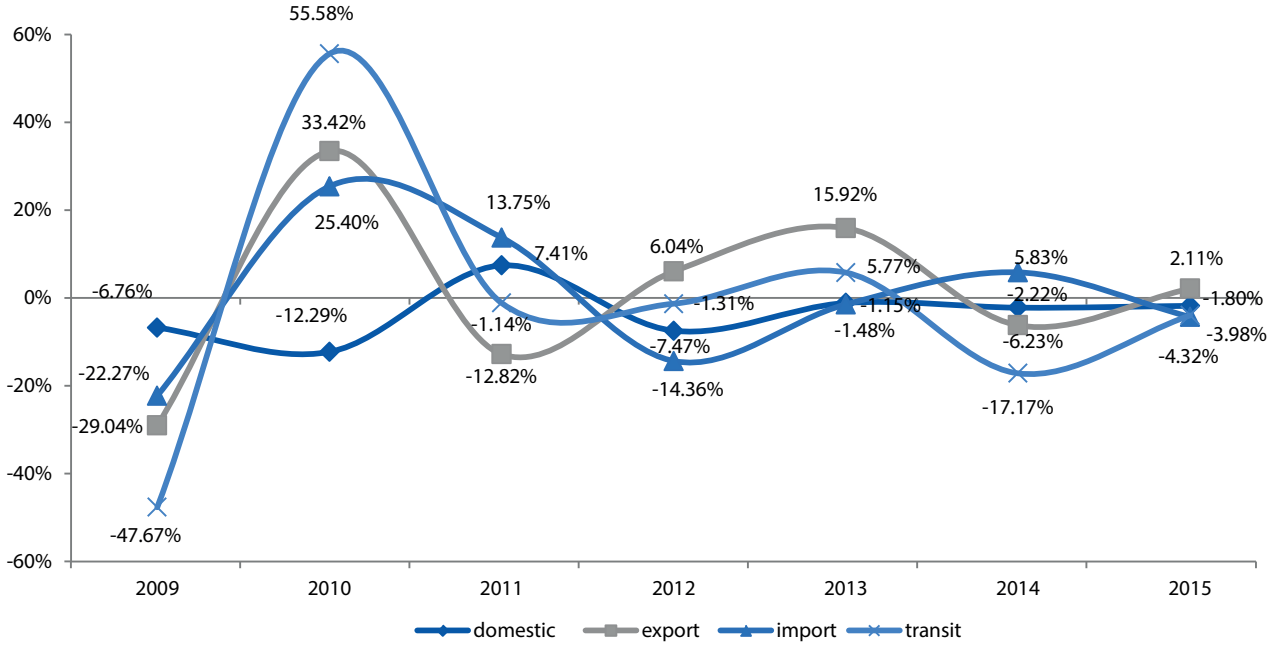
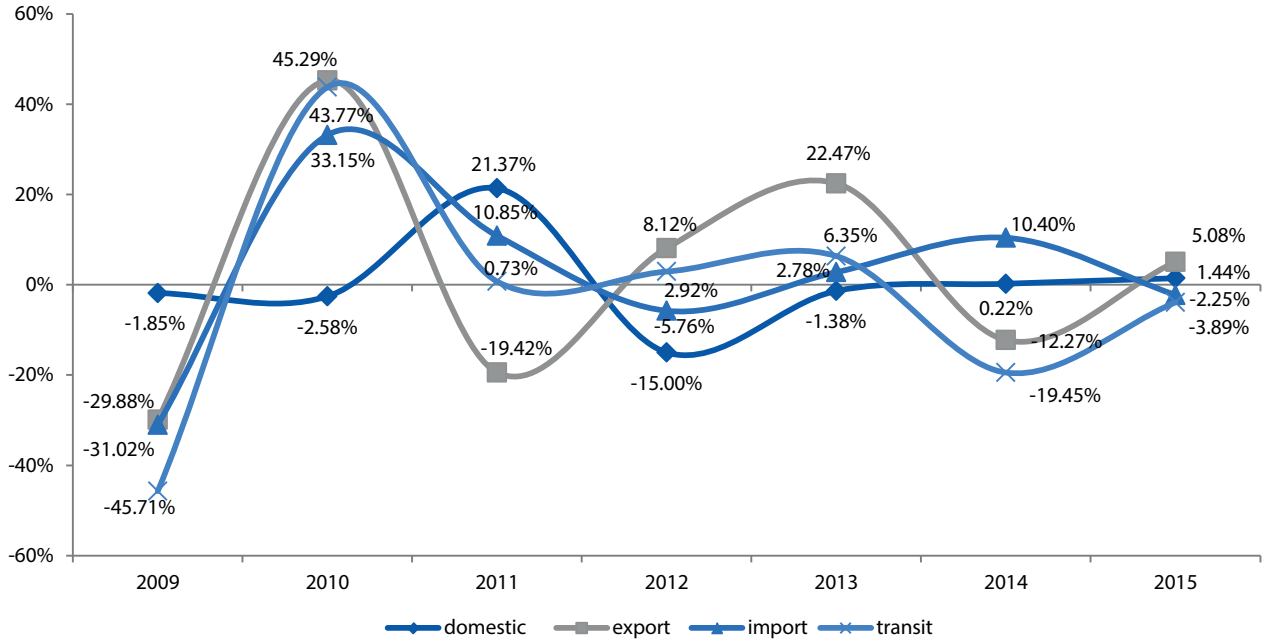


Fig. 34: Changes in individual modes of transport by transport performance (year-to-year trend) between 2009 and 2015



Hard coal accounts for over 40% of the total weight transported in Poland.

International transport experienced the largest deviations from the trend between 2009 and 2015. In 2015 the domestic market decreased by weight by 1.8% (compared to 2.2% in 2014). An upward trend was maintained in transport performance (a 1.4% increase in 2015 compared to a 0.2% increase in 2014).

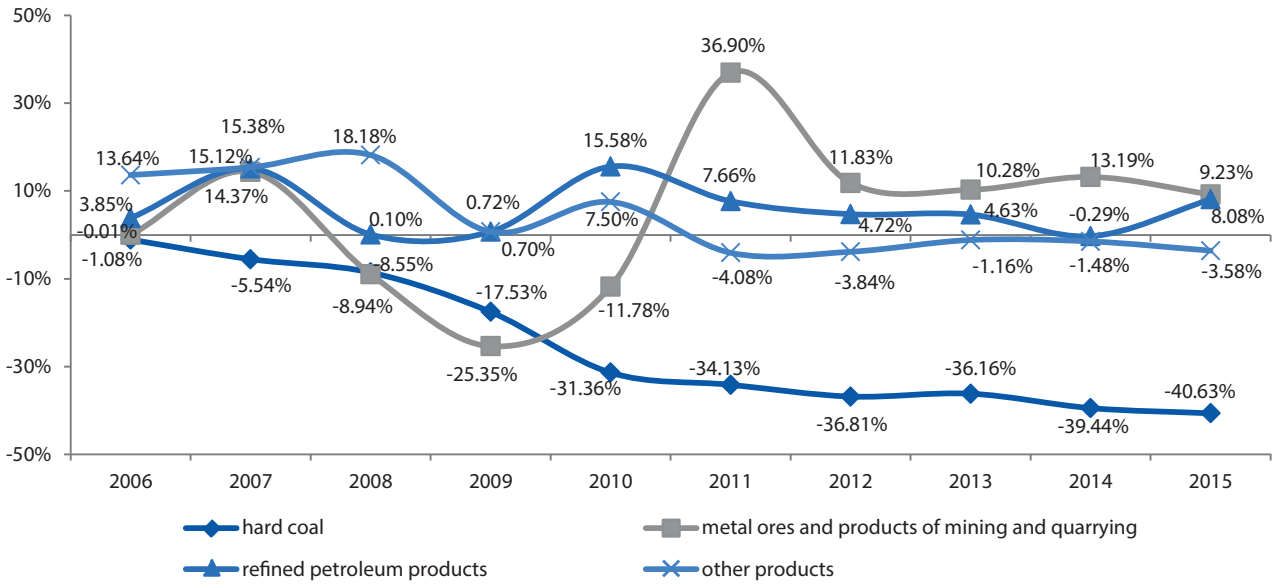
A trend reversal could be observed for exports and imports. Exports grew by 2.1% in terms of weight and by 5.1% in terms of transport performance (last year exports dropped in this respect). Imports reversed from an upward trend to a downward trend (by 4.3% in terms of weight and by 2.3% in terms of transport performance).

2.3.2. Polish railway undertaking structure

Bulk goods continue to be the dominant freight transported. In 2015, the transport of hard coal, metal ores and mining and quarrying products represented 66.7% of the total volume of transported weight and 57.0% of the transport performance by railway undertakings.

The highest market share in terms of transported weight belonged to hard coal transport – 40.4% (90.8 m tonnes). It should be noted that the volume of hard coal transported by rail has been on a decrease for several years (a 40.0% decrease between 2006 and 2015, i.e. 60.5 m tonnes).

Fig. 35: The evolution of raw material transport by transported weight in 2015/2006 [2004=100%]



Tab. 9: Main groups of goods transported by freight railway undertakings in 2015

COMPANY					
	HARD COAL, LIGNITE	METAL ORES AND OTHER MINING AND QUARRYING PRODUCTS	COKE, BRIQUETTES, REFINED PETROLEUM PRODUCTS	CHEMICALS, CHEMICAL PRODUCTS	BASIC METALS, FABRICATED METAL PRODUCTS
Barter	✓	✓	✓	✓	✓
Bartex	✓				
Captrain Polska	✓	✓	✓		✓
Cargo Przewozy Tow. i Pas.		✓			
CL Łososna	✓		✓		✓
Ciech Cargo	✓	✓		✓	
CTL Express		✓	✓	✓	✓
CTL Kargo	✓	✓	✓	✓	
CTL Logistics	✓	✓	✓	✓	✓
CTL Północ	✓	✓			✓
CTL Rail	✓	✓	✓	✓	✓
CTL Reggio		✓		✓	
CTL Train	✓	✓			
DB Schenker Rail Polska	✓	✓	✓	✓	✓
DB Schenker Rail Spedkol				✓	
Depol	✓	✓			
DLA		✓			
Ecco Rail	✓	✓	✓	✓	✓
Euronaft Trzebinia		✓	✓	✓	✓
Eurotrans	✓	✓	✓	✓	✓
F.H.U Orion Kolej	✓	✓			
Freightliner PL	✓	✓		✓	
Grupa Azoty „KOLTAR"		✓	✓	✓	✓
HSL Polska	✓	✓	✓	✓	✓
Inter Cargo	✓	✓	✓		
Karpiel			✓	✓	✓
Kolej Bałtycka		✓	✓	✓	✓
Koleje Czeskie	✓		✓		✓
KP Kotlarnia	✓	✓			
Lotos Kolej	✓	✓	✓	✓	✓
LW Bogdanka	✓				
Majkoltrans		✓			
Moris					✓
NKN		✓			
Orlen KolTrans		✓	✓		
OT Rail	✓	✓	✓		
PKP Cargo	✓	✓	✓	✓	✓
PKP Cargo Service	✓	✓			
PKP LHS	✓	✓	✓	✓	✓
PNI Warszawa		✓			
Pol-Miedź Trans	✓	✓	✓	✓	✓
POZ BRUK		✓			
PPMT-Gdańsk		✓			
PUK KOLPREM	✓	✓	✓		✓
Rail Polska	✓	✓	✓	✓	✓
STK Wrocław	✓	✓	✓	✓	✓
Torpol		✓			✓
Track Tec Rail	✓	✓			
Trakcja PRKil		✓			✓
Transchem			✓	✓	
WAM		✓			
Wiskol		✓	✓		✓
ZPNTMiU „TABOR"		✓			
ZPiS„SPEDKOKS"	✓				
ZIK Sandomierz		✓		✓	

Tab. 10: The volume of transported weight of goods by groups (in thousand tonnes) and their market shares in 2015

Weight of goods			
Groups of goods		In total (in thousand tonnes)	Market share [%]
TOTAL		**224 777.295**	**100.00%.**
Products of agriculture, hunting, and forestry; fish and other fishing products		3 903.670	1.74%.
of which	cereals	416.523	0.19%.
Hard coal, lignite, crude oil and natural gas		91 644.057	40.77%.
of which	hard coal	90 824.042	40.41%.
Metal ores and other mining and quarrying products		59 186.447	26.33%.
of which	iron ores	12 635.408	5.62%.
	aggregates, sand, gravel, clay	43 632.274	19.41%.
Food products, beverages and tobacco products		1 938.887	0.86%.
Textiles and textile products, leather and leather products		2.181	0.0014%.
Wood and articles of wood and cork, articles of straw, paper and paper products, printed matter and recorded media		2 092.502	0.93%.
Coke, briquettes, refined petroleum products, manufactured gas		25 627.915	11.40%.
of which	refined petroleum products	15 242.506	6.78%.
Chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel		9 640.617	4.29%.
Other non-metallic mineral products		2 842.806	1.26%.
of which	cement, lime, gypsum	2 442.486	1.09%.
	other building materials	291.355	0.13%.
Basic metals, fabricated metal products, except machinery and equipment		8 840.925	3.93%.
Machines, appliances, electrical and electronic equipment		162.287	0.07%.
Transport equipment		731.676	0.33%
Furniture, other manufactured goods n.e.c.		76.105	0.03%
Secondary raw materials, municipal wastes		3 673.781	1.63%
Letters, packages and courier's parcels and shipments		0	0%
Empty packaging		818.352	0.36%
Goods moved in the course of household and office removals, other non-market goods n.e.c.		0	0%
Mixed goods, excluding food products		356.110	0.16%
Unidentifiable goods		7 066.625	3.14%
Other goods n.e.c.		6 172.353	2.75%

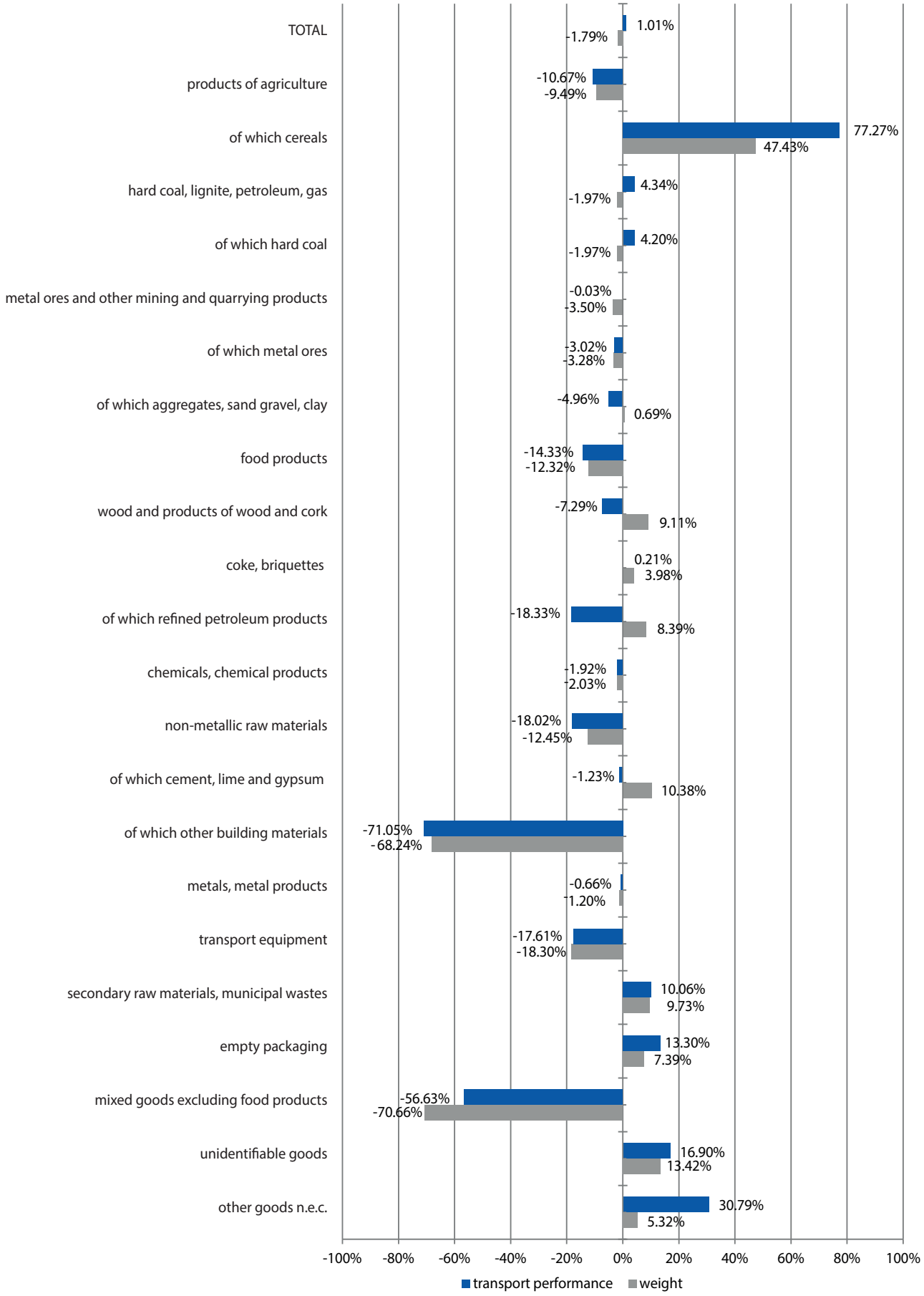
The transport of refined petroleum products increased in 2015. Increasing growth in terms of the weight of transported goods compared to 2014 was also recorded for the transport of wood and articles of wood and cork (9.1%), secondary raw materials (9.7%), cement, lime and gypsum (10.4%); unidentifiable goods and cereals (47.4%).

The highest transport performance was recorded for hard coal, lignite, crude oil and natural gas – 30.2% (15.3 bn tkm) as well as metal ores and mining and quarrying products – 26.8% (13.5 bn tkm). Upward trends in transport performance were recorded for the transport of secondary raw materials (10.1%), empty packages (13.3%), unidentifiable goods (16.9%) and other goods n.e.c. (30.8%) and cereals (77.3%).

Tab. 11: Transport performance by groups of goods (in thousand tkm) and their market shares in 2015

Transport performance			
Groups of goods		In total (in thousand tkm)	Market share [%]
TOTAL		**50 605 533.552**	**100.00%**
Products of agriculture, hunting, and forestry; fish and other fishing products		1 416 177.822	2.80%
of which	cereals	129 229.856	0.26%
Hard coal, lignite, crude oil and natural gas		15 525 431.846	30.68%
of which	hard coal	15 306 551.031	30.25%
Metal ores and other mining and quarrying products		13 537 376.597	26.75%
of which	iron ores	3 945 950.317	7.80%
	aggregates, sand, gravel, clay	7 561 644.438	14.94%
Food products, beverages and tobacco products		539 953.817	1.07%
Textiles and textile products, leather and leather products		700.251	0.0014%
Wood and articles of wood, cork, articles of straw, paper and paper products, printed matter and recorded media		521 508.271	1.03%
Coke, briquettes, refined petroleum products, manufactured gas		7 983 938.098	15.78%
of which	refined petroleum products	4 207 242.539	8.31%
Chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel		3 011 980.273	5.95%
Other non-metallic mineral products		810 632.284	1.60%
of which	cement, lime, gypsum	722 164.888	1.43%
	other building materials	68 858.301	0.14%
Basic metals, fabricated metal products, except machinery and equipment		2 172 899.007	4.29%
Machines, appliances, electrical and electronic equipment		49 102.211	0.10%
Transport equipment		225 980.148	0.45%
Furniture, other manufactured goods n.e.c.		30 010.824	0.06%
Secondary raw materials, municipal wastes		886 313.865	1.75%
Letters, packages and courier's parcels and shipments		0.000	0.00%
Empty packaging		306 908.775	0.61%
Goods moved in the course of household and office removals, other non-market goods n.e.c.		0.000	0.00%
Mixed goods, excluding food products		78 057.092	0.15%
Unidentifiable goods		2 570 399.968	5.08%
Other goods n.e.c.		938 162.403	1.85%

Fig. 36: Transport volume changes in particular groups of goods in 2015



The market structure of Polish freight transport by rail involving transported materials is still dominated by the transport of bulk goods, including energy raw materials. It is important to note the increase in biomass transport in 2015, including biodegradable solid and liquid substances of vegetable and animal origin, derived from the products, waste and remains from agricultural and forestry production as well as from the industry processing these products, and part of the remaining biodegradable waste. The main factors behind the growth of demand for this kind of transport include the increasingly stringent environmental protection standards and the implementation of EU climate policy, requiring a reduction in carbon dioxide emissions, including numerous investments in energy production based on biomass combustion and coal co-combustion. In 2015, railway undertakings transported nearly 3.2 m tonnes of biomass, which is over 0.3 m tonnes more than in 2014 (an increase of 12.0%). The biomass transport market measured by transport performance shows a similar tendency. The transport performance of railway undertakings amounted to 1 043.4 m tkm, which is 196.8 m more than in 2015 (an increase of 23.2%).

The share of biomass transport in the total transport volume at the end of 2015 amounted to 1.4% in terms of transported weight and around 2.1% in terms of transport performance. Biomass transport in 2015 involved primarily products of plant origin (which accounted for 41.9% of the total volume of the biomass transported), wood including sawdust and other timber waste (31.0%) and oilseed cake and other fat and vegetable oil extraction products (24.7%). Other unlisted products accounted for 2.4% of the total transported weight.

2.3.3. Freight transport in international transport

In 2015 freight transport in international transportation was provided by 25 licensed railway undertakings, which transported nearly 67.1 m tonnes of goods, and their transport performance amounted to 21.8 bn tkm. It should be stressed that the volume of goods weight in comparison to the previous year decreased by 1.8%, with a simultaneous increase in transport performance of 0.5%.

Fig. 37: The weight of transported goods in domestic and international transport in the years 2010-2015

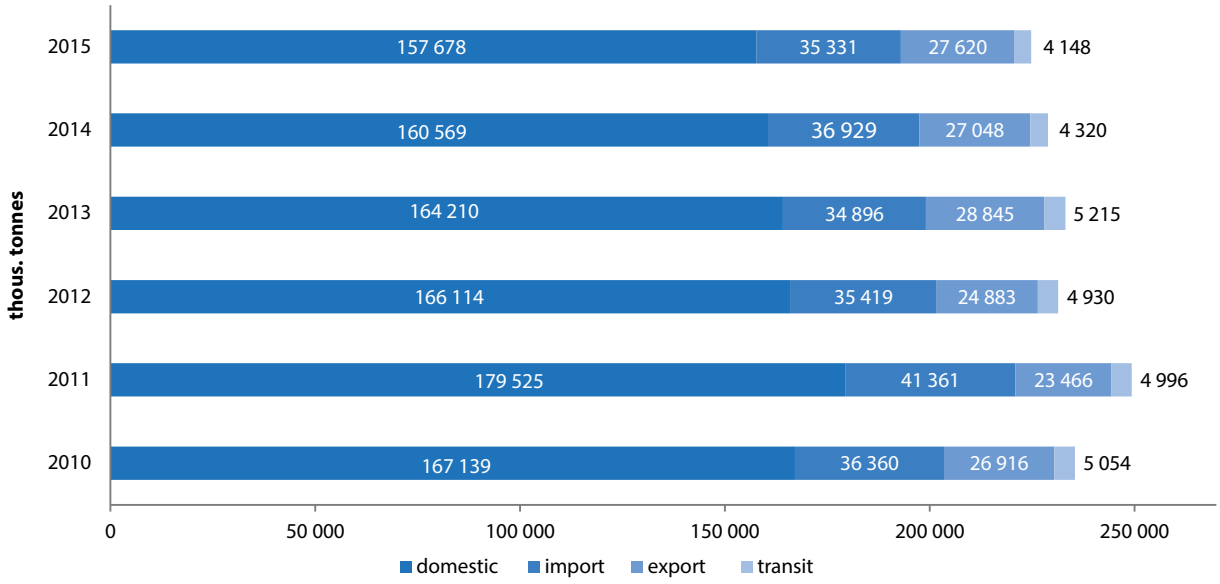
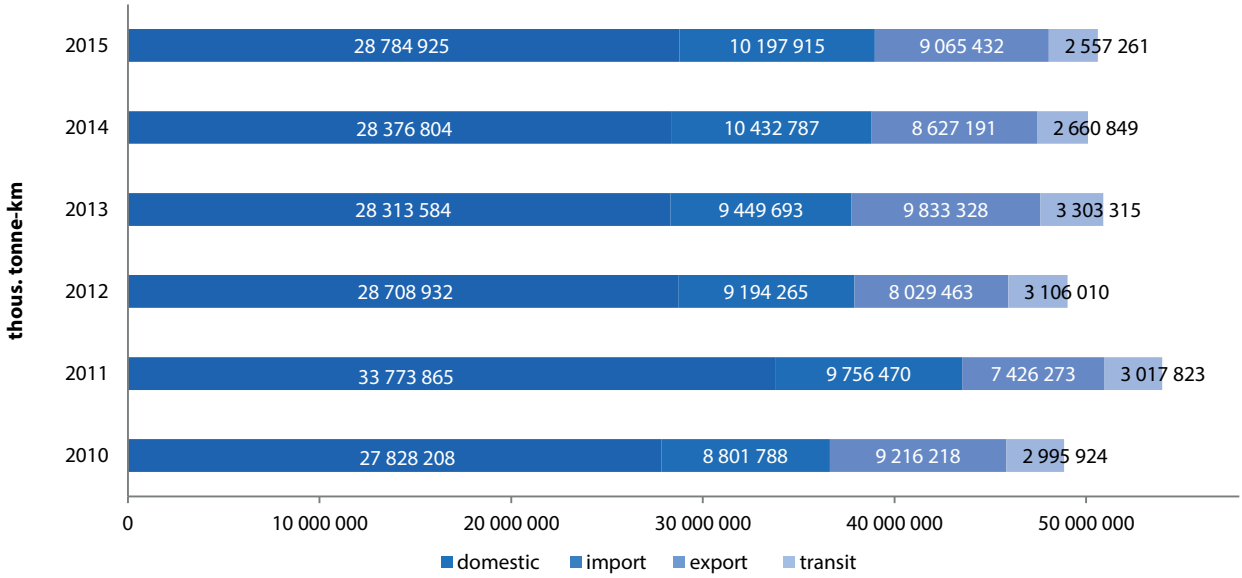


Fig. 38: Transport performance in freight transport in domestic and international transport in the years 2010-2015



In 2015, an increase in the transported weight of goods was recorded only for exports (of 2.1% and 5.1%, respectively). The volume of transported weight and transport performance decreased for imports by 4.3% and 2.3%, respectively. The weight of goods and transport performance decreased for transit by 4.0% and 3.9%, respectively. Domestic transport recorded a volume decrease in comparison to 2014. Nearly 2.9 m tonnes of goods less than a year before were transported (a 1.8% decrease). Transport performance, however, increased by more than 0.4 bn tkm (increase of 1.4%). The share of transport in international transport measured by transported weight of freight is still relatively low. In 2010 it was 29%, in 2011 it amounted to 28%, in 2012 to 28.2%, in 2013 to 29.6%, in 2014 around 29.8% and in 2015 to about 29.9%. Due to the distances to cover in this type of transport (in 2015, approx. 325 km on average), its market share concerning transport performance is higher, accordingly). Until 2016 it fluctuated at the level of 50%, and in the following years there was a gradual decrease in this share. At the end of 2015, the share of international transport in the market involving transport performance reached the level of 43.1%.

In international transport, imports (35.3 m tonnes and 10.2 bn tkm) exceeded exports (27.6 m tonnes and 9.1 bn tkm). Transit in Poland accounted for 4.1 m tonnes, with transport performance of 2.6 bn tkm.

Despite recording decreases, the companies of PKP Group still held the largest share in international transport. At the end of 2015, it amounted to 71.9% by weight and 74.2% by transport performance. An analysis of the performance of other railway undertakings show that the companies with the largest market shares include: DB Schenker (7.4% by weight and 7.1% by transport performance), CTL (6.2% and 7.9%, respectively), Lotos Kolej (5.9% and 6.5%, respectively) and Freightliner PL (1.7% and 0.8%, respectively). The share of other companies in transported weight did not exceed 1%. It should be noted that companies such as PKP Cargo, Lotos Kolej and Rail Polska, which have appropriate certificates, may engage in transport independently within Central and Eastern European countries.

Fig. 39: Railway undertakings' share in international transport in 2015 by weight (over 0.5%)

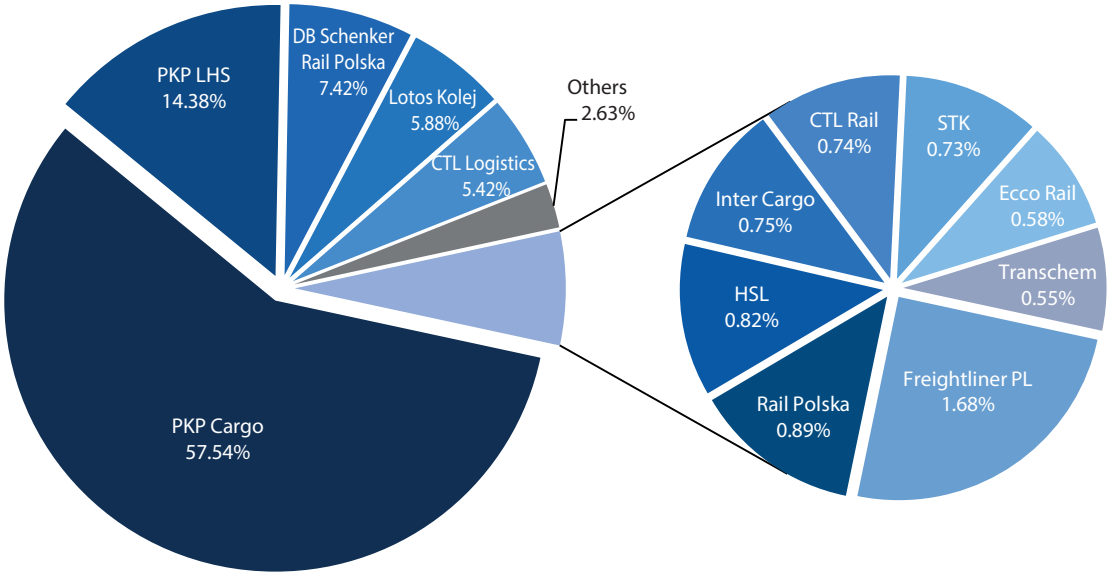
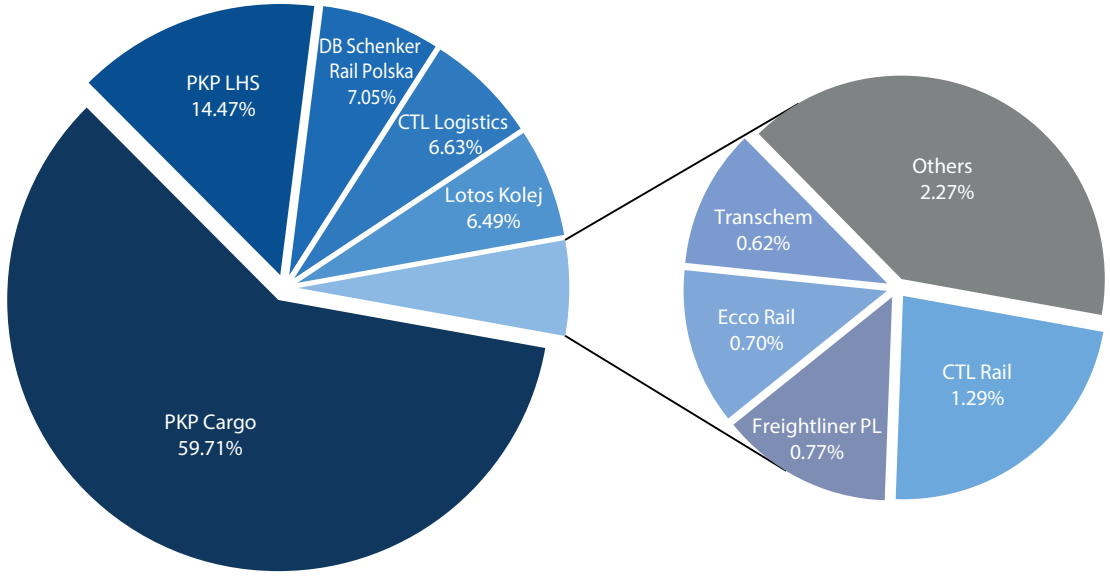
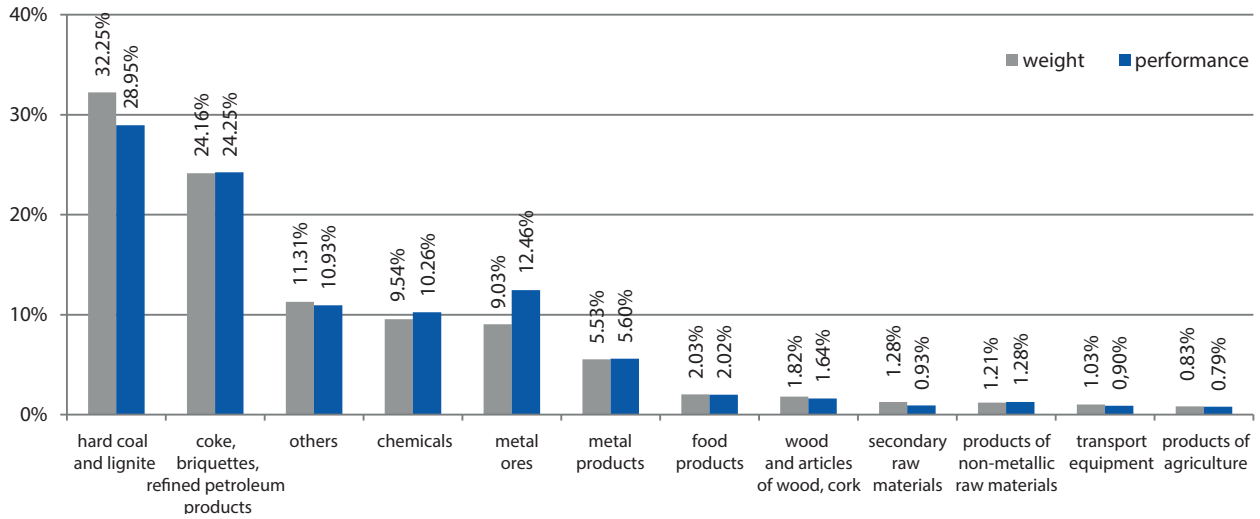


Fig. 40: Railway undertakings' share in international transport in 2015 by transport performance (over 0.5%)



In this market segment, the transport of raw materials such as hard coal, coke, briquettes and refined petroleum products is still predominant. The largest amount of transported freight involved coal (hard coal and lignite), with a share of 32.3% by weight and 29.0% by transport performance and freight such as coke, briquettes and refined petroleum products – 24.2% and 24.3%. In 2015, the overall level of transported weight of coal was 17.3 m tonnes. More than 50% of coal is exported. The share of imports in the transport of hard coal at the end of 2015 was 46%. Compared to a year before, there was an increase in the transport of chemicals and metal ores by 0.2% and 1.3% by weight, respectively, and by 0.2% and 2.0%, by transport performance, respectively. It should be emphasised that the share of highly processed and general cargo goods is still insignificant, i.e. slightly over a dozen percent.

Fig. 41: The structure of goods transported internationally in 2015



As in 2014, the largest trading partners for Poland were Germany, Russia, Ukraine and the Czech Republic. For this reason, the share of rail transport in these directions is also the highest, accounting for over 59% of total transported weight. The share of transport performance involving these countries in 2015 reached 51%. As regards the place of dispatch and destination of goods (according to waybills), transportation between Poland and Germany constituted the largest share – 18.7% of the total volume of goods. In 2015, nearly 11.7 m tonnes in total were transported between those countries, with transport performance at the level of 4 bn tkm. Ukraine and Russia were the major trading partners of Poland as well. The share of transport between Poland and Ukraine by weight amounted to 17.0% by weight, and to 17.1% by transport performance. Transport to and from Russia accounted for 12.9% and 7.3%, respectively.

Poland's major partners in exports included Germany, the Czech Republic, Ukraine, the United Kingdom, Italy and Austria. In terms of imports, as in the previous year, Poland traded mainly with Ukraine, Russia, Belarus and Germany. Also trade with China has been growing in importance. Exports to China in 2015 accounted for nearly 4% of weight and 5% of transport performance. Imports from China accounted for 4% of weight and more than 5% of transport performance. Polish chemical, food and machinery industries, as well as luxury products such as jewellery and leather products have been increasingly recognised in China. Poland's transport potential as a country that lies on the Euro-Asian trade route has been increasingly important for China. Growing in importance is especially intermodal transport to and via Poland.

Germany, Russia, Ukraine and the Czech Republic are Poland's largest trading partners. Poland's trade with China has been on the rise as well.

2.3.4. Intermodal transport

In 2015 there were 12 licensed railway undertakings engaging in intermodal transport.

Tab. 12: The names and number of undertakings engaging in intermodal rail transport in the years 2006-2015

Company	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
PKP Cargo	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PKP LHS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DB Schenker	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DB Kolchem	✓	✓	✓	✓						
CTL Rail		✓	✓					✓	✓	✓
CTL Logistics		✓		✓		✓	✓	✓	✓	✓
CTL Express			✓	✓	✓	✓	✓			
Lotos Kolej				✓	✓	✓	✓	✓	✓	✓
STK Wrocław						✓	✓	✓		
Majkoltrans							✓			
Ecco Rail								✓	✓	✓
ITL / Captrain Polska								✓		✓
Rail Polska							✓	✓	✓	✓
Freightliner									✓	✓
Karpiel									✓	
Eurotrans									✓	✓
Polzug									✓	✓

In 2015 railway undertakings transported a record number of intermodal cargo units – a total of 745.3 thousand units.

In 2015, railway undertakings transported a record number of cargo units – 745.3 thousand units in total, including nearly 716 thousand containers (over 1.093 m TEU). Compared to 2014, the number of transported units increased by over 6.5%. The total weight of transported cargo amounted to 10.4 m tonnes, and the transport performance amounted to 3.7 bn tkm. Comparing the data to the results from 2014, this is an increase in transport of 8.2% and 9.3%, respectively. It should be stressed that this is the best outcome recorded in the history of Polish intermodal rail transport.

Fig. 42: Intermodal rail transport in Poland (in thousand tonnes)

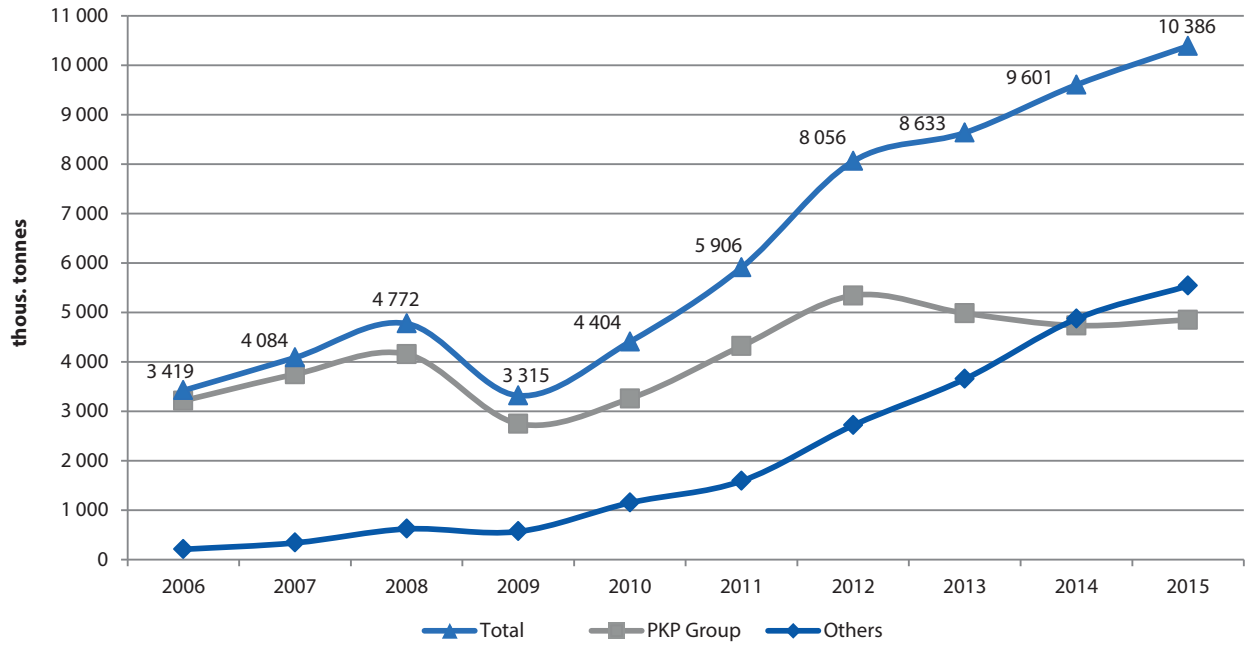


Fig. 43: Intermodal rail transport in Poland (in thousand tkm)

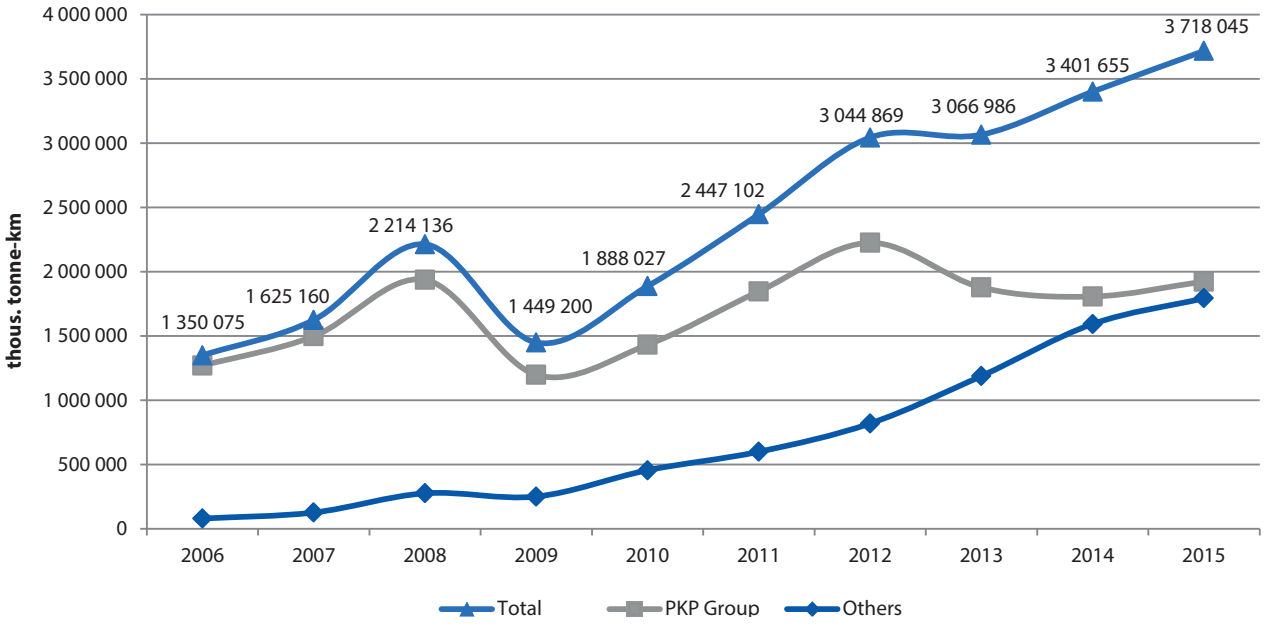


Fig. 44: Intermodal rail transport in Poland (in thousand units)

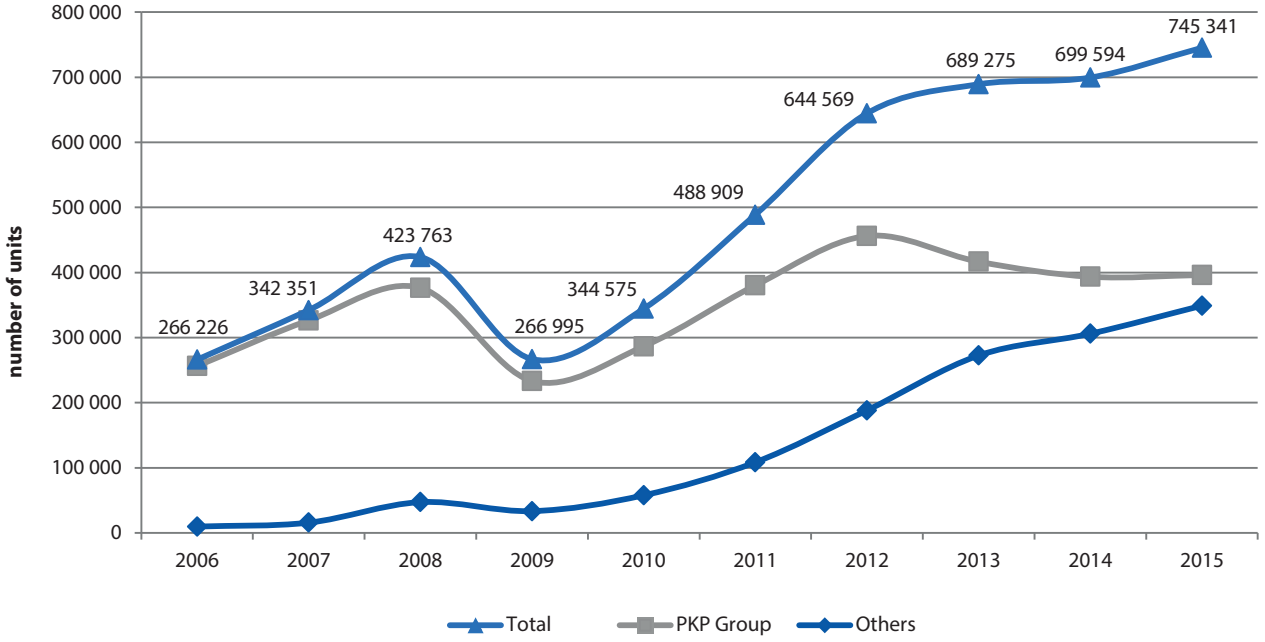
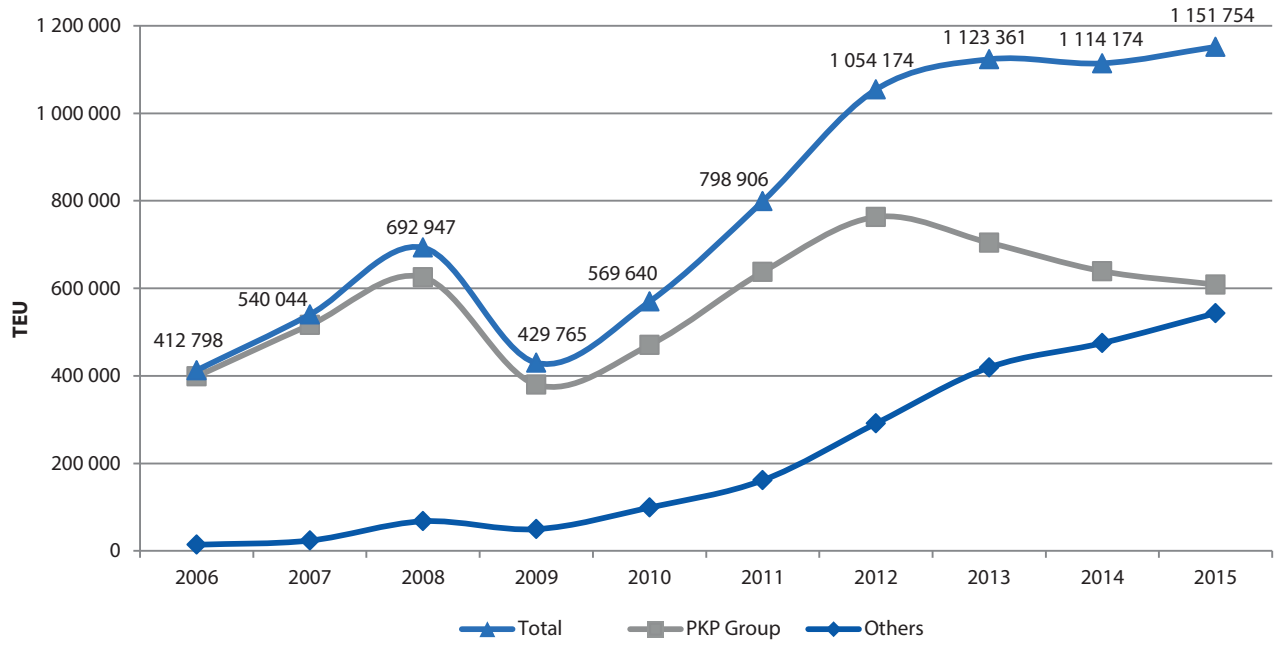


Fig. 45: Intermodal rail transport in Poland (in thousand TEU)



As in 2014, PKP Cargo continues to be the dominant railway undertaking in this market segment, with its shares at the end of 2015 being 45% in the weight of transported units and 50.4% in transport performance.

In 2015 the share of intermodal transport in the rail-transport market measured by weight reached 4.6% (4.2% to 2014) and by transport performance 7.4% (6.8% in 2014)

Fig. 46: The share of railway undertakings in the intermodal transport market by weight in 2015

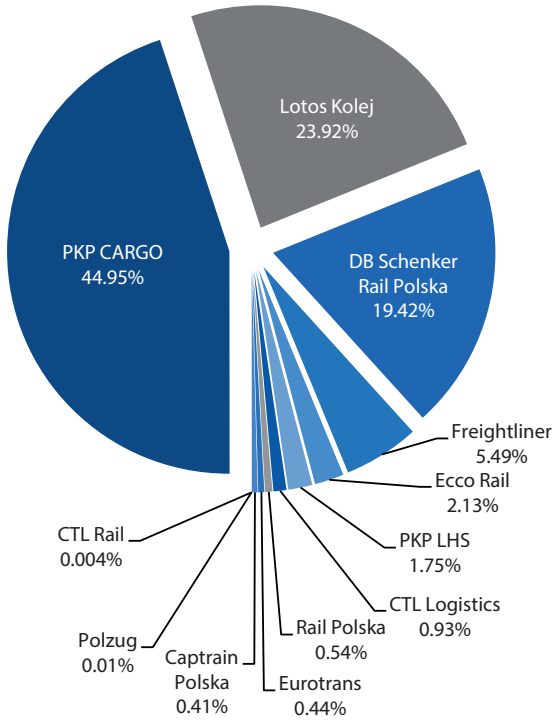
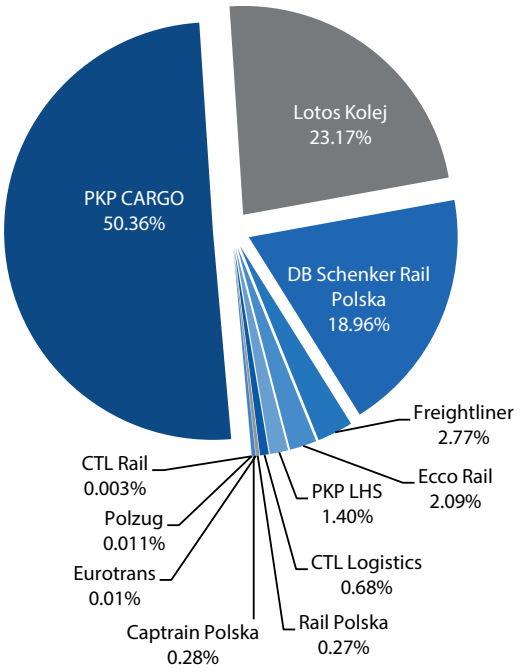


Fig. 47: The share of railway undertakings in the intermodal transport market by transport performance in 2015



In 2015, the companies Lotos Kolej and DB Schenker Rail Polska also had a significant market position in terms of the volume of intermodal transport. Their market share in terms of transported weight was 23.9% and 19.4%, respectively. In terms of transport performance this share was 23.2% and 19.0%, respectively. Another notable development is the substantial increase in transport provided by Freightliner PL, which had a 5.5% share in the transported weight at the end of 2015 and a 2.8% share in transport performance. As in previous years, the share of domestic transport in intermodal transport as a whole was low. Measured by transport performance, this share dropped by 1 percentage point compared to 2014 to reach 28.4%. Due to the high costs of transport by rail – disproportionate to road transport costs – and the low quality of the railway track parameters (including the average commercial speed), the transport of containers on short distances is unprofitable. The profitability of intermodal transport by rail increases with transport distance. The share of international transport is 71.6% by transport performance.

Fig. 48: Transport share ininternational transport in intermodal transport in 2015

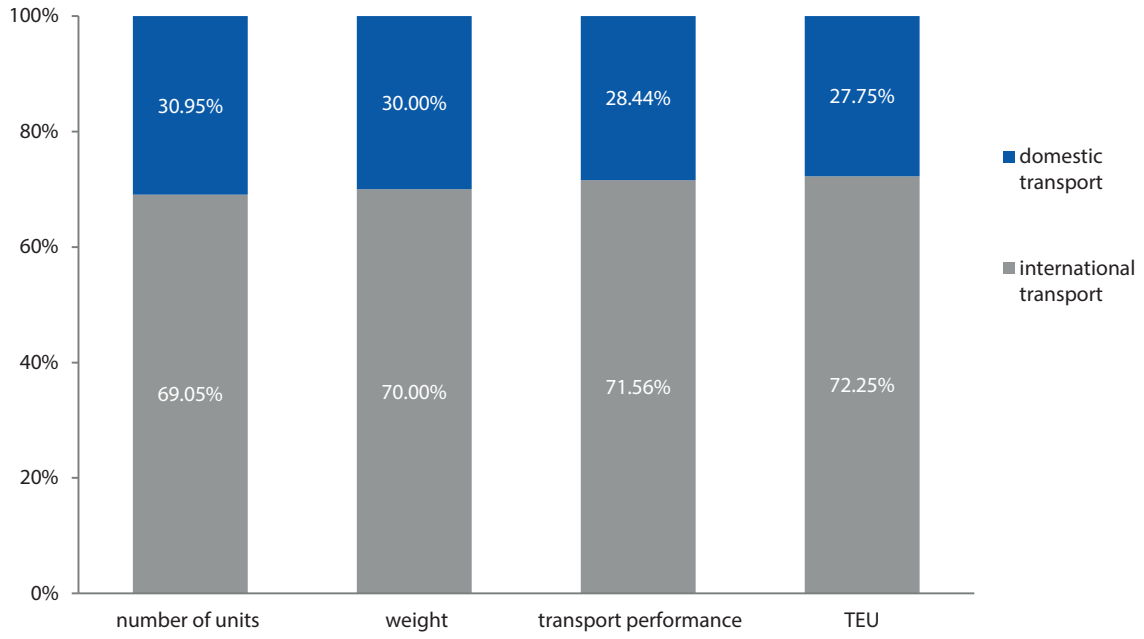
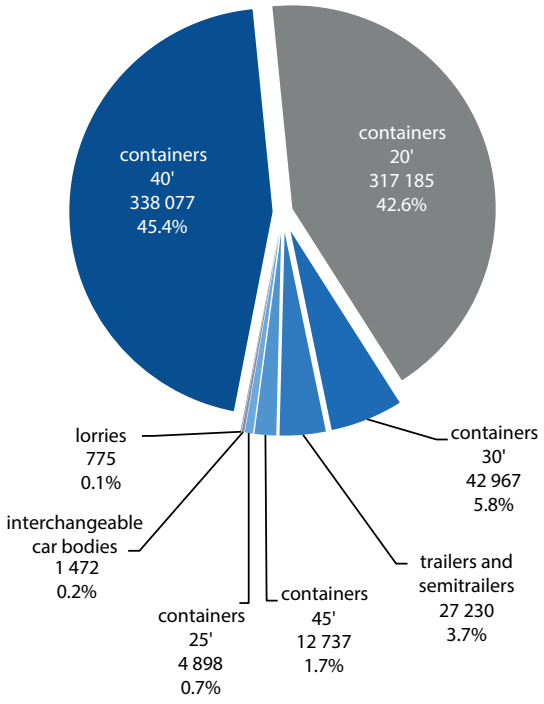


Fig. 49: The share of specific types of transport units in 2015



Taking into consideration international transport, the share of particular types of transport by the number of transported units amounted to, respectively for, imports – 29.6%, exports – 27.7% and transit – 11.7%. Polish intermodal transport is mostly based on land transport, which accounted for almost 70.1% (in terms of transport performance). The share of transport through seaports is still low – in 2015 it amounted to approx. 29.9%.

Intermodal transport uses mainly containers, whose share in the total number of units amounted to 96.2% at the end of 2015. 20- and 40-foot unit transport dominated in this segment, accounting for 42.6% and 45.4%, respectively. The share of other containers amounted to: 25-foot – 0.7%, 30-foot – 5.8% and 45-foot – 1.7%.

In 2015 the share of intermodal transport in the rail-transport market measured by cargo weight reached 4.6% and was higher by 0.4 percentage point compared to 2014. Intermodal transport accounted for 7.4% of transport performance, which is a 0.6 percentage point increase compared to 2014.

Intermodal transport involving railways requires a multiannual and multifaceted support programme to be able to compete with road transport. Market players believe that it is important for intermodal transport to have preferential access to the infrastructure. What is also important for the development of intermodal transport is investment in infrastructure upgrades and the expansion and construction of new transshipment terminals (including in sea ports) and the establishment of regional logistics centres near major urban agglomerations. Track closures should be eliminated and commercial speeds should be increased to support long-term contracts.

Sustainable policies supporting intermodal transport should help to bridge the gap between Poland and EU countries in the long term. Poland's geographic location is good for international trade. Two transport corridors cross Poland, running as follows:

- Corridor 5 (Baltic-Adriatic): Gdynia/Świnoujście – Katowice – Ostrava/Zilina – Bratislava/Vienna/Klagenfurt – Udine – Venice/Triest/Bologne/Ravenna/Graz – Maribor – Ljubljana – Koper/Triest;
- Corridor 8 (North Sea-Baltic): Bremerhaven/Rotterdam/Antwerp – Aachen/Berlin – Warsaw – Terespol/Kaunas (the path might be extended to Medyka by 2020 and to include the section of Kaunas – Riga –Tallinn).

If supported by an appropriate government policy, the development of both corridors might provide a real opportunity for intermodal transport to become a major factor in international transport.

2.3.5. The transport of dangerous goods

In 2015, 26 licensed railway undertakings conducted economic activity involving the transport of dangerous goods.

Railway undertakings transported in total nearly 23 m tonnes of dangerous goods, which resulted in transport performance of over 7.3 bn tkm.

The share of the transport of dangerous goods in the rail market amounted to 10.2% by weight and nearly 14.4% by transport performance. Compared to 2014, the average distance in the transport of dangerous goods dropped from 322 km to 318 km.

The transport of dangerous goods is performed mainly in domestic transport, which in 2015 accounted for nearly 64.2% by weight and 71.7% in terms of transport performance. International transport in this type of transport is rather insignificant. For example, the share of exports fluctuated around 11.4% in terms of transport performance, and in transit it was 3.3%.

The Baltic-Adriatic and North Sea-Baltic transport corridors represent an opportunity for Poland.

In 2015, flammable liquid materials (crude petroleum and petroleum products, e.g. fuels, diesel oil) continued to be the most important group of goods in transport, with a market share of nearly 65.1%. In comparison to the previous year it was a decrease of 1.5 percentage points. According to the classification of dangerous goods (provided for in the RID regulations for international rail transport of dangerous goods), apart from flammable liquids, the largest share in dangerous goods transport was held by class 2 goods – gases (12.6% by weight and 10.2% by transport performance), class 8 – corrosives (6.5% and 5.6%, respectively), class 4.1 – flammable solids (2.4% and 2.7%) and class 4.2 – substances liable to spontaneous combustion (2.2% and 0.9%, respectively).

Fig. 50: The share of transport of particular groups of dangerous goods in 2015 (by weight)

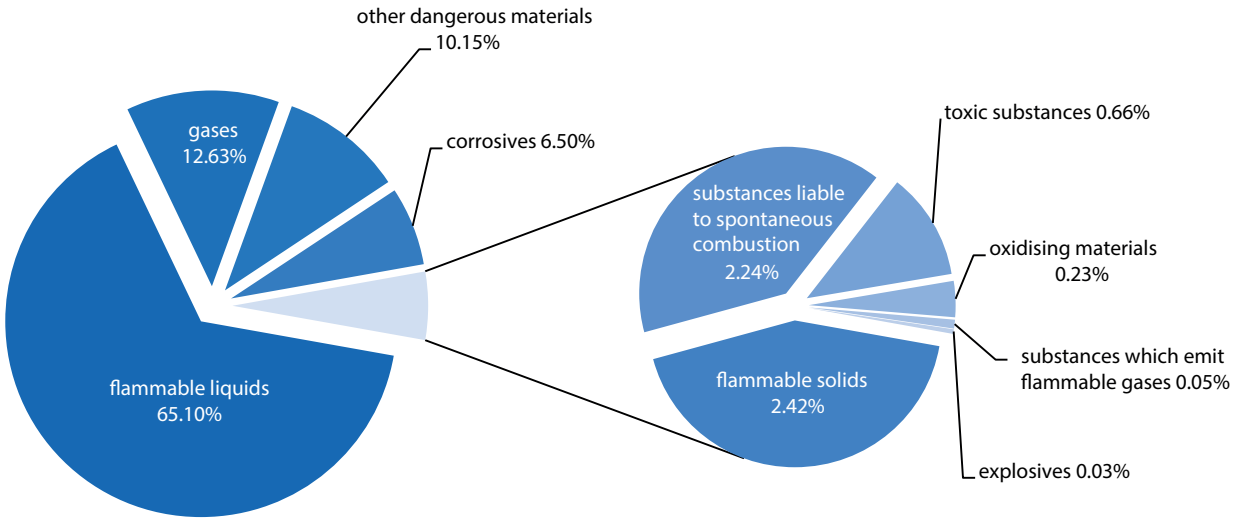
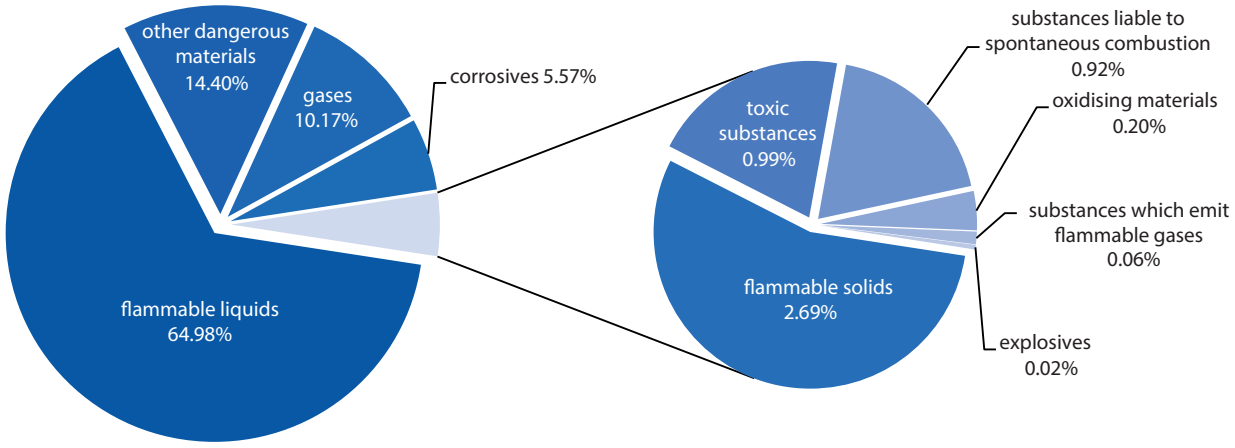


Fig. 51: The share of transport of particular groups of dangerous goods in 2015 (by transport performance)



2.3.6. The structure of the rolling stock available to freight railway undertakings

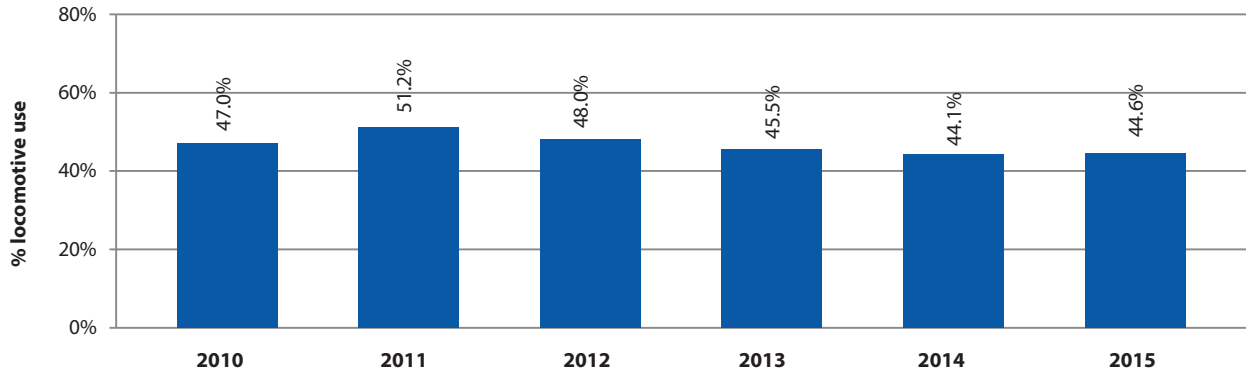
In 2015 freight railway undertakings had fewer locomotives and wagons compared to 2014.

A decrease was recorded in 2015 both for wagon and traction rolling stock. The number of locomotives available to railway undertakings decreased by 5 to amount to 3 659 compared to 2014. The number of wagon rolling stock at the end of 2015 was 90 754 wagons. The almost 8% decrease in the number of available wagons was attributable to the GATX concern having a large number of tank wagons – until 2014, this concern was represented on the Polish market as a railway undertaking under the name of GATX Rail Poland. Some of the company's tank wagons are currently used by other railway undertakings. Diesel locomotives accounted for 58.9% of all locomotives. In absolute terms this is a decrease by 11 locomotives compared to the end of 2014. The number of electric locomotives was 1 484 (six more than in 2014).

Tab. 13: The number of traction and wagon rolling stock managed by freight railway undertakings in the years 2006-2015

type of rolling stock	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
locomotives in total	4 398	4 462	3 988	3 944	3 699	3 710	3 677	3 707	3 664	3 659
electric locomotives	1 884	1 831	1 506	1 512	1 488	1 457	1 445	1 501	1 478	1 484
diesel locomotives	2 494	2 610	2 461	2 410	2 189	2 233	2 212	2 185	2 165	2 154
steam locomotives	20	21	21	22	22	20	20	21	21	21
wagons in total	109 487	112 842	112 699	107 795	101 074	101 511	99 879	98 106	98 643	90 754
of which covered wagons	9 754	9 807	8 961	7 609	5 814	4 898	4 563	4 397	4 141	4 053
of which open freight wagons	66 714	67 493	66 281	63 166	58 724	59 978	58 500	57 745	57 827	58 058
of which flat wagons	12 770	12 962	13 312	12 871	12 165	11 958	11 225	11 202	11 712	11 683
of which tank wagons	13 472	13 801	14 877	14 873	15 041	14 665	15 746	15 357	16 018	8 677
of which refrigerated vans	4	0	0	0	0	0	0	0	0	0
of which with sliding roofs	1 019	954	1015	1 015	1 201	1 197	1 238	1 220	1 220	1 256
of which special wagons	5 754	7 825	8 253	8 261	8 129	8 815	8 128	7 747	7 304	6 608
of which freight wagons – other	0	0	0	0	0	0	479	438	421	419

Fig. 52: Locomotive use in the years 2010-2015 by daily stock



In 2015 the locomotives use index increased for freight railway undertakings to 44.6% at the end of the year (in 2014 it oscillated around 44.1%).

The use of freight wagons in 2015 remained similar to the level recorded in 2014, at 76.5% (0.2 percentage point less than in 2014).

According to information provided by railway undertakings, investment costs in 2015 amounted to a total of over PLN 368.9 m, of which PLN 219.5 m were purchase costs and PLN 149.4 m – upgrade costs.

In 2015 railway undertakings spent PLN 219.5 m to purchase rolling stock and PLN 149.4 m to upgrade their rolling stock.

Employment at freight railway undertakings decreased by 9.9% in 2015.

2.3.7. The employment and business performance of freight railway undertakings

Employment at freight railway undertakings decreased in 2015 from 30 978 to 27 908 persons (a decrease of 9.9%). An overview of employment in freight transport in the past years shows that over the last 10 years companies have gradually reduced their workforce.

Fig. 53: Employment in freight transport in the years 2008-2015

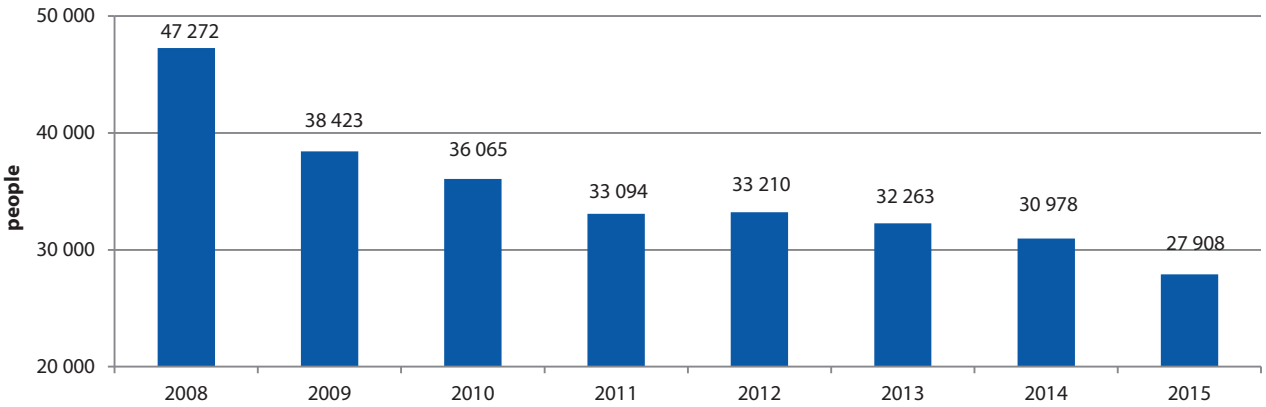
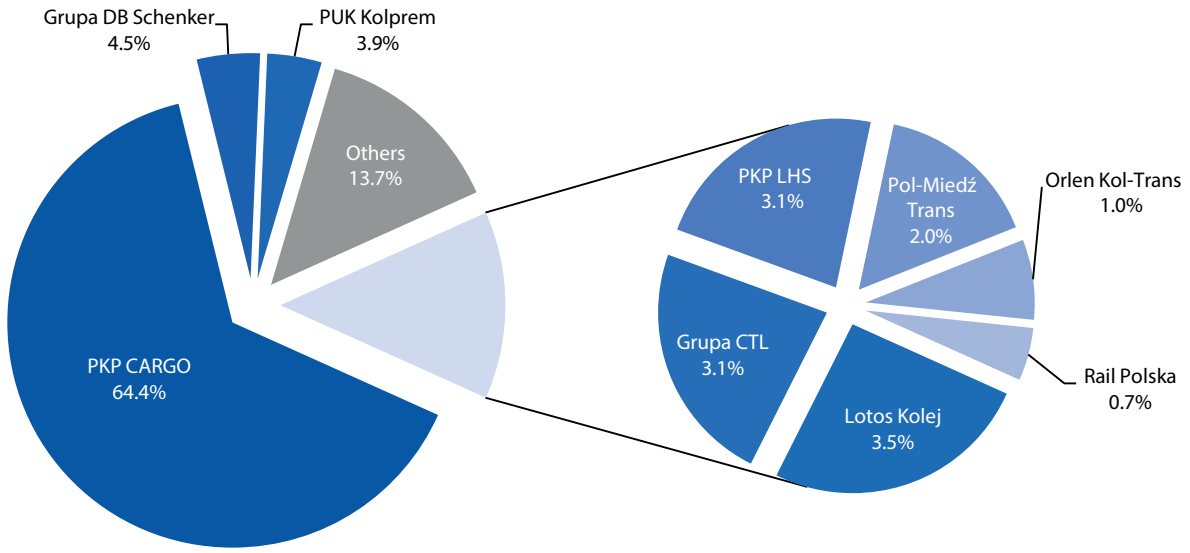
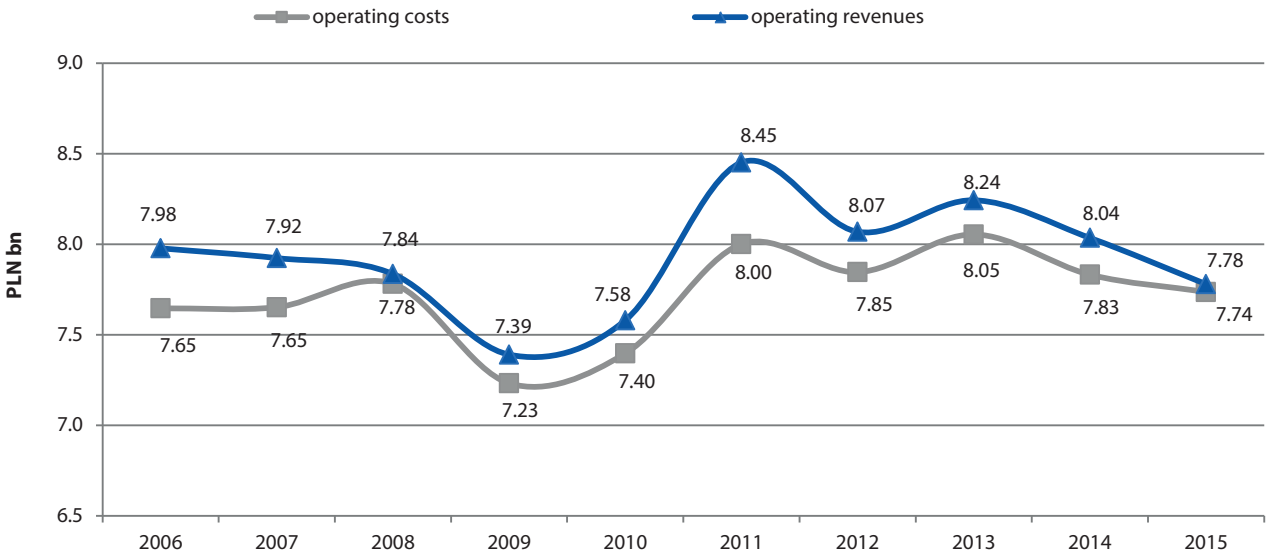


Fig. 54: Employment structure at freight railway undertakings in 2015



Despite substantial reduction of employment, PKP Cargo continues to be the largest employer on the market, with more than 64% of all employees of railway freight undertakings working at this company. DB Schenker is second in terms of the workforce with an over 4.5% share in overall workforce on the market. PUK Kolprem employs 3.9% of the overall workforce. Other employers include Lotos Kolej (3.5%), CTL group (3.1%), PKP LHS (3.1%), Pol-Miedź Trans (2.1%), Orlen Koltrans (1.0%).

Fig. 55: The business performance of freight railway undertakings (in PLN bn) in the years 2006-2015



Railway undertakings recorded a decrease in operating revenues in 2015. Operating costs dropped as well. The 2015 revenue was PLN 40 m higher than the 2015 costs.

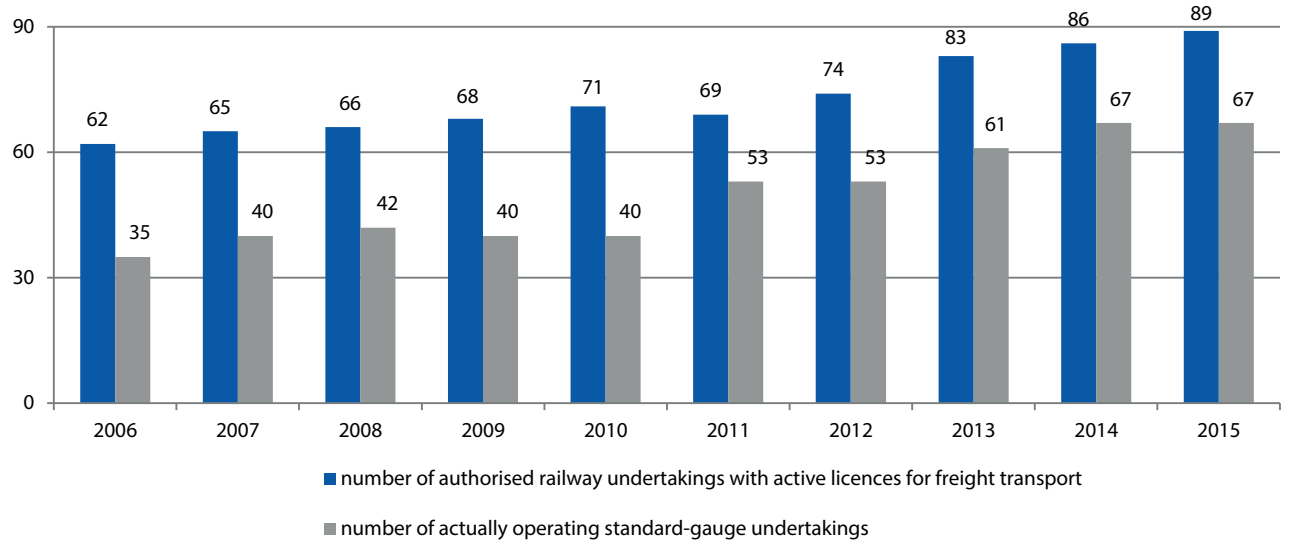
2.3.8. Freight transport licensing

Due to the entry into force of Commission Implementing Regulation (EU) 2015/171 of 4 February 2015 on certain aspects of the procedure of licensing railway undertakings (OJ L 29/3 of 5 February 2015), further referred to as Regulation 2015/171/EU, licensing rules have been changed. A license is now issued in a single copy, based on the template of the license document, as specified in Annexes 1 and 2 to the Regulation, and includes the types of services that an undertaking is to provide (passenger transport and/or freight transport and/or traction vehicles supply).

In 2015 the President of UTK, acting in accordance with Article 10 (1) (2) of the Rail Transport Act, issued seven licenses for the provision of freight rail transport, including four licenses based on the new license document template in line with Annexes 1 and 2 of Regulation (EU) 2015/171/EU. At the end of the previous year, valid licences (suspended licenses excluded) were held by 89 railway undertakings, including 4 held by narrow-gauge railway undertakings.

Of 89 railway undertakings holding active licenses in 2015, 67 undertakings engaged in the transport business.

Fig. 56: The number of licensed railway undertakings authorised to provide transport services and actually operating on the rail market in the years 2006-2015



As a result of administrative proceedings conducted ex officio and petitioned for in the period from 1 January to 31 December 2015, the President of UTK issued the following decisions concerning the licensing of railway passenger transport:

In 2015 the President of UTK issued a total of 7 licenses for the transport of goods by rail.

- 7 licenses to provide freight rail transport were issued, including 4 licenses based on the new license document template;
- 2 licences for the transport of goods by rail were suspended;
- data were changed in 7 licences for the transport of goods by rail;
- 1 decision was issued to extend the deadline for the launch of licensed operations in the transport of goods by rail;
- 2 decisions were issued to extend the deadline for the launch of licensed operations in the transport of goods by rail;
- 5 decisions were issued to refuse licensing for the transport of goods by rail;
- 4 decisions were issued to discontinue proceedings, including two proceedings related to the issuance of a license and two proceedings related to granting a longer time limit for launching licensed operations;
- 3 decisions were issued relating to the expiry of licenses for the transport of goods by rail.

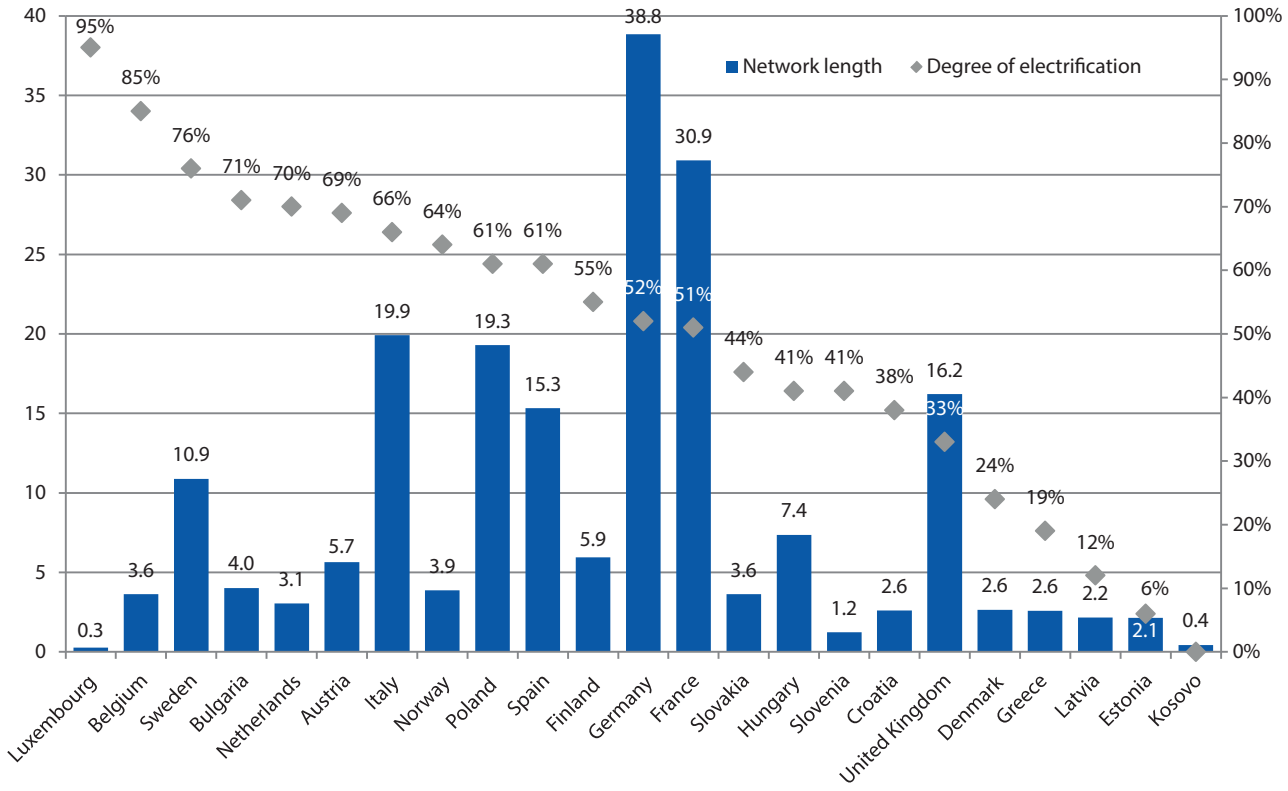
3. The railway infrastructure

3.1. The railway infrastructure in Europe

3.1.1. The length and use of the railway network in Europe

The basic parameter to characterise the railway infrastructure network is line length. An important indicator for infrastructure assessment is also the level of electrification of railway lines, which to a certain degree reflects the impact of rail transport on the environment. The figure below shows data on railway line length in countries where regulatory bodies are associated in IRG-Rail and have provided infrastructure data. The presented data are from the latest IRG-Rail report published in 2016 and reflect the status as at the end of 2014.

Fig. 57: The length and electrification level of railway lines in countries reporting to IRG-Rail in 2014



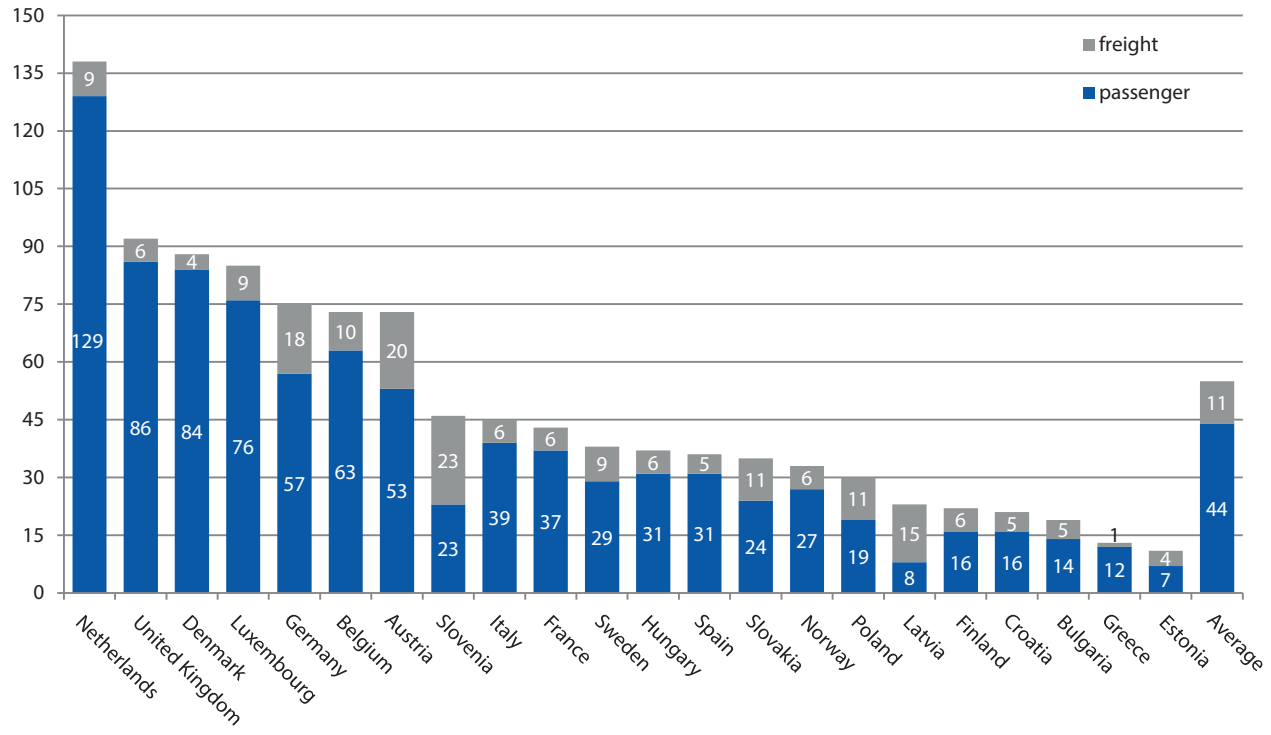
Source: prepared by UTK based on IRG-Rail data

The longest railway line network in Europe was that of Germany (38.8 thousand km). It is followed by the railways in France, Italy and Poland.

The longest railway line network was that of Germany (38.8 thousand km), with nearly half of the lines electrified. A similar electrification level was present in the second largest railway network in France, which is, however, shorter by nearly 8 thousand km (30.9 thousand km). The length of railway lines in France increased in 2014 by over a thousand kilometres, whereas the electrification level decreased by 2 percentage points. The third and fourth longest railway networks were those of Italy and Poland. The Italian network is slightly longer and more electrified than the Polish one. The electrification level of the Italian and Polish railway network, particularly given their length, was relatively high. The British railway network, which is 3 thousand km shorter, had a relatively low electrification level (33%). In Spain the percentage of electrified lines was similar to that in Poland, but across an over 4 thousand km shorter network. Sweden had a very high electrification level (75%) with a network nearly 11 thousand km long, which makes it stand out against other countries with high electrification levels (these are often countries with a small area, which means they have shorter railway networks, e.g. Luxembourg with the highest percentage of lines with an electrified traction network and also Belgium, Bulgaria and the Netherlands). The shortest railway network of the mentioned countries is in Kosovo, where no lines are electrified. A low percentage of electrified lines is also found in Estonia, Latvia, Greece and Denmark.

The figure below presents the level of use of the railway infrastructure in respective EU countries (the average number of trains per 1 km of railway line during 1 day in a year). This ratio is calculated by dividing operational performance by the length of the network and the number of calendar days. The usage intensity of the network was shown for both the passenger and freight segments.

Fig. 58: The average number of trains per day per 1 km of railway line in 2014 in IRG-Rail reporting countries



Source: prepared by UTK based on IRG-Rail data

The railway network usage intensity is the highest in the Netherlands, where there is a daily average of 138 trains per one kilometre of railway line. Notably, these are mainly passenger trains, as the Netherlands is among the leaders in operational performance by passenger trains (93%). Such high usage intensity in the Netherlands might be attributable to a very high population density and a high demand for railway transport services, which is satisfied thanks to high network capacity. The high capacity is achieved due to the high percentage of double-track lines and quadruple-track lines around major cities. A very high usage intensity is also observed in the United Kingdom and Denmark, with passenger trains also dominating in those countries. Passenger trains in Denmark have the highest operational performance from among the analysed countries (95%), and it is also very high in the United Kingdom (93%). Slovenia is roughly in the middle among the ranked countries in terms of network usage intensity and the operational performance distribution between passenger and freight trains. Only

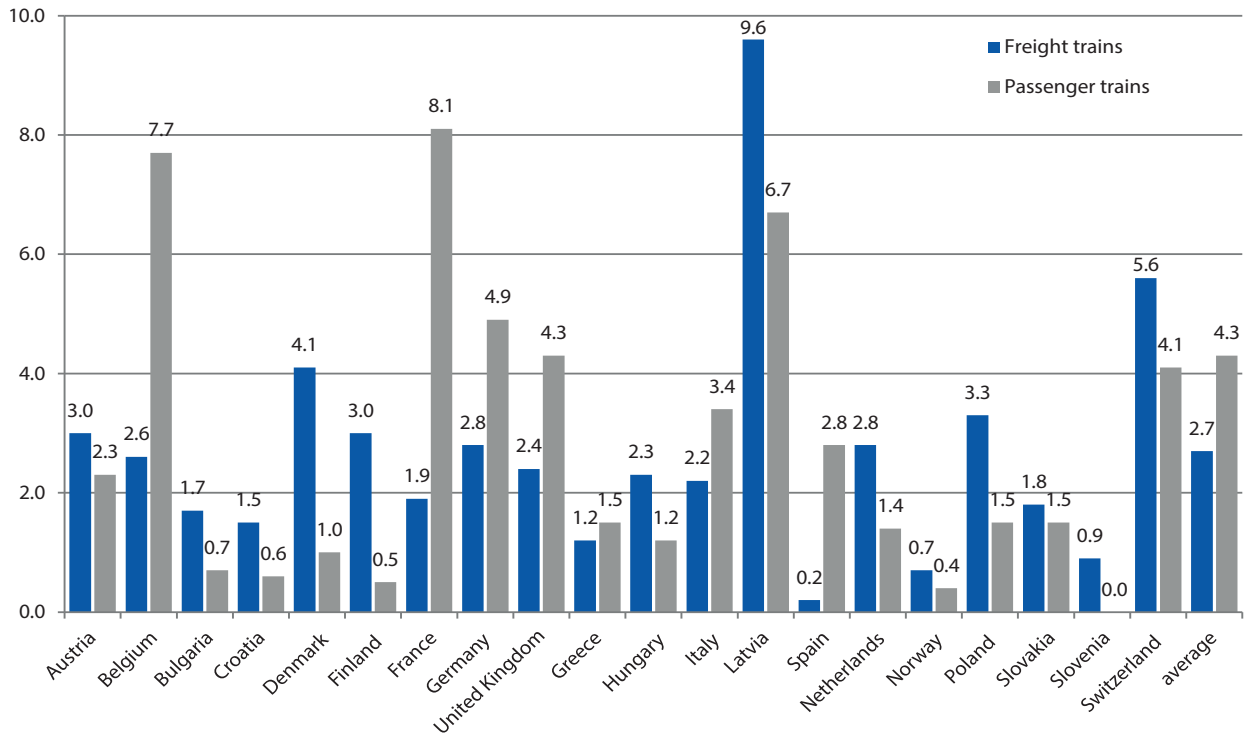
In terms of network usage intensity Poland is clearly below European average.

in Latvia freight trains are much more common in the network than passenger trains (65% against 35%). Freight trains in Poland are responsible for 37% of operational performance, which is the fourth highest percentage. At the same time, Poland is far in terms of network usage intensity, clearly below average, with 30 trains per 1 km of the network. The railway network is least used in Estonia, Greece and Bulgaria. The average proportion of usage intensity in the discussed countries is about 80:20 to the benefit of passenger transport.

3.1.2. Charges for access to the railway infrastructure across EU Member States

Data concerning the average revenue from charges for the minimum access package to railway infrastructure in respective IRG-Rail-reporting countries are presented below. The average revenue was divided into the freight and passenger segments calculated in the following way: revenue from access charges were divided by the number of train-km in each segment in 2014.

Fig. 59: The average revenue from charges for the minimum access package to railway infrastructure for freight and passenger trains in 2014 (in EUR per train-km)



Source: prepared by UTK based on IRG-rail data

In the majority of analysed countries the level of charges for freight transport is higher than that for passenger transport. The average level of revenue from charges for access to freight trains in 2014 was EUR 2.7 per train-km, meaning a decrease of 7% from EUR 2.9 in the previous year and a return to the level from 2012. In Poland the average number of revenue decreased by 27% from EUR 4.5 to EUR 3.3 per train-km, which made Poland closer to the average for the discussed countries. The lowest level of average revenue from charges for access to freight trains is observed in Spain and it is only slightly higher in Norway, where only the heaviest freight trains and passenger trains running to the Oslo Airport are charged for access to railway infrastructure. The highest relative increase in revenue from charges for freight trains was in Norway, as well as in France and Hungary.

In Belgium, France, Germany, the United Kingdom, Greece, Italy and Spain the average level of charges for passenger trains is higher than for freight trains. The very high charges for passenger trains in Belgium (including platform charges), France and Latvia increase the average to the level of EUR 4.3 per train-km (no change in relation to the previous year). In Poland, the average level of revenue from charges for access to infrastructure in 2014 for passenger traffic was EUR 1.5/train-km and was 17% lower than in 2013 and 9% lower than in 2012. The average level of revenue for access of passenger trains in Poland was 35% of the average for the discuss ed countries. A lower level of charges for passenger trains is characteristic for countries from Central and Eastern Europe. In Slovenia trains operating as part of rail transport services covered by public service contracts are not charged for access to infrastructure.

3.2. Polish railway infrastructure

3.2.1. Polish railway infrastructure managers

By the end of 2015 operations involving the management of railway infrastructure were carried out by the following entities:

On the basis of safety authorisations:

- PKP PLK;
- PKP SKM in Tricity;
- PKP LHS;
- Infra SILESIA;
- JSK;
- KP Kotlarnia Linie Kolejowe;
- PMT Linie Kolejowe;
- Euroterminal Sławków;
- CTL Maczki - Bór;
- CARGOTOR;
- DSDiK in Wrocław.

On the basis of safety certificates:

- UBB Polska;
- WKD;
- PKM.

Some new entities for which the process of obtaining authorisations ended in 2015 include:

- DSDiK in Wrocław, which obtained a safety authorisation as of 7 April 2015;
- CARGOTOR – obtained a safety authorisation as of 31 March 2015. On 21 September 2015 the authorisation was amended (a change in the number of station points).

DSDiK manages the infrastructure which was previously managed by PMT Linie Kolejowe. The user of DSDiK in Wrocław's infrastructure in 2015 was Koleje Dolnośląskie. Currently the entity manages lines 311 - Szklarska Poręba Górna - State Border from km 29 844 to km 43 138 and 326 - Wrocław Zakrzów - Trzebnica from km 1 260 to km 19 903. DSDiK in Wrocław is a local government budget entity financed by the Dolnośląskie Province.

CARGOTOR provides logistics and services infrastructure to railway undertakings in the Małaszewicze transhipment area near the border with Belarus in Terespol. The company manages four standard-gauge railway lines with a total length of 11.5 km, including 5.83 km electrified. The total length of tracks (including station and additional tracks) held by CARGOTOR is nearly 128 km. Over 66 km are tracks with a gauge of 1435 mm and 61 km with a gauge of 1520 mm. Over 70% of standard-gauge tracks are electrified, wide-gauge tracks are not electrified. In the area of Małaszewicze the company has four marshalling yards. Some of the manager's infrastructure is directly connected to the PKP PLK network. CARGOTOR's infrastructure provides the capability of reaching most terminals in the Małaszewicze transhipment area. CARGOTOR also has station points and sidings in various parts of Poland. CARGOTOR is an entity which was separated from PKP Cargo in 2014.

In 2015 safety authorisations were obtained by DSDiK in Wrocław and CARGOTOR, while Pomorska Kolej Metropolitalna obtained a safety certificate.

Euroterminal Sławków is the infrastructure manager and transhipment terminal in the area of the Upper Silesian Industrial Region. Infrastructure managed by the entity is connected both to the standard-gauge line managed by PKP PLK and PKP LHS's wide-gauge line. Euroterminal manages the Sosnowiec Maczki - Euroterminal Sławków line with the length of 5.5 km and gauge of 1435 mm and the line running from the terminal to PKP LHS infrastructure with the length of 4.1 km and gauge of 1520 mm. Euroterminal also manages 21.5 km of station tracks with the gauge of 1435 mm and 14.3 km with the gauge of 1520 mm. The infrastructure of Euroterminal Sławków is not electrified.

In the Commission Implementing Decision of 6 July 2016 on the strategic significance of railway infrastructure, the CARGOTOR and Euroterminal Sławków railway lines were not considered infrastructure without strategic significance for the operation of the rail market. This is due to the fact that the infrastructure of both manager is a connection between standard- and wide-gauge lines. Furthermore, the infrastructure of CARGOTOR is located along Rail Freight Corridor 8 defined in the annex to Regulation (EU) No 913/2010 of the European Parliament and of the Council, and the Sławków terminal is located in the trans-European core network, as defined in the annex to Regulation (EU) No 1315/2013 of the European Parliament and of the Council.

Pomorska Kolej Metropolitalna obtained a safety certificate on 7 August 2015. The company manages new railway infrastructure with the length of 34.9 km. Launching Pomorska Kolej Metropolitalna resulted from investments of the regional government of the Pomorskie Province implemented with the support of EU funds within the framework of the Infrastructure and Environment Operational Programme. The transport services are operated by PKP SKM in Trójmieście.

Three companies acted both as railway undertakings and infrastructure managers (PKP LHS, WKD and PKP SKM in Tricity) at the same time. Two of those, PKP LHS (with only a 1520 mm wide-gauge line) and WKD did not provide their own infrastructure to other railway undertakings. PKP SKM in Tricity was a railway undertaking and manager of public railway infrastructure.

Tab. 14: The length and share of used railway lines, as at 31 December 2015

Infrastructure managers	The length of used lines (km)	Share (%) in the length of used lines
PKP PLK	18 509.9	95.76%
PKP LHS	394.7	2.04%
KP Kotlarnia Linie Kolejowe	114.7	0.59%
Infra SILESIA	57.0	0.29%
Jastrzębska Spółka Kolejowa	43.1	0.22%
CTL Maczki - Bór	42.2	0.22%
WKD	38.6	0.20%
PKM	34.9	0.18%
PKP SKM	32.6	0.17%
DSDiK in Wrocław	31.9	0.17%
CARGOTOR	11.5	0.06%
Euroterminal Sławków	9.6	0.05%
PMT Linie Kolejowe	8.0	0.04%
UBB Polska	1.4	0.01%
TOTAL	19 330.1	100%

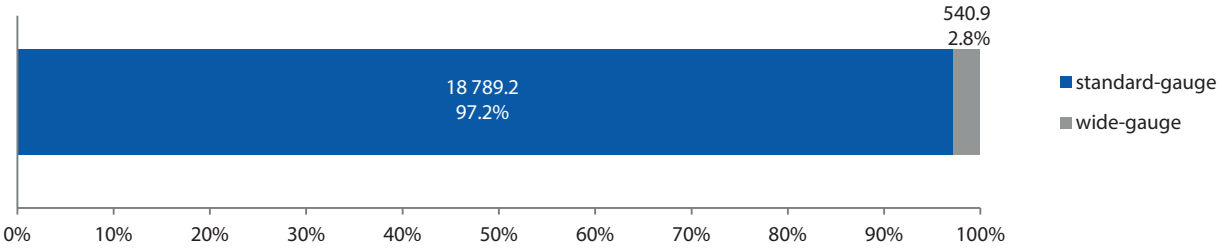
The largest infrastructure manager in Poland is PKP PLK, which provides railway infrastructure to freight and passenger railway undertakings. PKP PLK operates both standard- and wide-gauge lines. For other companies, a significant proportion of them operate only freight trains or passenger connections within agglomerations.

3.3. Polish railway infrastructure managers' activity

The length of the railway lines used by all infrastructure managers in 2015, including standard- and wide-gauge railways, was 19 330.11 km, which means an increase of 36.22 km in comparison to 2014 (a rise in standard-gauge line length of 37.45 km and a decrease in wide-gauge line length of 1.23 km). An increase in line length is due to including CARGOTOR's railway lines and the placing into service of PKM's infrastructure connecting lines 202 and 201 through the Gdańsk Airport. PKM's section was laid along the former Gdańsk Wrzeszcz - Stara Piła line. On the other hand, in 2015 the largest manager placed 6.32 km of lines out of service. Other managers also placed out of service a minimum amount of their lines, e.g. Infra SILESIA placed 5.38 km out of service. The changed in PMT Linie Kolejowe, as already mentioned, was connected with the transfer of operation of selected lines to DSDiK in Wrocław.

97.2% of all railway lines used in Poland were standard-gauge lines.

Fig. 60: The types of railway lines used in Poland as at 31 December 2015



The length of the operated wide-gauge lines included railway lines of three managers: PKP LHS (394.65 km), PKP PLK (142.1 km) and Euroterminal Sławków (4.14 km). The proportion of wide-gauge lines remained at a similar level as in 2014.

In 2015 PKP PLK remained the manager of 20 850.7 km of lines, which was 582.2 km less than in 2014. Of these, 2 340.8 km (11.2%) were out of service. It was the only company to manage infrastructure of State importance, which by the end of 2015 constituted 66.5% of lines operated by PKP PLK and 63.88% of all operated lines. The length of lines of State importance slightly dropped and by the end of 2015 it was 12 316.6 km in comparison to 12 325.3 km in 2014. The length of electrified railway lines in operation by all infrastructure managers in Poland was 11 866.0 km (61.4%) in comparison to 11 832.4 km in 2014 (61.3%). 99.5% of electrified lines were held by Grupa PKP companies (PKP PLK and PKP SKM w Trójmieście). The total length of single-track lines as at the end of 2015 was 10 568.2 km, which amounted to 53.7% of all operated lines and is a decrease in comparison to the previous year, when this proportion was at 55.3%. In single-track lines the electrification level as at the end of 2015 was 37.5%, whereas a year before it was 37.8%. In double-track lines, the electrification level as at the end of 2015 was 90.2% in comparison to 90.5% in 2014.

The average density of railway lines for the whole country was 6.18 km/100 square km. The density of the railway network in individual provinces is measured in kilometres of lines/100 square km of area did not change significantly in 2015. The largest increase in density in absolute terms was observed in the Pomorskie Province, from 6.68 km to 6.85 km of lines/100 square km, whereas the largest decrease was in the Opolskie Province, similar to 2014. Currently, the density of railway lines/100 square km is 7.96 km in this province, which is a value lower by 0.15 km in relation to 2014, but as compared to 2013 – by nearly 0.5 km. The highest density remains in the Śląskie Province (16.05 km/100 square km) and the lowest in the Podlaskie Province (3.24 km/100 square km). The largest proportion of the railway network is held by the Śląskie Province (10.24%) and the lowest by the Podlaskie Province (3.24%).

In 2015 infrastructure managers sold 2.6 m paths.

3.3.1. Providing railway undertakings with access to infrastructure

In 2015 services involving the provision of RUs with railway infrastructure were rendered by twelve infrastructure managers. In 2015 all infrastructure managers sold in total 2.6 m paths, with a total length of 214.9 m km. Their total length increased by 8.7 m kilometres (4.2%) in comparison to 2014.

PKP PLK, as the manager, holds a dominant position on the market for infrastructure access provision. In 2015, for their annual and individual timetables, railway undertakings commissioned from PKP PLK a total of 2.72 m paths (5.9% less than a year before) with a total length of 243 573.35 thous. km (a drop of 3.9%). In 2015 this manager sold 2.35 m paths with a total length of 211.57 m km (in 2014 2.33 m paths and 202.96 m km). The increase in the length of paths purchased by RUs was mainly due to the increase in operational performance in the passenger services segment.

Fig. 61: The length of paths sold by PKP PLK, as the infrastructure manager, in the years 2006-2015

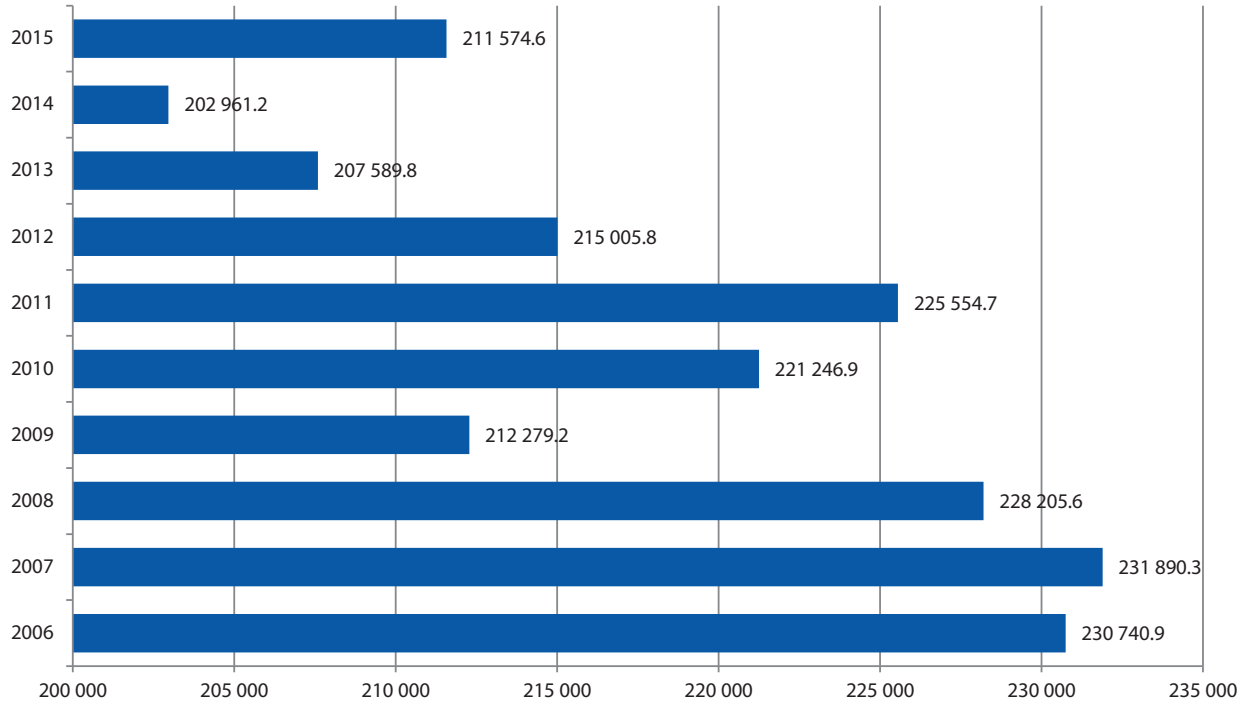
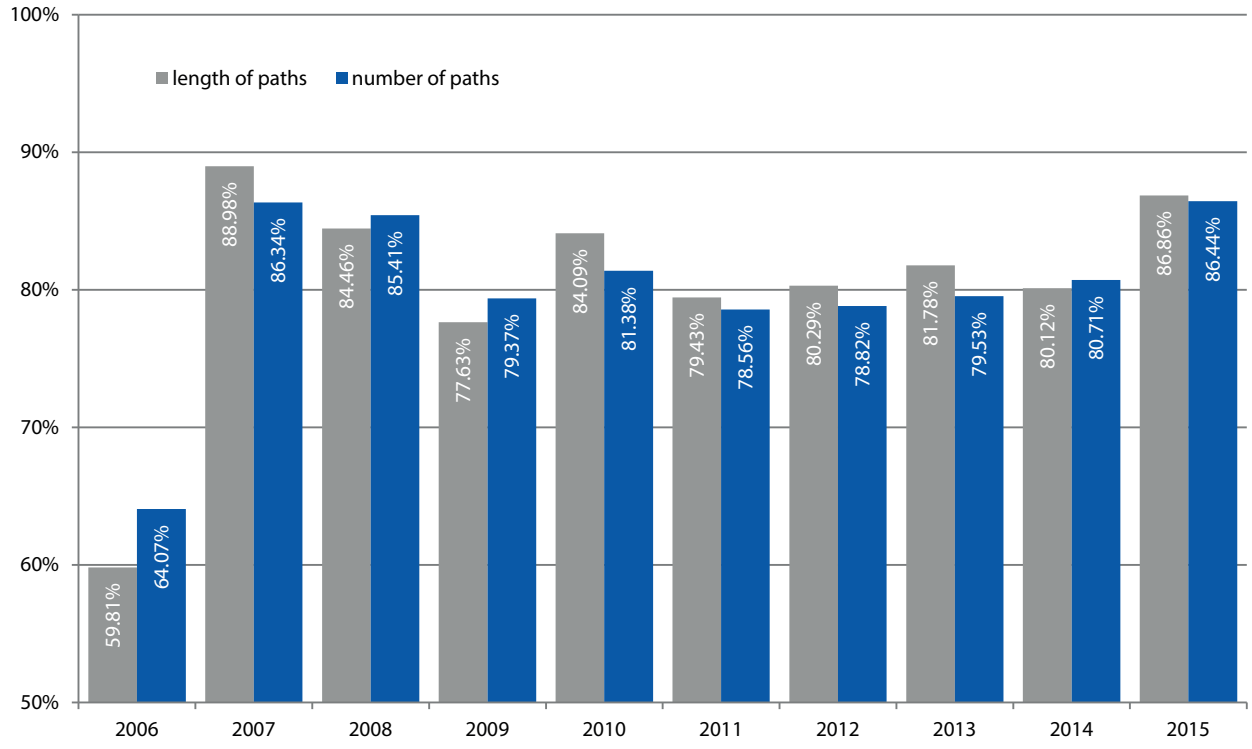


Fig. 62: The proportion of paths sold in the total number of paths commissioned by RUs from PKP PLK in the years 2006-2015



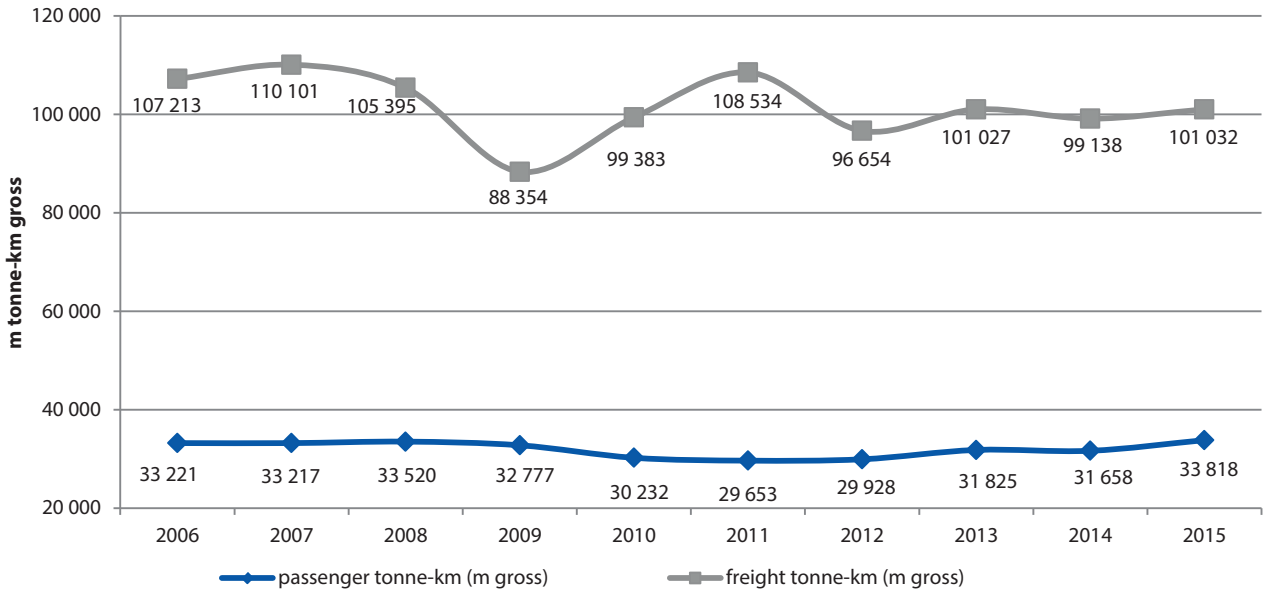
The utilisation ratio calculated as the quotient of the number of paths purchased and the number of paths commissioned was 86.4% and the ratio calculated as the quotient of the length of purchased paths and the length of commissioned paths was 86.9%.

The majority of paths provided by PKP PLK had been included in its annual timetable (1.576 m compared to 1.545 m in 2014), which accounted for 67.0% of all launched services (66.4% in 2014). It is noticeable, therefore, that the proportion of paths purchased as part of an individual timetable is increasing with each year. For the minimum access to the provided infrastructure the manager collected PLN 1.864 bn in fees from RUs, i.e. approx. PLN 86 m more than a year before. The total amount included PLN 17.15 m in booking charges for paths unused by RUs. In addition, the manager collected PLN 108.28 m in fees for the basic access to the systems connected with train service

(113.14 m in 2014) and PLN 26 m in additional charges (30.82 m in 2014). By the end of 2015 the share of PKP PLK in the infrastructure provision and path-selling market, as measured by operational performance within its network, slightly dropped and amounted to 98.3%.

In 2015 within its purchased paths the gross transport performance was 134.850 bn tkm, which, compared to the year before, constituted a drop of 4.055 bn tkm (of 3.1%). The gross performance in freight accounted for 74.9% (75.8% in 2014) and in passenger transport 25.1% (24.2% in 2014), which shows an increase in gross transport performance by passenger rail undertakings and a drop in the transport performance of freight transport operators.

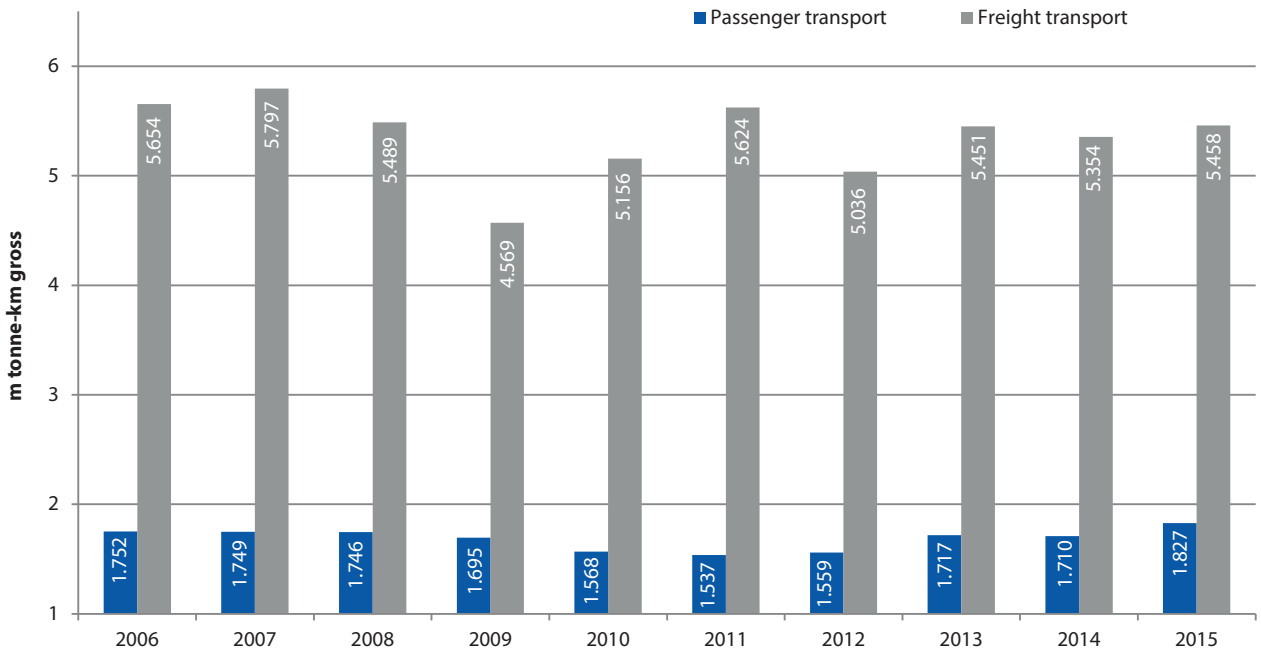
Fig. 63: The load of PKP PLK railway lines with transport performance per km (m tkm gross per 1 km of line) in 2006-2015



The average load per line kilometre in 2015 was approx. 7.28 m tonnes gross, i.e. 0.2 m more than in 2014. The increase was found both in passenger and freight RUs, but it was higher in passenger transport. As per one km of railway line, the transport performance of freight RUs was 104 thousand tonnes higher. In 2015, the average load for this type of transport reached 5.458 m tonnes gross per one line kilometre. In passenger transport this was 1.827 m tonnes per kilometre, which is an increase by nearly 110 thousand tonnes and a situation in which the year differences are higher for passenger transport than for freight transport. An increase in operational performance in passenger transport in 2015 is the reason for the highest value of load of railway lines per km in the last 10 years. The above value was primarily due to the considerable increase of PKP Intercity's service package and an increasing share of new local government railway undertakings. The above reasons also led to a higher number of paths purchased by passenger railway undertakings, as well as the introduction of a large number of new rolling stock, which required appropriate test drives.

An increase in operational performance in passenger transport in 2015 is the reason for the highest value of load of railway lines per km in the last 10 years.

Fig. 64: The load of PKP PLK railway lines with transport performance per km (m tkm gross per 1 km of line) in 2006-2015



3.3.2. Fees for access to the railway infrastructure

Fees for access to railway infrastructure are supervised by the President of UTK, who, pursuant to Article 10, Par. 1 of the Rail Transport Act is the national regulator of rail transport. The main areas of competence of the President of UTK in this field include approving unit rates for access to railway infrastructure and considering complaints from railway undertakings regarding the allocation of train paths and charges for using railway infrastructure.

In 2015 services involving the provision of RUs with railway infrastructure were rendered by twelve infrastructure managers:

- PKP PLK;
- CTL Maczki - Bór
- Infra SILESIA;
- JSK;
- KP Kotlarnia Linie Kolejowe;
- PMT Linie Kolejowe;
- UBB Polska;
- PKP SKM w Trójmieście;
- CARGOTOR;
- Euroterminal Sławków;
- PKM
- DSDiK in Wrocław.

Fees for access to infrastructure

In connection with the draft unit rates for the use of railway infrastructure submitted by railway infrastructure managers for approval by the President of UTK, 16 decisions were issued, including:

- 8 decisions approving unit rates of charges for the use by RUs of railway infrastructure of IMs:
  - Euroterminal Sławków for the train timetable, "timetable", 2014/2015 and for the 2015/2016 timetable;
  - PKP PLK for the 2015/2016 timetable;
  - PKM for the 2014/2015 timetable;
  - Infra SILESIA for the 2015/2016 timetable;
  - PKP SKM w Trójmieście for the 2015/2016 timetable;
  - DSDiK we Wrocławiu for the 2015/2016 timetable;
  - PMT Linie Kolejowe for the 2015/2016 timetable;

The submitted draft unit rates were compliant with regulations for approving the unit rates for charges specified in the Regulation of the Minister of Infrastructure and Development of 5 June 2014 on the conditions of access to and use of railway infrastructure;

- 5 decisions refusing to approve the submitted unit rates for:
  - CTL Maczki – Bór;
  - JSK;
  - Infra SILESIA;
  - CARGOTOR;
  - KP Kotlarnia Linie Kolejowe.
- 3 decisions to discontinue proceedings on the application to approve the unit rates for charges for:
  - PKM;
  - CARGOTOR;
  - JSK.

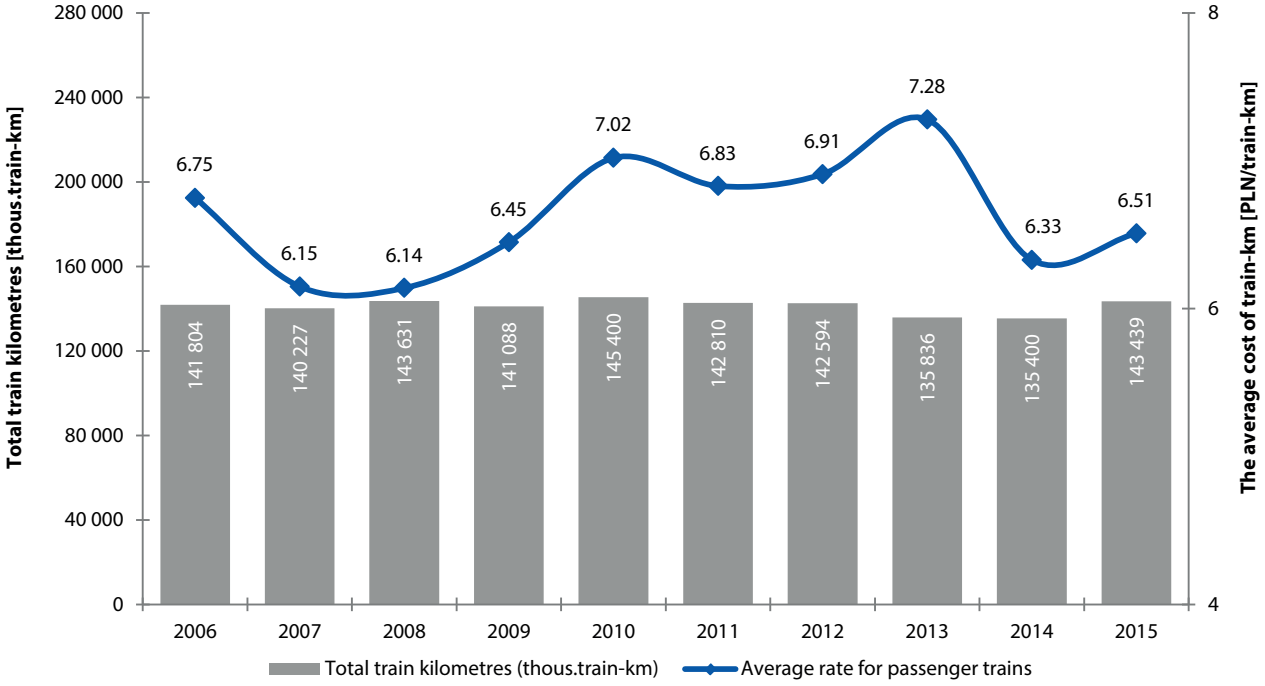
PKP PLK rates are the most important for market development, as they cover the whole country and concern both freight and passenger transport. For the purposes of commercial balancing, PKP PLK concluded with the Ministry of Infrastructure and Development a contract for funding from the State budget of costs of railway infrastructure management and protection.

Fig. 65: The average cost of train-km for the minimum access to PKP PLK's infrastructure from the 2004/2005 timetable to the 2015-2016 timetable

In the 2013/2014 timetable, as a result of the manager's adopting for the calculation of the unit rates of the basic fee only some costs of maintenance, management of rail traffic and depreciation, which are directly incurred as a result of operating the train service, which is mentioned in the judgment of the EU Court of Justice, the average basic network rate for minimum access to PKP PLK's infrastructure for all trains was reduced by 20.43% to the level of PLN 8.92/train-km. Starting from 2014 (the 2013/2014 timetable), the average network rates have been reduced and stabilised.

Starting from 2014 the average network rates have been reduced and stabilised.

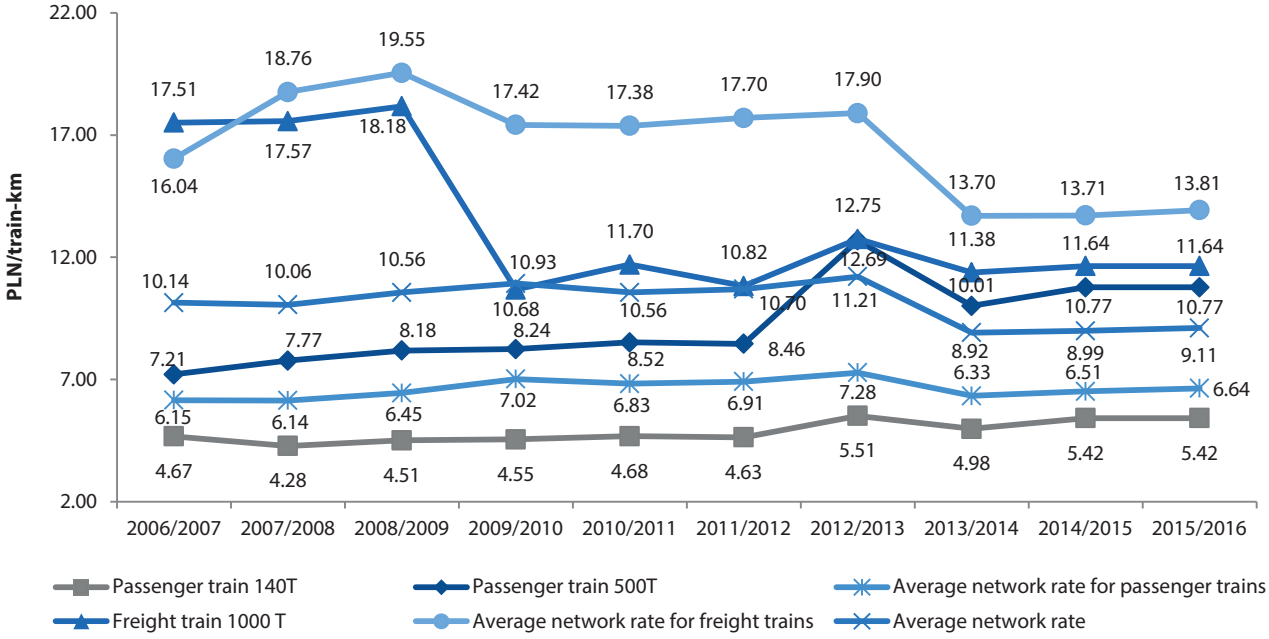
Fig. 66: The rates for access to PKP PLK's infrastructure for passenger trains in view of the volume of passenger transport in the years 2006-2015



The following figure presents unit rates of the basic fee for minimum access to PKP PLK's railway infrastructure in the period from the 2006/2007 timetable to the 2015/2016 timetable for typical passenger trains (regional – 140 tonnes and long-distance – 500 tonnes) and freight trains (1000 tonnes).

For the 2014/2015 and 2015/2016 timetables the rate for a typical freight train (1000 tonnes) was PLN 11.64/train-km. In passenger transport, for a typical regional train (140 tonnes), the rate was PLN 5.42/train-km in the 2014/2015 and 2015/2016 timetables, whereas for a typical long-distance train (500 tonnes) – PLN 10.77/train-km.

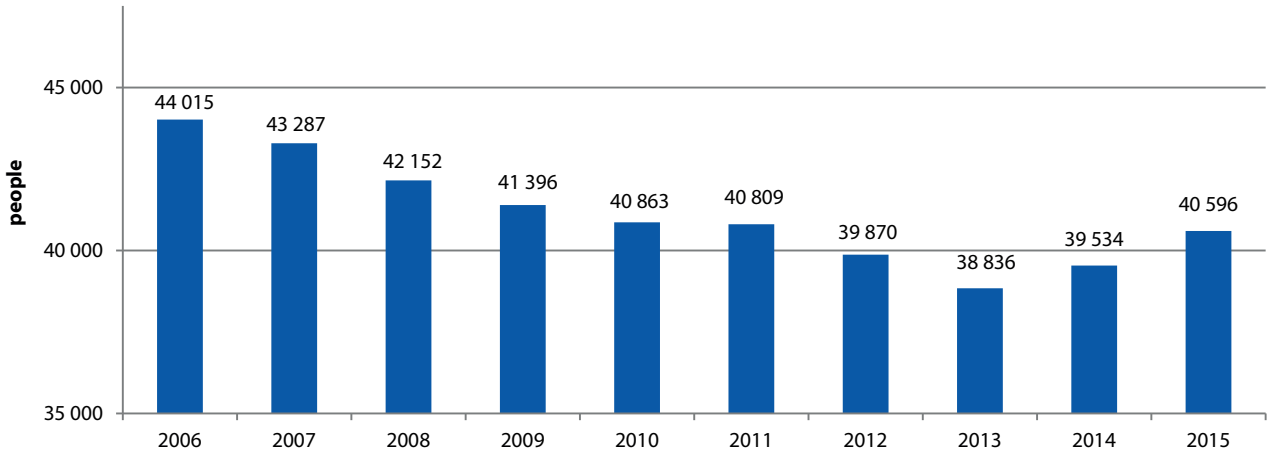
Fig. 67: The unit rate of the basic fee for minimum access to infrastructure in PKP PLK's network from the 2006/2007 timetable to the 2014/2015 timetable for typical passenger and freight trains



3.3.3. The employment and business performance of infrastructure managers

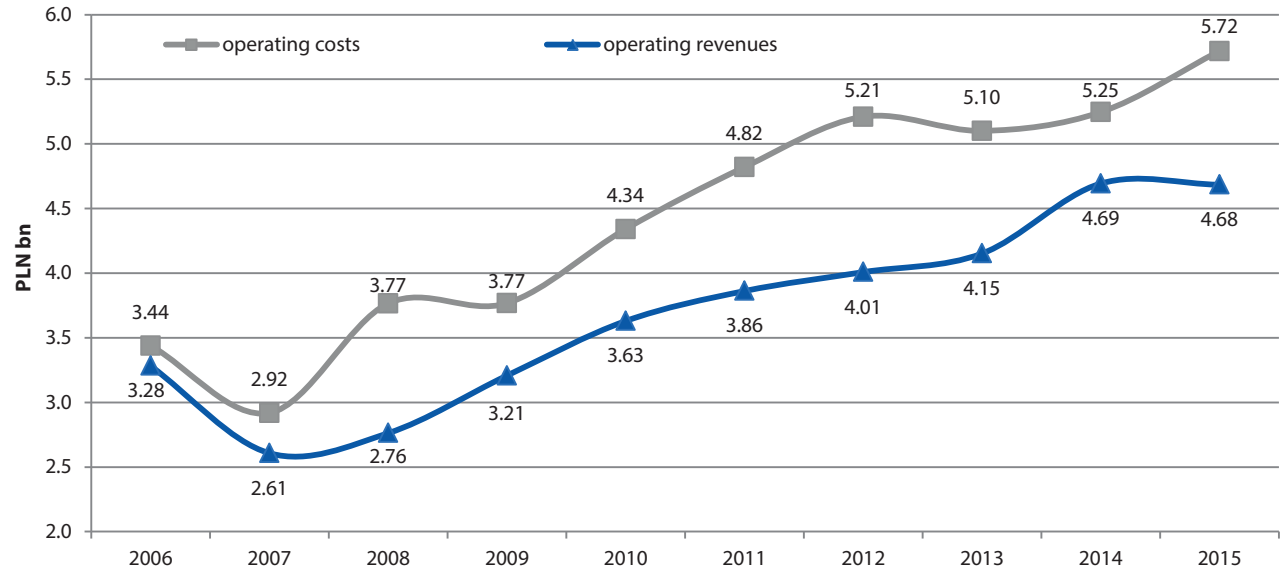
At the end of 2015 the number of employees was 40 596, which was 2.7% more than in 2014 and the largest number since 2011. This primarily resulted from an increase in employment by the main infrastructure manager and by new managers starting their activities. It was the second consecutive year which saw a 20% decrease in the number of employees in KP Kotlarnia Linie Kolejowe. It was also the second consecutive year that the number of employees of PKP SKM and Infra SILESIA decreased. The main infrastructure manager's share in the general workforce was 96.4%, which is a decrease from 96.8% a year before. WKD and UBB managers were not included in the list.

Fig. 68: Employment in infrastructure managers in the years 2006-2015



In 2015 the operating costs increased by 9% from the level of PLN 5.25 bn to PLN 5.72 bn, reaching a new record high. PKP PLK's costs rose by 7.5% and PKP SKM's by 11%. Revenue showed a slight decrease of 0.2%, which was due to a drop in the subsidy level of 6%. Revenue calculated without the subsidy increased by 7.7%. The negative difference between revenue and operating costs significantly increased from PLN 0.55 bn to PLN 1.03 bn reaching the highest level since 2012.

Fig. 69: The business performance of infrastructure managers (in PLN bn) in the years 2006-2015



4. Public transport

4.1. Sustainable development plans for public transport

In 2015 organisers of public transport were finalising work on preparing and adopting sustainable development plans for public transport. In that period, from among the organisers performing tasks in the field of rail transport, transport plans were adopted by the regional governments of the Wielkopolskie and Łódzkie Provinces and the City of Warsaw. This led to the completion of the process of developing transport plans at the provincial level in 2015. In addition, two provinces – Warmińsko-Mazurskie and Lubuskie – updated their plans, which came into force in 2013 and 2014 respectively. As part of the obligation arising from Article 13(1)(6a) of the Rail Transport Act, the President of UTK expressed his opinion on the draft plans and updates.

Transport plans are of particular significance for shaping the transport package in public transport. The basic objectives of preparing these studies specified therein primarily include improving service quality, integrating various transport branches, improving transport accessibility and ensuring the passenger transport safety.

The process of developing transport plans at the province level was completed in 2015.

The way in which the Public Transport Act of 16 December 2010 (consolidated text, Journal of Laws of 2015, item 1440, as amended), further referred to as "the Public Transport Act" and the Regulation of the Minister of Infrastructure on the detailed scope of the sustainable development plan for public transport specified the subject-matter area of the plan enabled the organisers to adopt solutions at various levels of detail. For the public utility transport network, solutions allowing the gradual development of the provincial transport network and also alternative solutions and those that provide a fixed transport network without alternative options were used. The following methods of marking the transport network were used in individual regions:

- Wielkopolskie – transport lines without alternative options were presented;
- Łódzkie – the following variants of servicing the transport network were adopted:
  - 1.1 basic option – the connection of districts reached by the consolidated railway network with the main provincial centre and possible direct connections between districts;
  - additional option I – the basic option was extended with sections reaching the provincial border along with the possibility of extending them. The implementation of this option was determined as depending on the conclusion of appropriate agreements with relevant provinces and having sufficient financial resources.
  - additional option II – specifying the lines on which it was possible to launch additional provincial public road transport after meeting such conditions as: the discontinuation of transport services provision by private undertakings, no possibility of or economic justification for rail transport, sufficient financial resources of the province.
- City of Warsaw – specifying the transport lines assuming continued servicing of the network in its present form, pre-

senting possible new sections and the target range of the transport network that can be achieved after the interested local governments provide the necessary co-financing for transport services or a relevant agreement with the organiser of provincial rail transport.

The varied approach was also adopted for determining the standards of service quality. Specifying the expected number of connections on a given transport line was of particular importance for ensuring the stability of the transport package. The solutions introduced involved specifying the minimum number of connection pairs on a given section of the transport line depending on three scenarios of assumed resident mobility (reduced, realistic or increased) or specifying the base frequency of connections per hour in each direction. Due to the lack of a clear obligation to specify the number or frequency of connections a case in which solutions in this respect were not adopted was also identified.

Pursuant to Article 11 (2) of the Public Transport Act, the sustainable development plan for public transport can be subject to updates depending on justified needs. The updates in individual provinces introduced in 2015 were due to:

- Warmińsko-Mazurskie – the construction of the Regional Airport in Szymany along with a railway connection between the airport and Olsztyn, which started in 2014. As part of these works, a revitalisation and upgrading of the current railway lines making up the Olsztyn – Szymany connection was performed and 1.6 km of railway lines were added from the Szymany station to the terminal. In connection with expanding the railway network within the province, the sustainable development plan for public transport updated the planned public utility transport lines;

- Lubuskie – specifying the changes to the rules of organising bus connections, which was not subject to an opinion by the President of UTK. In addition, the adopted updating amendment added information about the assumptions of the National Railway Programme for 2014-2023.

4.2. Public service contract in passenger rail transport

The preparation by regional governments of provincial transport plans is connected with important consequences for concluding public service contracts. In compliance with the Rail Transport Act they are concluded on the basis of and within the scope specified in the currently applicable plans. At the same time, in compliance with the Public Transport Act, until the transport plan is adopted, but no longer than in the period of 3 years from the Act's entering into force, the public service contract can be concluded for a period no longer than 3 years.

Compared to the previous year, in 2015 the number of public service contracts concluded with the obligation to submit the draft contract to the President of UTK for an opinion on their compliance with the applicable transport plan increased considerably. This task was implemented by the following provinces: Warmińsko-Mazurskie (3 draft contracts), Dolnośląskie, Pomorskie (4 draft contracts), Lubuskie, Opolskie, Podkarpackie, Świętokrzyskie, Śląskie (2 draft contracts), Mazowieckie (2 draft contracts), Lubelskie, Łódzkie (3 draft contracts), Małopolskie (3 draft contracts). In 2015 a total of 35 projects were evaluated, while in 2014 their number reached 11.

In that period operators provided services on the basis of contracts concluded with individual organisers for a term of one year, two years, three years or longer. Domestic and international transport services were provided on the basis of two annual contracts concluded by the minister in charge of transport with PKP Intercity, covering inter-provincial and international traffic, as well as on the basis of an annual contract concluded with Przewozy Regionalne, covering only international passenger traffic.

Contracts between organisers and undertakings were usually concluded for a one year term. However, compared to 2014, in 2015 there were more multi-year contracts, including contracts which obligated the parties to conclude one-year contracts (e.g. in the Dolnośląskie Province). In many cases multi-year contracts covered transport services between provinces provided on the basis of agreements between public transport organisers and transport services provided using upgraded rolling stock purchased using EU funds. In 2015 the practice of concluding contracts for terms shorter than an annual timetable was also less common.

On the basis of contracts submitted to the President of UTK, it can be concluded that in 2015 most provinces entrusted the operation of transport lines within a given province to one operator as part of one order. A particular exception to this rule was in the Pomorskie Province, where two railway undertakings were entrusted with providing transport services as part of several separate tasks. For undertakings being an internal entity in relation to the organiser, the tasks were divided between that undertaking and Przewozy Regionalne. Exceptions include, i.a. Mazowieckie Province and the City of Warsaw, where transport services were conducted only by internal entities. In the Małopolskie Province, the fact that the services are provided by three undertakings is also notable.

PART II
A REVIEW OF RAIL TRAFFIC SAFETY IN 2015

Introduction

This part of the report provides an overview of safety in railway transport in 2015, indicating the critical areas, specifying their probable causes and identifying corrective actions to be focused on in the coming years. Evaluating rail transport safety also aligns with the fulfilment of the statutory role of the President of UTK with regard to monitoring, promoting and, where applicable, enforcing and developing a legal framework in terms of safety, along with a national safety principles system.

This part of the report has been divided into several key chapters, which contain an overview of the following topics:

- considerations underlying the rail system's safety;
- rail event analysis;
- events involving unauthorised persons on railway premises;
- safety at level crossings;
- vandalism in the railway network;
- the safety of transport of dangerous goods;
- the assessment of the technical state of railway infrastructure;
- the assessment of the technical state of railway vehicles;
- the President of UTK's additional actions in the field of improving rail traffic safety and promoting the development of the culture of safety.

This report was elaborated largely on the basis of an analysis of statistical data accumulated in the Rail Event Register kept by the President of UTK. Rail companies are required to supply these data under applicable laws. The statistical data contained in this report are valid as at 30 June 2016.

The following data provide an overview of the level of rail traffic safety achieved in 2015:

- a decrease in the number of railway accidents from 704 in 2013 to 671 in 2014 and 638 in 2015;
- a decrease in the accident index (the number of accidents as compared to operational performance): from 3.79 in 2011 to 2.92 in 2015;
- maintaining the failure rate in the transport of dangerous goods (the number of accidents as compared to the volume of transport of dangerous goods) at a level similar to that observed in the previous years: 1.16 in 2013, 1.29 in 2014 and 1.13 in 2015;
- a decrease in the number of accidents at level crossings from 255 in 2013 to 216 in 2014 to 208 in 2015, with an increase in the number of casualties of such accidents as compared to 2014 (the number of fatalities increased from 43 to 55 and the number of severe injuries increased from 25 to 41);
- the number of casualties at level crossings remains at the same level as in 2013, when 52 people died and 37 suffered severe injuries at level crossings;
- an increase in the number of incidents, which was the largest in events accidents caused by poorly maintained or damaged wagons (from 126 in 2014 to 281 in 2015), which might be due to the President of UTK's actions to enforce the correct classification of railway events.

In addition to statistical data from the Rail Event Register, this report was prepared with a number of additional data sources which resulted from the implementation of specific processes in the field of rail sector safety falling within the scope of the President of UTK's authority. Some parts of this report use data from external entities, including in particular the Railroad Guard Headquarters, to provide a full picture of some trends and put them in a broader perspective.

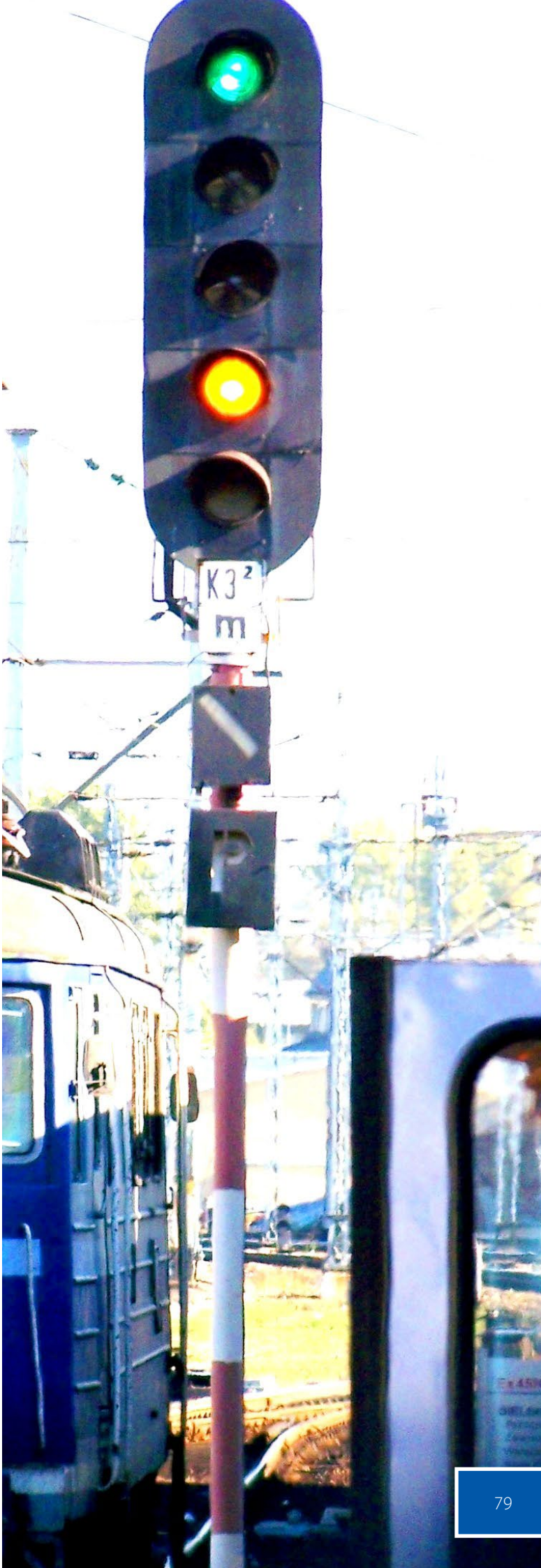
This part of the report covers data and information on service operations on a line that is jointly operated by thirteen infrastructure managers listed below, both required to provide access to the infrastructure to railway undertakings and managers of separated from generally accessible infrastructure:

- PKP Polskie Linie Kolejowe S.A. (PKP PLK S.A.);
- PKP Szybka Kolej Miejska w Trójmieście sp. z o.o.;
- PKP Linia Hutnicza Szerokotorowa sp. z o.o.;
- Infra SILESIA S.A.;
- CTL Maczki-Bór S.A.;
- Jastrzębska Spółka Kolejowa sp. z o.o.;
- Kopalnia Piasku Kotlarnia – Linie kolejowe sp. z o.o.;
- PMT Linie Kolejowe sp. z o.o.;
- Euroterminal Sławków sp. z o.o.;
- Cargotor sp. z o.o.;
- Lower Silesian Roads and Rail Service in Wrocław;
- Warszawska Kolej Dojazdowa sp. z o.o.;

- Pomorska Kolej Metropolitalna S.A.

This information on entities covered by the report is particularly important, as other entities responsible for monitoring railway safety in Poland provide data that, in most cases, involve primarily the main infrastructure manager (PKP PLK S.A.) or the infrastructure networks of only those managers who are required to grant access to their infrastructure.

Recognising the broad scope of entities that this report covers, for some areas with the limited availability of verifying 2015 data due to the lack of comparative data, the President of UTK presented information that includes only selected topics to ensure the reliability of the conclusions contained in this report.



5. Considerations underlying the rail system's safety

Pursuant to national and EU law, all entities operating within a railway system in a given Member State are fully responsible for the safe operation of that system, each in respect of its scope of activities, including the area of interaction between those entities.

This responsibility particularly applies to infrastructure managers and railway undertakings, but also to all their suppliers and subcontractors providing services to them, including, in particular, producers and suppliers of components and devices, and entities involved in the maintenance cycle of railway vehicles.

Due to the broad scope of entities operating in the rail sector, performing various functions within the system, there is a huge need for effective and reliable information exchange between those entities on safety-critical matters and the joint implementation of measures that allow the optimal control of risks connected with the operation of the rail transport sector.

In this context, the role of relevant public authorities is to provide an appropriate legal framework for the operation of companies in the rail transport sector, including, in particular, solutions aimed at managing the safety of operations by individual entities independently (safety management systems and maintenance management systems), enforcing constant assessment of operational risk and, as a result, implementing the appropriate control measures.

Furthermore, in compliance with the applicable requirements, public authorities are obliged to evaluate the ability of individual entities to comply with the legal regulations and safe operation in the rail transport sector before such entities enter the market (appropriate certification and authorisation processes and other processes rooted in the national legal system and involving the issue of other documents confirming compliance with specific conditions) and also to perform constant supervision of the competences of such entities with regard to the safe management of operations in daily operations.

It should be emphasised that given the increasingly liberal conditions on the rail sector, which involves a number of various entities, public authorities are not, nor will ever be,

In compliance with the applicable requirements, public authorities are obliged to evaluate the ability of individual entities to comply with the legal regulations and safe operation in the rail transport sector before such entities enter the market.

the appropriate body to assume responsibility for the safety of both individual entities and the rail sector at large. This stems from the fact that the risks within the system are generated by individual entities, and thus can be effectively managed and identified by those entities alone, by means of uniform and compulsory tools, such as a common safety method in terms of risk assessment (Commission Regulation No 402/2013) and a common safety method regarding monitoring (Commission Regulation No 1078/2012).

The approach to the issue of responsibility indicated (in this section of the report) is the direct result of implementing in the national legal system the requirements of EU regulations aimed at promoting a systemic approach to safety. According to this concept every entity is not only obliged to comply with the relevant regulations, but also to prepare solutions enabling it to actively identify risks and implement preventive measures optimal in a given situation. This system departs from the approach in which most safety-critical issues were regulated at the level of national regulations and embraces solutions which attach a key role to the active and responsible management of safety by individual entities using appropriate management systems. The role of State institutions performing supervisory activities is subject to a similar change. In this aspect, the burden is shifted from detailed inspections aimed at verifying compliance with legal or technical requirements to evaluating the ability of entities to comprehensively and responsibly manage the safety of their activities.

6. Rail events analysis

Pursuant to domestic law a railway event means serious accidents, accidents and incidents on railway lines.

Statistical data on rail system safety is collected by various institutions at the national and European levels. These institutions use slightly different procedures in this area, which is directly attributable to differences in applicable laws. This leads to different types of annual data being used by individual railway safety institutions. These differences result primarily from:

- The geographical coverage of the data (parts of the system or the entire system);
- Different rules for adjusting historical data.

The divergence between the data collected by UTK and the Polish National Investigation Body (PKBWK) is a clear example of the legally sanctioned differences with regard to the data coverage. **The President of UTK is required to process and report information on events within the public rail system and the network separated from the generally accessible infrastructure. The PKBWK processes and reports data only on events within the public rail system (excluding the network separated from the generally accessible infrastructure).**

In UTK President's view, these differences are irrelevant, as the two institutions have different functions and responsibilities, and they collect and process data for the purpose of monitoring trends in the system safety. It is important, however, to promote public awareness about the differences in which individual institutions collect and process data, and how and for what purposes they do this.

This review of rail traffic safety for 2015, in the part based on statistical data, makes use of accident data that the President of UTK continuously receives over the year from rail sector companies and that are entered in the Rail Event Register. These data were reviewed and revised as part of the formal safety reporting procedure which is binding on rail sector companies under the applicable law.

6.1. Rail accidents

Statistical data accumulated in the Rail Event Register show that rail **system safety remained at a similar level as in the previous year**, as reflected in fewer accidents recorded with higher operational performance in 2015 (by approx. 0.5% as compared to the previous year).

Compared to 2014, there were 4.9% fewer accidents and serious accidents within the national public rail network and the network separated from the generally accessible infrastructure

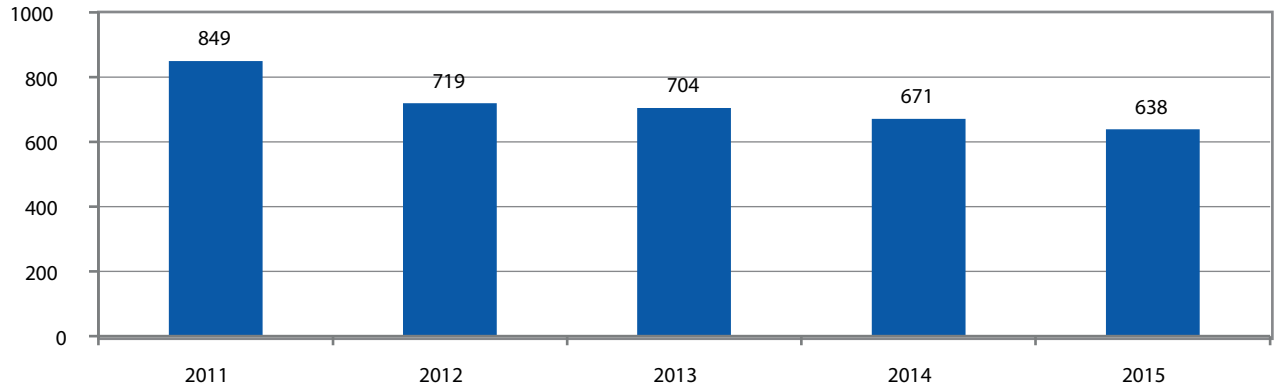
in 2015. The total number of 671 accidents in 2014 dropped to 638 accidents in 2015 with a noticeable downward trend over the last 5 years, which is shown in the following table and in the accompanying figure. The number of accidents on railway lines in Poland from 2011 dropped by 24.9%.

Tab. 15: An overview of rail accidents in the years 2011-2015

No.	Events	2011	2012	2013	2014	2015
1.	Accidents and serious accidents	849	719	704	671	638
	Change	-	-15.3%	-2.1%	-4.7%	-4.9%

Source: prepared by UTK using the Rail Event Register data

Fig. 70: An overview of rail accidents in the years 2011-2015



Source: prepared by UTK using the Rail Event Register data

The rail accident classification used by the President of UTK for all incidents covers in particular:

- collisions;
- derailments;
- level crossing events;
- events involving people and caused by a rail vehicle in motion;
- fire on a rail vehicle.

Tab. 16: The types of accidents in public and networks separated from the generally accessible infrastructure in the years 2011-2015

No.	Type of event	2011		2012		2013		2014		2015	
		A [1]	SA [2]	A	SA	A	SA	A	SA	A	SA
1.	Collisions	27	0	41	1	55	0	56	1	53	0
2.	Derailments	104	1	112	0	136	0	134	0	122	0
3.	Level crossing events	226	27	272	0	254	1	216	0	206	2
4.	Events involving people and caused by a rail vehicle in motion	324	53	286	0	253	0	254	0	247	0
5.	Fire on a rail vehicle	4	0	1	0	2	0	3	0	0	0
6.	Other	82	1	6	0	3	0	7	0	8	0
7.	Total	849		719		704		671		638	

[1] A – accident, SA – serious accident

[2] The disproportion in the number of serious accidents in 2011, as compared to subsequent years, is caused by some of the inquiry commissions' misinterpreting the definition of "a serious accident" as used before 2012.

Source: prepared by UTK using the Rail Event Register data

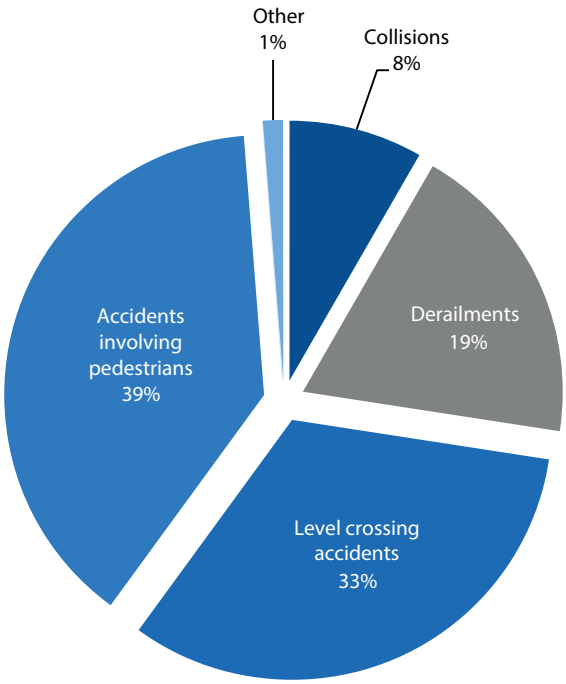
According to the presented data, most rail network accidents in 2015 were accidents involving people and caused by a rail vehicle in motion (38.7%), with as much as 95.1% of these being trespassing accidents. The second most numerous group is made up of accidents at level crossings (32.6%). The primary causes of these events include poor safety culture and the lack of basic awareness among third parties (non-rail related) of how the rail system works. It is not only rail sector companies that are responsible for minimising the risks in this area.

In 2015 about one fourth of accidents were caused by internal systemic factors, while nearly three fourths were events overlapping between the rail system and third parties.

In 2015 two serious accidents happened at level crossings: the accident of 3 June 2015 at the category D level crossing located on the path Kornatowo – Grudziądz Mniszek of railway line No 207 Toruń Wschodni – Malbork and the accident of 11 July 2015 at the category A level crossing located on the path Gałkówek – Koluszki of railway line No 17 Łódź Fabryczna – Koluszki.

These accidents, along with other accidents at level crossings and pedestrian level crossings and accidents involving people caused by rolling stock in motion are discussed in greater detail further in this report.

Fig. 71: Rail network events in 2015 by type of event



Source: prepared by UTK using the Rail Event Register data

Collisions and derailments, which accounted for approx. 27.3% of rail accidents in 2015, are usually caused by the broadly defined rail system, including technology malfunctions, ineffective procedures or the human factor (on the part of railway undertakings and infrastructure managers). It should be noted that accidents caused by a rail vehicle colliding with a road vehicle or the reverse outside level crossings on a station or rail path, which usually occur as a result of a road vehicle entering the rolling stock's gauge, are also classified as collisions. In 2015 there were 7 such events, which makes up approx. 13% of all collisions. The potential to reduce these two types of events lies directly with railway sector entities – infrastructure managers and railway undertakings. Equally important, though, are also designers, manufacturers, and suppliers, as well as construction and maintenance companies.

6.2. Accidents within the rail system and accidents involving the third-party

As already indicated, during the analysis of statistical data showing the rail system safety level, it should be borne in mind that there is a group of events caused solely by the rail system and a group of events largely, or even completely, dependent on factors and entities external to the rail system. In this perspective, all **events within the rail system** can be classified under one of the two following groups:

- accidents within the rail system;
- accidents resulting from the interaction of the rail system and third parties.

Notably, about a quarter of all accidents in 2015 were caused by internal systemic factors, while the remaining events overlapped between the rail system and third parties. Events **within the rail system** occurred due to, i.a., the following causes (ordered by number of events):

- a damaged or poorly maintained superstructure or engineering structures;
- a rail vehicle running into another rail vehicle or other obstacle;
- a train passing a "Stop" or "No Shunting" signal;
- a train being dispatched to an inappropriately laid out and unprotected signalling block section;
- a poorly maintained wagon;
- a prematurely cleared signalling block section and a shift of the switch under a train;
- poorly maintained rail vehicle with traction;
- cargo-related irregularities.

These events resulted in no fatalities, with three serious injuries.

Accidents involving third parties and in principle **not rail-related**, are events:

- involving unauthorised persons on railway premises (a trespasser illegally entering railway property);
- at level crossings;
- involving passengers (train hopping and jumping out of the train);
- involving road vehicles outside of level crossings at stations and rail paths;
- involving malicious mischief to the rail system.

A total of 466 such accidents, with 228 fatalities and 93 serious injuries, were reported in 2015. These events are generally not related to the rail system and often the rail system alone has a limited ability to effectively counteract such events. Regrettably, statistics on the events in question lead the public to believe that the bulk of blame is on rail traffic, although the majority of these events are caused entirely by third parties. The events in question make up about **70% of all accidents.**

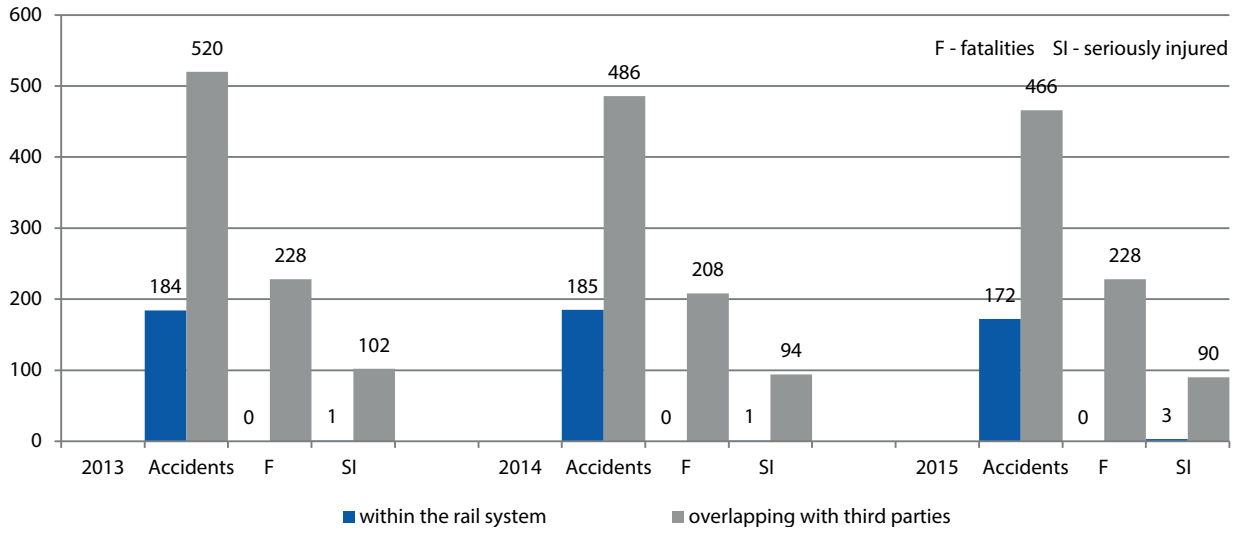
The data in above brake down, which are also summarised in the table below and in graphic form in the accompanying figure, clearly indicate that an important factor in the events is represented by external entities, which caused most of the events.

Tab. 17: Rail-related and non-rail related accidents in 2013-2015 and their consequences

No.	Accidents	Number of events			Fatalities			Serious injuries		
		2013	2014	2015	2013	2014	2015	2013	2014	2015
1.	Within the rail system	184	185	172	0	0	0	1	1	3
2.	Resulting from the interaction of the rail system and third parties	520	486	466	228	208	228	102	94	90
3.	Total	704	671	638	228	208	228	103	95	93

Source: prepared by UTK using the Rail Event Register data

Fig. 72: Rail-related and non-rail related events and their consequences in 2013-2015



Source: prepared by UTK using the Rail Event Register data

As shown by the above, the number of accidents within the rail system dropped to 13 events and the number of fatalities and serious injuries within the rail system in 2015 remained similar to the year before (no fatalities, an increase from 1 to 3 serious injuries).

6.3. Accident index

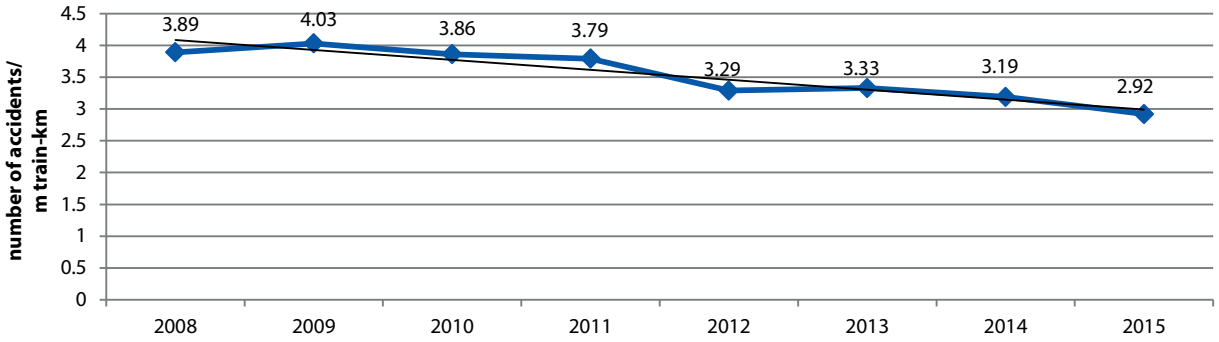
For a clearer picture of safety data and trends, the President of UTK uses the available data to derive, on an annual basis, the so-called accident index by drawing a relationship between the number of rail network accidents in a given year and train-km travelled. As mentioned in the beginning of this chapter, the number of accidents in 2014 decreased, while the operational performance increased. This makes the 2015 accident index lower by 0.27 than the 2014 index, which means that the level of safety is increasing. It should be emphasised that the index value for 2015 is the lowest of the last 8 years. The following table presents changes to the index from 2008. The graphical representation of data is illustrated in the next figure, which also features a trendline.

Tab. 18: The accident index in the years 2008-2015

No.	Year	Operational performance [m train kilometres]	Number of accidents	Index
1.	2008	229.75	894	3.89
2.	2009	209.76	845	4.03
3.	2010	220.37	851	3.86
4.	2011	223.83	849	3.79
5.	2012	218.47	719	3.29
6.	2013	211.45	704	3.33
7.	2014	210.31	671	3.19
8.	2015	218.20	638	2.92

Source: prepared by UTK using the Rail Event Register data and reports of railway undertakings

Fig. 73: The accident index in the years 2008-2015



Source: prepared by UTK using the Rail Event Register data and reports of railway undertakings

6.4. Rail accident casualties

The number of casualties in accidents within the general and dedicated network of the rail system was 321, of which 228 were fatalities and 93 serious injuries. A detailed classification of individual types of accidents along with the changes in the period 2013-2015 is presented in the table below.

Tab. 19: The number of accidents in public and dedicated networks in the years 2013-2015

No.	Type of accident	Fatalities			Serious injuries		
		2013	2014	2015	2013	2014	2015
1.	Collisions	11)	11)	0	1	32)	3
	change	-	0%	-100.0%	-	+200.0%	0%
2.	Derailments	0	0	0	0	0	0
	change	-	0%	0%	-	0%	0%
3.	Level crossing accidents	52	43	55	37	25	41
	change	-	-17.3%	+27.9%	-	-32.4%	+64%
4.	Accidents involving people and caused by a rail vehicle in motion	175	164	173	64	67	49
	change	-11.6%	-6.3%	+5.5%	-	+4.7%	-26.9%
5.	Fire on a rail vehicle	0	0	0	0	0	0
	change	-	-	-	-	-	-
6.	Other	0	0	0	1	0	0
	change	-	-	-	-	-	-
7.	**Total**	**228**	**208**	**228**	**103**	**95**	**93**
	change	**-**	**-8.8%**	**+9.6%**	**-**	**-7.8%**	**-2.1%**

1) as a result of colliding with a road vehicle outside level crossings.
2) including two serious injuries as a result of colliding with a road vehicle outside level crossings.

Source: prepared by UTK using the Rail Event Register data

The number of fatalities and serious injuries is directly correlated with the number of events of each type. **Unauthorised persons** on railway premises (168 fatalities, which makes up 73.7% of all fatalities) and **level crossing users** (53 fatalities, which makes up **23.2%** of all fatalities) accounted for the large bulk of **accident fatalities** in 2013. A similar pattern applies to serious injuries. The most numerous group (44 people, or **47.3%** of all serious injuries) were unauthorised persons on railway premises. The second-largest group of serious injuries were level crossing and pedestrian **level crossing users** (38 serious injuries, or **40.9%** of all serious injuries).

The data on individual groups of casualties contained in the following table indicate that in the group of level crossing and pedestrian level crossing users there was a 39.5% increase in the number of fatalities and in the group of unauthorised persons on railway premises there was a 3.7% increase. Detailed figures on rail accidents in 2013-2015 are illustrated by the following tables and the percentage of each group is shown in the accompanying figures.

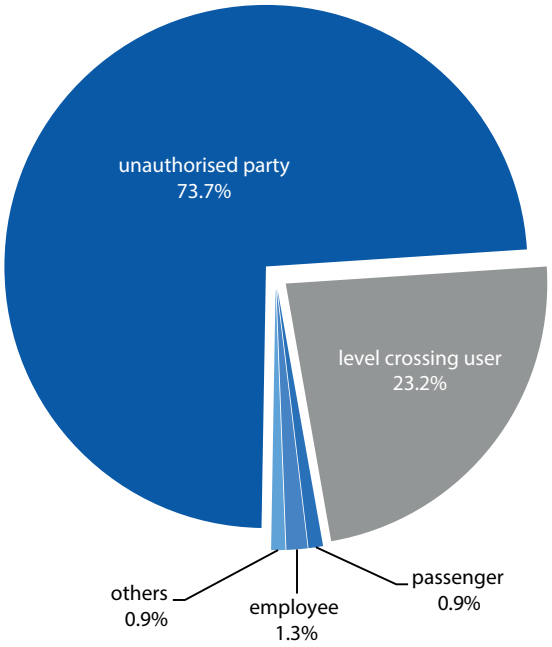
The table shown below presents the number of casualties as divided into categories. The accumulated data show that most casualties were trespassing accidents. The number of casualties remained similar as compared to the previous year. A change was recorded in level crossing events (an increase of **39.5%** in fatalities and **58.3%** in serious injuries).

Tab. 20: Accident fatalities in the years 2013-2015

No.	Category	Fatalities			Serious injuries		
		2013	2014	2015	2013	2014	2015
1.	Passenger	6	2	2	8	6	6
	change	-	-66.7%	0%	-	-25.0%	0%
2.	Employee or subcontractor	2	1	3	4	4	4
	change	-	-50.0	+200.0%	-	0%	0%
3.	Level crossing user	52	38	53	35	24	38
	change	-	-26.9%	+39.5%	-	-31.4%	+58.3%
4.	Unauthorised party	166	162	168	56	57	44
	change	-	-2.4%	+3.7%	-	+1.8%	-22.8%
5.	Other	2	5	2	0	4	1
	change	-	+150.0%	-60.0%	-	-	-75.0%
6.	**Total**	**228**	**208**	**228**	**103**	**95**	**93**
	change	**-**	**-8.8%**	**+9.6%**	**-**	**-7.8%**	**-2.1%**

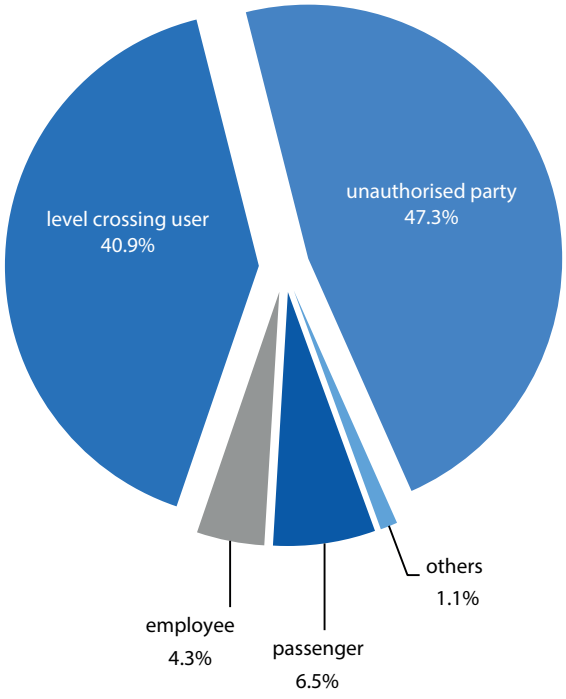
Source: prepared by UTK using the Rail Event Register data

Fig. 74: The proportion of individual types of fatalities in rail accidents in 2015



Source: prepared by UTK using the Rail Event Register data

Fig. 75: The proportion of individual types of serious injuries in rail accidents in 2015



Source: prepared by UTK using the Rail Event Register data

6.5. Incidents

Incidents are an important group of events connected with train traffic that requires constant monitoring. As defined in the Rail Transport Act, an incident is every event other than an accident or serious accident connected with train traffic and affecting its safety. **Incidents, in contrast to accidents and serious accidents, have no negative impact such as fatalities, serious injuries or substantial damage to property, but they indicate sources of threats.**

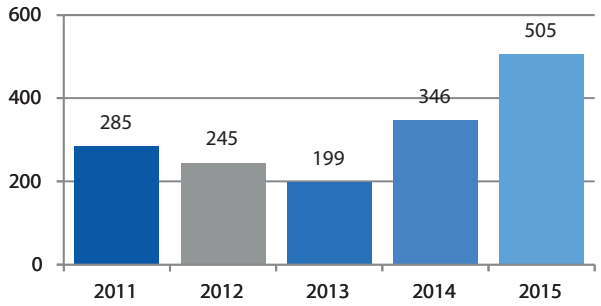
Three fourths of incidents are caused by the rail system. This group of events does not cover events at level crossings and trespassing events, which are only classified as accidents.

Tab. 21: An overview of incidents on railway lines in the years 2011-2015

No.	Event	2011	2012	2013	2014	2015
1.	Incidents	285	245	199	346	505
	change	-	-14.0%	-18.8%	+73.9%	+46.0%

Source: prepared by UTK using the Rail Event Register data

Fig. 76: An overview of incidents on railway lines in the years 2011-2015



Source: prepared by UTK using the Rail Event Register data

At the same time, it should be stressed that since mid-2013 the President of UTK had conducted actions aimed at verifying the reliability of event classification by individual rail sector companies. Supervisory activities in the field connected with the safety management systems of railway undertakings and infrastructure managers showed that there is a possibility of incorrectly classifying some incidents and accidents, which could result in their omission from the official statistics submitted to the President of UTK or the President of the Polish National Investigation Body (PKBWK). As a result of the President of UTK's measures of enforcing the correct classification of events, an increase from 2014 was observed in the number of reported incidents, in particular regarding incidents connected with the technical condition of the rolling stock – in 2015 these were 55.6% of all registered incidents.

6.6. Analysis of the rail events causes

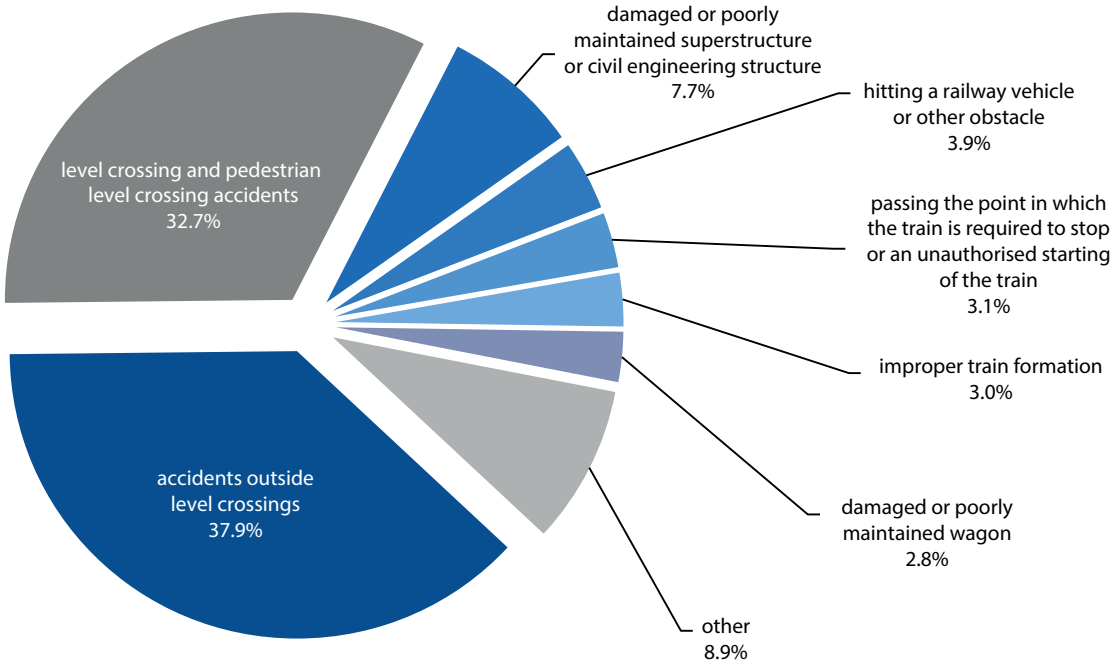
In 2015 the nature and direct cause of an event was established using a category determined by an inquiry commission and verified by PKBWK, in line with the list included in Appendix 6 to the Regulation of the Minister of Transport of 30 April 2007 on serious accidents, accidents and incidents on railway lines. The event categories are identified according to an XYY pattern, where X defines the seriousness of the event (A is a serious accident, B is an accident, and C is an incident), while YY is a numeric category related to the cause classification.

The categories of serious accidents and accidents that occurred in last two years, according to the Rail Event Register data, is presented in the tables below, accordingly, and broken down as required by the aforementioned Regulation.

In the analysed year 2015, most accidents were caused by a train hitting a trespasser (categories 23 and 34) and a rail vehicle colliding with a road vehicle or hitting a person at a level crossing or pedestrian level crossing (categories 18-22 and 31-33).

Accidents involving road vehicles and individuals at level crossings and pedestrian level crossings and outside accounted for 70.5% of all rail network accidents.

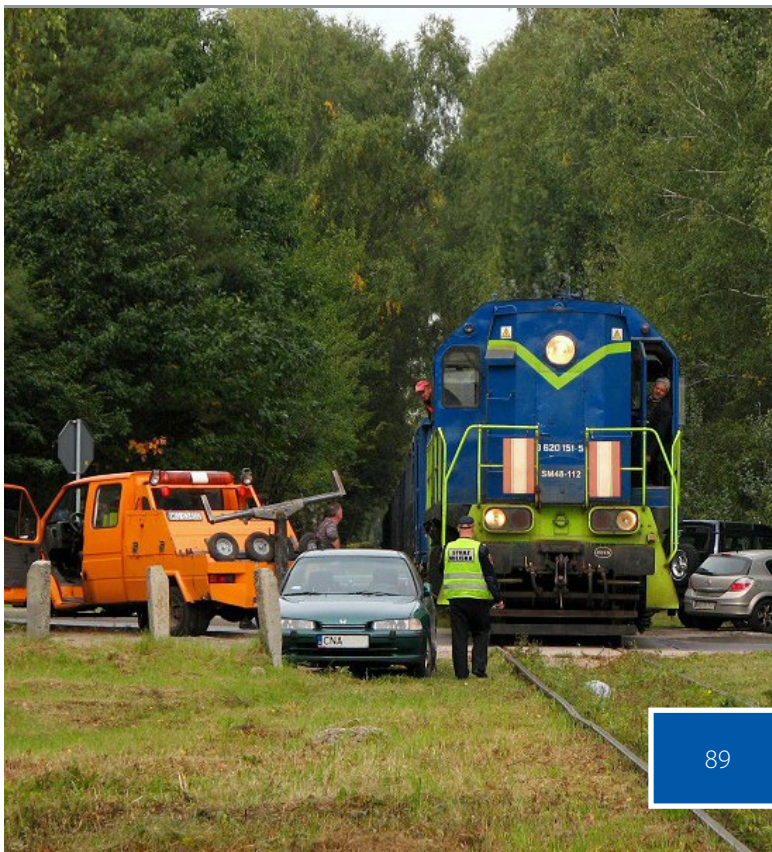
Fig. 77: Accidents in 2015 by categories



Source: prepared by UTK using the Rail Event Register data

In the remaining group of accidents, making up 29.5% the most numerous categories are accidents caused by damaged or poorly maintained railway superstructure or engineering structure (category 09), a rail vehicle colliding with another rail vehicle or any other obstacle (category 13) accidents caused by a train's failure to stop or its unauthorised movement (category 04), accidents caused by a train proceeding in an inappropriate block section or by mishandling rail traffic control devices (category 03) and accidents caused by a damaged or poorly maintained wagon (category 11).

The tables below present the number of events in each category in 2014-2015 and the change in the number of events in 2015 as compared to 2014. The accident categories listed above include the most frequent events. The selected event categories in which there were significant changes in the number of accidents, are presented in the tables below.



Tab. 22: Rail accident causes in 2014-2015 divided into numeric categories

No.	Numeric category		Cause description	2014	2015	Change 2014 /2015
1.	03		Dispatching or allowing a rail vehicle towards or into an inappropriately laid-out block section or mishandling rail traffic control devices	15	19	+26.7%
2.	04		Passing a „Stop" signal or any point in which the train is required to stop, or an unauthorised starting of the train	29	20	-31.0%
3.	05		Failing to exercise enough caution after a rail vehicle passes an automatic block signal indicating "Stop" or a doubtful signal after stopping before such signals.	0	1	-
4.	07		Manoeuvring in a way that puts the safety of rail traffic at risk	2	2	0%
5.	08		Rail vehicle runaway	5	6	+20.0%
6.	09		A damaged or poorly maintained superstructure, bridge or viaduct, including negligence such as the improper unloading of materials or superstructures, or leaving materials or equipment lying on the track or within the loading gauge.	61	49	-19.7%
7.	10		A damaged or poorly maintained rail vehicle with traction or a designated-purpose rail vehicle (including running into a structural component of a rail vehicle or a designated-purpose rail vehicle)	5	8	+60.0%
8.	11		A damaged or poorly maintained wagon (including running into a structural component of a wagon)	21	18	-14.3%
9.	12		Damaged or malfunctioning rail traffic control devices	2	2	0%
10.	13		A rail vehicle running into another rail vehicle or other obstacle (e.g. brake skid, luggage trolley, mail trolley, etc.)	15	25	+66.7%
11.	15		A prematurely cleared signalling block section and a shift of the switch under a train	11	11	0%
12.	16		Improper train formation	0	1	-
13.	17		Improper loading, unloading, load securing or any other cargo-related irregularities	13	7	-46.2%
14.	Collisions with road vehicles and accidents involving pedestrians at level crossings	18	A rail vehicle running into a road vehicle or vice versa at a level crossing with barriers (category A according to the crossing specification)	5	8	+60.0%
15.		19	A rail vehicle running into a road vehicle or vice versa at a half-length barrier automated level crossing (category B)	12	14	+16.7%
16.		20	A rail vehicle running into a road vehicle or vice versa at a level crossing with an automatic signalling system and without barriers (category C)	41	33	-19.5%
17.		21	A rail vehicle running into a road vehicle or vice versa at a level crossing without an automatic signalling system and without barriers (category D)	133	118	-11.3%
18.		22	A rail vehicle running into a road vehicle or vice versa at a private-use level crossing (category F)	0	2	-
19.		31	A rail vehicle running into a pedestrian at a guarded level crossing	4	10	+150.0%
20.		32	A rail vehicle running into a pedestrian at a guarded level crossing (category B, C)	7	9	+28.6%
21.		33	A rail vehicle running into a pedestrian at other level crossings	14	14	0%
22.			Total collisions with road vehicles and accidents involving pedestrians at level crossings	216	208	-3.7%
23.	23		A rail vehicle running into a road vehicle or vice versa outside level crossings, at stations, rail paths or siding connection tracks	11	7	-36.4%
24.	24		Train fire	3	0	-100.0%
25.	28		Natural disasters (e.g. flood, snowdrifts, ice dams, landslides)	2	1	-50.0%
26.	30		Malicious mischief, vandalism or reckless behaviour (e.g. throwing stones at trains, placing obstacles on tracks, vandalising power facilities, communication or traffic control devices or superstructures, or tampering with such devices)	3	1	-66.7%
27.	34		A rail vehicle running into a pedestrian outside level crossings at stations or rail paths	235	235	0%
28.	35		Events involving people and caused by a rail vehicle in motion (train hopping and falling out of a train or a rail vehicle, a fast approach or an abrupt braking of a rail vehicle)	19	12	-36.8%
29.	37		A train uncoupling without a wagon runaway	0	1	-
30.	38		Theft-related malfunctioning of rail traffic control buildings and devices or level crossings	0	2	-
31.	39		A rail vehicle using electricity from the traction network entering a free non-electrified track	0	1	-
32.	No category		The category has not been determined or the event cause is being investigated	3	1	-66.7%

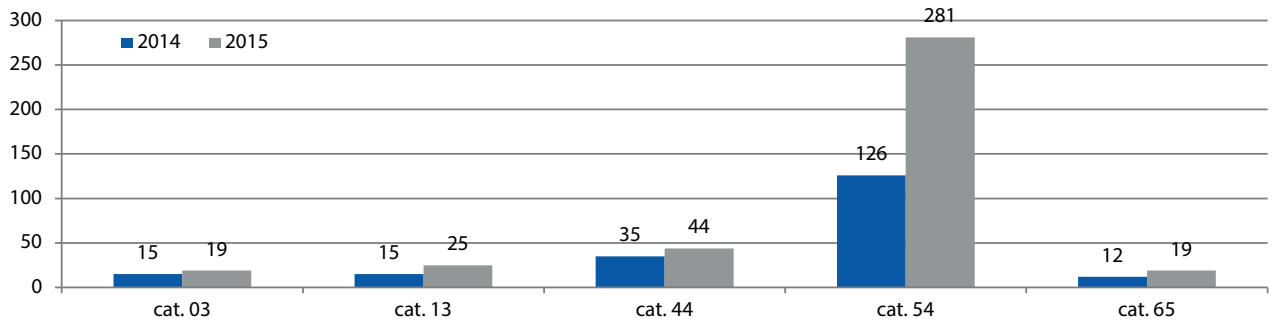
Source: prepared by UTK using the Rail Event Register data

Tab. 23: Rail incident causes in 2014-2015 divided into numeric categories

No.	Numeric category	Cause description	2014	2015	Change 2014/2015
1.	C41	Dispatching a rail vehicle into an occupied or closed track, or a track which runs opposite to the main track, or directing the rail vehicle in the wrong direction	2	1	-50.0%
2.	C42	Allowing a rail vehicle into a station or closed or occupied track	2	5	+150.0%
3.	C43	Dispatching, allowing or movement of a rail vehicle in an inappropriate block section or by mishandling devices	27	19	-29.6%
4.	C44	Passing a „Stop" signal or any point in which the train is required to stop, or an unauthorised starting of the train	35	44	+25.7%
5.	C45	Exceeding the maximum speed allowed	2	1	-50.0%
6.	C47	Rail vehicle runaway	1	2	+100%
7.	C48	A prematurely cleared signalling block section and a shift of the switch under a train;	0	2	-
8.	C49	Improper train formation	1	1	0.0%
9.	C50	Improper loading, unloading, load securing or any other cargo-related irregularities	7	5	-28.6%
10.	C51	A damaged superstructure, bridge or viaduct, including improper performance of work, e.g. improper unloading of materials, or leaving materials or equipment lying on the track or within the loading gauge.	19	15	-21.1%
11.	C52	Malfunctioning of rail control devices causing: – failure to cover with a "Stop" signal a line block occupied by a rail vehicle – setting a "Proceed" signal on a semaphore with an inappropriate block section, the malfunctioning of devices signalling if tracks and turnouts are unoccupied and the malfunctioning of turnout interlocking and line block devices	2	1	-50.0%
12.	C53	A damaged or poorly maintained rail vehicle with traction or a special-purpose rail vehicle which must be placed out of service	18	16	-11.1%
13.	C54	Damaged or poorly maintained wagon which must be placed out of service	126	281	+123.0%
14.	C55	Train fire	30	30	0.0%
15.	C56	Fire on a rail vehicle, excluding train fires	3	0	-100.0%
16.	C57	A building fire etc. within the railway area, a forest fire within the firebreak, a grain, grass or track fire within the railway area	1	0	-100.0%
17.	C59	Uncontrolled release of a hazardous material from a wagon or packaging requiring measures to eliminate the fire, chemical or biological hazards at a station or on the track	1	1	0.0%
18.	C60	A rail vehicle running into an obstacle (e.g. brake skid, luggage trolley, mail trolley etc.) without derailment or human asualties	25	21	-16.0%
19.	C62	Natural disasters (e.g. flood, snowdrifts, ice dams, hurricanes, landslides)	8	13	+62.5%
20.	C64	Malicious mischief, vandalism or reckless behaviour (e.g. throwing stones at trains, placing obstacles on tracks, vandalising power facilities, communication or traffic control devices or superstructures, or tampering with such devices)	21	21	0.0%
21.	C65	Events involving people and caused by a rail vehicle in motion (train hopping and falling out of a train or a rail vehicle, a fast approach or an abrupt braking of a rail vehicle), without human casualties	12	19	+58.3%
22.	C66	A road vehicle passing a closed barrier (half-length barrier) and damaging it or road signals	1	5	+400.0%
23.	C67	Theft-related malfunctioning of rail traffic control devices or rail vehicles	2	2	0.0%

Source: prepared by UTK using the Rail Event Register data

Fig. 78: The number of selected-category events compared with the upward trend in 2015



Source: prepared by UTK using the Rail Event Register data

In 2015 an increase was recorded in accidents caused in such categories as: dispatching, allowing or movement of a rail vehicle in an inappropriate block section or mishandling rail control devices (category 03, increase of 26.7%) and a rail vehicle running into another rail vehicle or any other obstacle (category 13, a 66.7% increase).

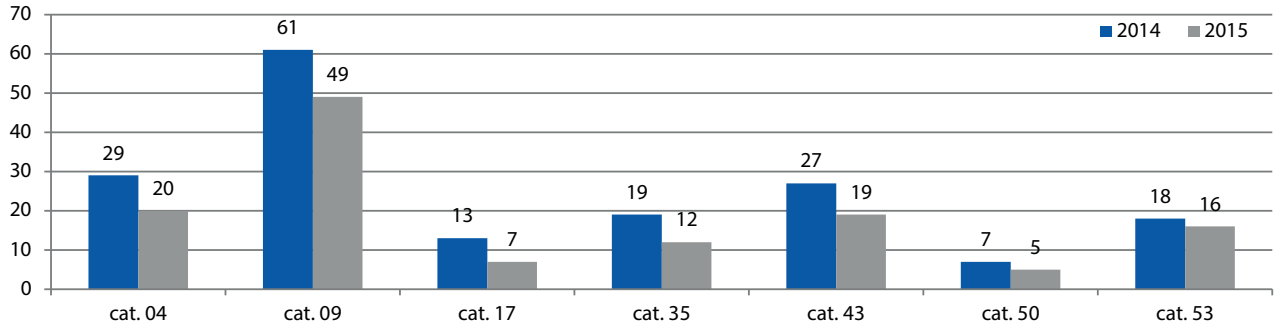
While the increase in the events in individual categories was not very high in the accident group, there was a considerable increase in the number of events in the incident group, i.a. caused by allowing a rail vehicle into a station or closed or occupied track (category 42, increase of 150.0%), a train passing a "Stop" signal or any point in which the train is required to stop, or an accident caused by an unauthorised starting of a train (category 44, increase of 25.7%), a damaged or poorly maintained wagon (category 54, increase of 123.0%), train hopping and falling out of a train, a fast approach or an abrupt braking of a rail vehicle, without human casualties (category 65, a 58.3% increase).

As mentioned before, the increase in the number of incidents connected with the technical condition of the rolling stock recorded in 2015, can result from the President of UTK's measures enforcing the correct classification of this type of events.

A decrease in the number of accidents in 2015 as compared to 2014 was recorded in the following categories: accidents caused by a train's failure to stop at a point in which it is required to stop (category 04, a 31.0% decrease), accidents caused by damaged or poorly maintained infrastructure (category 09, a 19.7% decrease), accidents caused by improper loading (category 17, a 46.2% decrease) and events involving people and caused by a rail vehicle in motion (category 35, a 36.8% decrease).

A drop in the number of incidents was observed i.a. in events caused by dispatching, allowing or movement of a rail vehicle in an inappropriate block section or by mishandling rail traffic control devices (category 43, a 29.6% decrease), caused by improper loading (category 50, a 28.6% decrease and events caused by damaged or poorly maintained rail vehicle with traction (category 53, an 11.1% decrease).

Fig. 79: The number of selected-category events compared with the downward trend in 2015



Source: prepared by UTK using the Rail Event Register data

It should be noted that the number of events (accidents and incidents), which occurred due to passing a "Stop" signal by a rail vehicle or not stopping in a place it was supposed to stop, or unauthorised starting of the train, despite a decrease in the number of accidents in this category still remains, in aggregate, at the previous year's level (64 events) and constitutes 5.6% of all rail events (accidents and incidents) which happened in the previous year.

Statistical data show that the number of events caused by poorly maintained or damaged railway infrastructure dropped in 2015 by 20%, as compared to 2014 although it still constituted a rather substantial proportion of all accidents and was the primary cause of events within the rail system, with a 25.8% share.

7. Events involving unauthorised persons on railway premises

The "unauthorised persons on railway premises" category comprises individuals who, against the law in force, enter railway premises despite being unauthorised to do so. These are primarily individuals who take shortcuts by crossing railway lines in random, unmarked locations or individuals who are suicidal.

Trespassing on railway lines is very dangerous and the illegal crossing statistics are alarming. As regards the number of suicides, it is important to note that certain events should be classified as suicides or accidents involving unauthorised persons on railway premises. As regards events involving "unauthorised persons on railway premises", the correct classification of a given event is not always obvious and straightforward. This often means that suicide-related events are also included in the primary category of events involving trespassing on railway tracks. Such events are classified in the appropriate category after the public prosecutor's office completes its work. Consequently, the number of events involving unauthorised persons on railway premises relative to the number of suicide-related events changes over the year.

As well as obviously being family tragedies, accidents involving pedestrians hit by trains disrupt the rail system and generate financial losses for rail enterprises and their clients. They also result in substantial disruptions to following the timetable as planned. Such disruptions usually last for several hours and effectively disorganise traffic. Some major delays might arise due to the need to use single-track operation or bypass the section which is being processed by the police. Occasionally, the Raliway Undertakings might need to arrange for buses to provided substitute transport for the passengers.

Illegal crossings

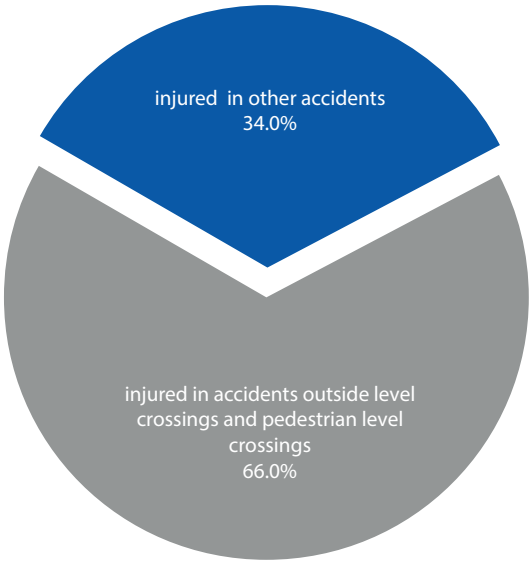
Source: https://www.youtube.com/watch?v=aldUTIPyTb4 and http://supernowosci24.pl/beda-przejscia-na-torach/

Since 2005, PKP PLK S.A., as the infrastructure manager, has been running a social campaign titled "Bezpieczny przejazd – szlaban na ryzyko" ("Safe crossing – a barrier against the risk"), the goal of which is to improve railway safety. The tragic statistics on accidents involving people hit by trains led to the campaign being extended in October 2012 to include measures counteracting rail trespassing. As part of the campaign, the "Zero tolerance for rail trespassers" effort was initiated. The scale of the problem of railway track trespassers is reflected in the statistical data presented by the Railroad Guard. In 2015, the RG covered 29 269 illegal crossings in its operations. Those were participated in by 27 600 RG officers who checked the documents of 3 653 people, admonishing 8 742 people and giving 3 150 tickets for unauthorised crossing of railway tracks.

7.1. Events involving pedestrians outside level crossings on stations and rail paths

The figures of fatalities and severe injuries are clearly correlated with the accidents involving people and caused by trains in motion. 2015 saw a total of 235 cases in which rail vehicles ran into pedestrians outside level crossings on stations or rail paths, which makes up about 36.8% of all registered events. These events resulted in 212 casualties, 169 of which were fatalities and 43 people sustained serious injuries. Railway line trespassers represent a substantial proportion of all casualties in railway track accidents. Data on individuals trespassing railway tracks are presented in the figure above and its accompanying figure.

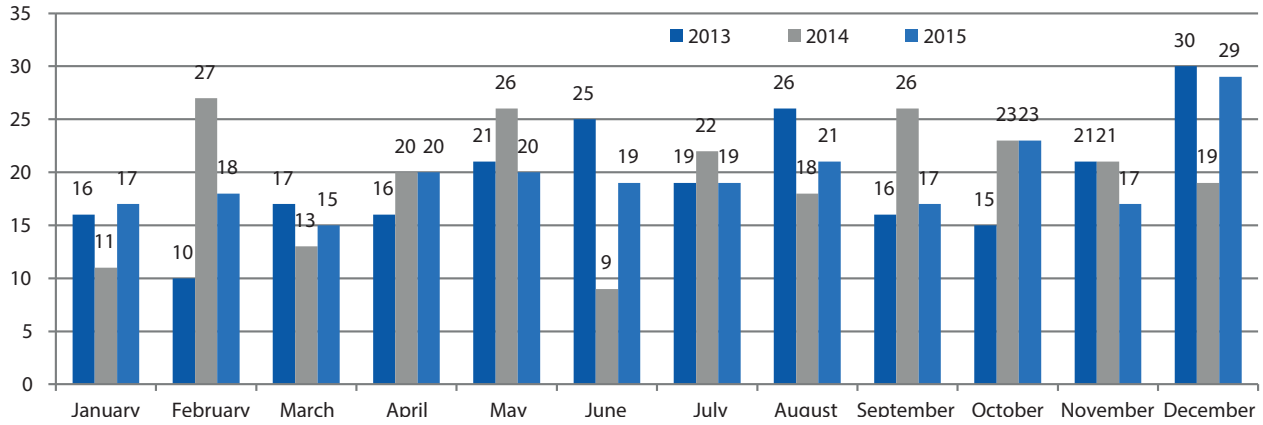
Fig. 80: The proportion of fatalities and severe injuries as a result of pedestrians crossing rail tracks outside level crossings on stations or rail paths in 2015



Source: prepared by UTK using the Rail Event Register data

In 2015, there were 235 events involving pedestrians who were hit by rail vehicles while crossing tracks on stations and tracks. This constitutes around 36.8% of all recorded accidents. Those events resulted in 212 casualties, including 169 fatalities and 43 serious injuries.

Fig. 81: The number of events with rail vehicles running into pedestrians outside level crossings on stations or rail paths in the respective months of 2013-2015



Source: prepared by UTK using the Rail Event Register data

As can be seen in the figure above, the number of incidents related to a train hitting a person who is crossing rail tracks outside level crossings and rail paths does not depend on the season of the year. It is also not possible to derive a common trend for both analysed periods.

7.2. Suicides and suicide attempts

Suicides and suicide attempts represent another serious problem within the rail network. Statistically, they constitute a separate group which is not included in serious accidents and accidents. As indicated in the background to this chapter, each event involving a rail vehicle running into a pedestrian is initially classified by inquiry commissions in the B34-category, i.e. "a rail vehicle running into a pedestrian outside a level crossing on a station or rail path." It is only after the prosecution service has found the event to be a suicide that it is reclassified from the B-34 category to "suicide".

The analysed year 2015 saw 95 such events, of which 86 resulted in death of the person attempting suicide, and 7 resulted in serious injuries. Compared to 2014, in which 77 events were qualified as suicides or suicide attempts, there were 22.1% more events of this type. The increase observed since 2012 in the number of events where a railway vehicle ran into people illegally crossing tracks on stations and rail paths (cat. 34), which were reclassified as suicides, results from the intensified cooperation between railway commissions and the Police and the prosecution service.

Tab. 24: An overview of suicides and suicide attempts in the years 2011-2015

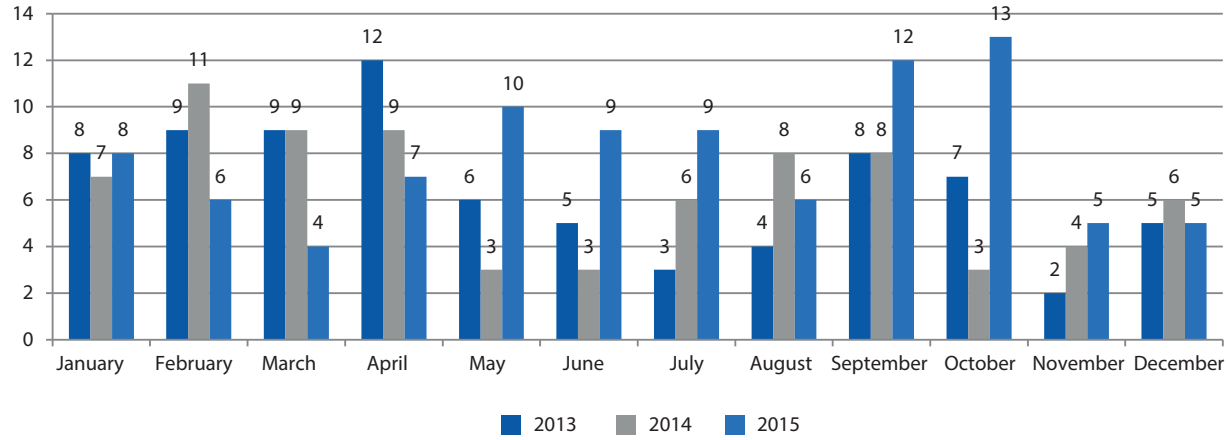
No.	Event[1)]	2011	2012	2013	2014	2015
1.	Suicides and suicide attempts	28	82	79	77	94
	change	-	+192.9%	-3.7%	-2.5%	+22.1%

1) including suicide attempts: in 2012 – 2, in 2013 – 8, in 2014 – 6, 2015 – 7.

Source: prepared by UTK using the Rail Event Register data

On the basis of data from the Rail Event Register, it was established where and how often the analysed problem occurred throughout 2015. Similarly to the events involving rail vehicles running into pedestrians outside level crossings on stations and rail paths, the locations of these events are generally random and almost equally prevalent throughout Poland. The figure below shows suicides and suicide attempts throughout a year and indicates that there is no possibility to determine a growing trend in the number of suicide attempts during the entire year.

Fig. 82: The number of suicides and suicide attempts in individual months of the years 2013-2015



Source: prepared by UTK using the Rail Event Register data

The fact that there were more suicides in 2015 (as compared to the previous years) might in turn suggest that the B34 category events were reclassified as suicides.

8. Safety on level crossings

Level crossings, i.e. intersections where railway lines cross public roads at the same level, are among the most dangerous locations within the rail system due to the interaction between the two kinds of transport (rail and road).

Level crossings are also that element of the system in which rail sector companies have limited capabilities when it comes to minimising the risk generated by such crossings, as the bulk of this risk is attributable to third parties (road users and pedestrians). Level crossing events result in substantial damage to property, traffic delays and disruptions and, sadly, very often lead to fatalities and serious injuries.

In the majority of cases level crossing events resulted from improper (i.e. contrary to the law in force) behaviour on the part of road users (drivers and pedestrians).

The large bulk of level crossing events is caused by the inappropriate (i.e. illegal) behaviour of road users (drivers and pedestrians). Partly to blame, though much less, are also maintenance works related to devices and infrastructure within level crossings, including their failures, and negligence on the part of rail personnel.

To ensure a satisfactory level of safety for level crossing users, these facilities are fitted with varied-class safety devices designed to warn road users about an approaching train and to block the level crossing with gates. These devices are activated either manually by rail personnel or automatically in response to the approaching train.

8.1. Level crossings in Poland by category and type of safety devices

The national solutions for securing one-level intersections of railway lines and vehicle roads, in force as at the end of 2015, correspond to the requirements set out in the Regulation of the

Minister of Transport and the Maritime Economy of 30 October 2015 on the technical conditions to be met by intersections of railway lines/side-tracks and public roads, and their location (Journal of Laws, item 1744). During the analysed period, this Regulation replaced the previously binding Regulation of the Minister of Transport and Maritime Economy of 26 February 1996 on the technical conditions to be met by intersections of railway lines and public roads, and their location. The new Regulation allows the use of six single level-crossing categories on railway lines with the maximum allowed train speed of 160 km/h. Level crossings and pedestrian level crossings are classified into specific categories depending on traffic management, the traffic factor, and the road category. Moreover, the Regulation provides for certain active and passive safety devices:

- barrier devices;
- road signal lights;
- barrier lights;
- sound signalling devices.

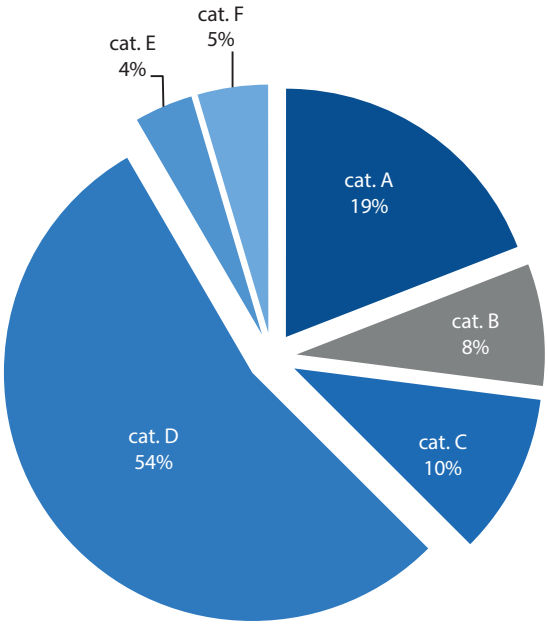
Given the above-mentioned traffic considerations and protection measures, the following level crossing categories can be identified:

- **category A** – level crossings on which road traffic control is conducted by: a) authorised staff of the rail manager or the railway undertaking, holding the required qualifications; b) with manual signalling or safety devices fitted with barriers that are able to close off a roadway across its entire width;
- **category B** – level crossings on which road traffic control is conducted with automatic crossing systems fitted with signal lights and barriers that are able to block road traffic towards: a) entrance to the crossing or b) entrance to and exit from the crossing;
- **category C** – level crossings on which road traffic control is conducted by automatic crossing systems fitted only with signal lights;
- **category D** – road-railway level crossings which are not fitted with traffic safety systems and devices;
- **category E** – crossings fitted with: a) semi-automatic crossing systems or automatic crossing systems, or b) turnstiles, barriers or labyrinths;
- **category F** – level crossings or crossings located on internal roads, fitted with permanently closed barriers which can be opened whenever needed by the users or in line with technical conditions set out in categories A or B.

As at 31 December 2015, on the national rail network, including the separate network, supervised by thirteen infrastructure managers, there were 13 290 active road-railway crossings and pedestrian crossings. D-category crossings are by far the most prevalent (7 192) and account for 54.1% of all crossings. The second largest category of crossing is A (2 536 crossings, which accounts for 19.1% of all crossings), and the third is C category (1 392, which accounts for 10.5% of all active crossings. There were 1 055 B-category (7.9%) crossings and 611 F-category (4.6%) crossings in Poland at the end of 2015. E-category pedestrian level crossings (504) account for 3.8% of all level crossings.

The number of level crossings and pedestrian level crossings was by 196 lower than the year before. The following figure presents the percentage shares of crossings from the various categories as at the end of 2015.

Fig. 83: Road-level crossings on public and dedicated networks broken down by category



Source: prepared by UTK using infrastructure managers' data as presented in 2015 safety reports

The data suggest that in Polish conditions **the average distance between intersections at the level of tracks** on lines operated within the public railway network (with the exception of the network separated from the generally accessible infrastructure) was **1.45 km** in 2015. Similarly, on a statistical basis, there were **0.69 crossings per kilometre** of a line on the operated railway lines.

8.2. Problems related to operating level crossings

As already outlined in the introduction to this chapter, traffic safety on level crossings depends on whether road users comply with the traffic rules, whether level crossings are properly marked for railway lines and roads, and also whether the level crossing infrastructure and devices are properly maintained and functional. Also of importance is the expertise and responsibility of the personnel who operate and maintain level crossings, and sufficient visibility within the level crossing.

As far as the causes of level crossing events are concerned, the most important factors that have been identified to impact on the use of level crossings and, thereby to affect safety on single level crossings, include:

- non-compliance with road traffic rules by road users;
- the inclination of some drivers to downplay the efficiency of safety devices (e.g. due to long barrier closure times) and the resulting attempts to bypass safety systems;
- professional discipline of the staff involved directly in rail traffic control;
- premature activation or deactivation of level crossing safety devices;
- insufficient visibility of approaching trains;
- incomplete or illegible marking of level crossings.

8.3. Level crossing accidents

Given the facts presented in the statistical section of this report, level crossing accidents make up a substantial portion of all events. In 2013, 2014 and 2015, these accounted for about 36%, 32% and 37% of all events, respectively. Any level crossing collision can put human life and health at risk. The same applies to cargo transported on both rail and road vehicles. Such collisions can generate substantial social costs resulting from traffic disruptions and limitations.

The available data show that in 2015 there were 208 level crossing and pedestrian level crossings accidents, which resulted in 55 deaths and 41 serious injuries. Detailed data in this respect, broken down by the categories of level crossings, are presented in the table below.

Tab. 25: The number of accidents on public network and network separated from the generally accessible infrastructure level crossings in the years 2013 - 2015

No.	Level crossing category	Events		
		2013	2014	2015
1.	Category A	13	9	17
	change	-	-30.8%	+88.9%
2.	Category B	18	17	20
	change	-	-5.6%	+17.6%
3.	Category C	41	44	36
	change	-	+7.3%	-18.2%
4.	Category D	173	137	123
	change	-	-20.8%	-10.2%
5.	Category E	6	9	7
	change	-	+50.0%	-22.2%
6.	Category F	4	0	5
	change	-	-100.0%	-
7.	Total	255	216	208
	change	-	-15.3%	-3.7%

Source: prepared by UTK using the Rail Event Register data

In 2015, level crossings were the site of two serious accidents: on 3 June, a serious accident occurred at a D-category level crossing on the Kornatowo-Grudziądz Mniszek path, railway line No. 207 Toruń Wschodni-Malbork; on 11 July, there was a serious accident at an A-category level crossing on the Gałkówek-Koluszki path, railway line No. 17 Łódź Fabryczna-Koluszki.

On 3 June 2015, at 3:45 pm, passenger train No. 59715 from Toruń Główny station to Grudziądz operating an SA106-012 railbus owned by ARRIVA RP Sp. z o.o. (a railway undertaking), on a D-category level crossing, kilometre 36.658 of railway line No. 207 Toruń Wschodni-Malbork, hit a passenger car. The train was operated by a trainee driver under direct supervision of a driver from ARRIVA RP Sp. z o.o. The vehicles collided with the train moving at 93 km/h.

In the accident, two children died and two adults sustained serious injuries; the car was completely destroyed. The following causes were identified to underlie the accident: failure to remain within the required "visibility triangle"; the infrastructure manager's failure to respond to reports from the community of the Pniewite village, who warned of a substantial risk of accidents there; the railway infrastructure manager's failure to set up a crossing committee to amend the crossing's safety model as a follow-up to an increase in the speed limit for trains using this line. A number of systemic causes were also identified.

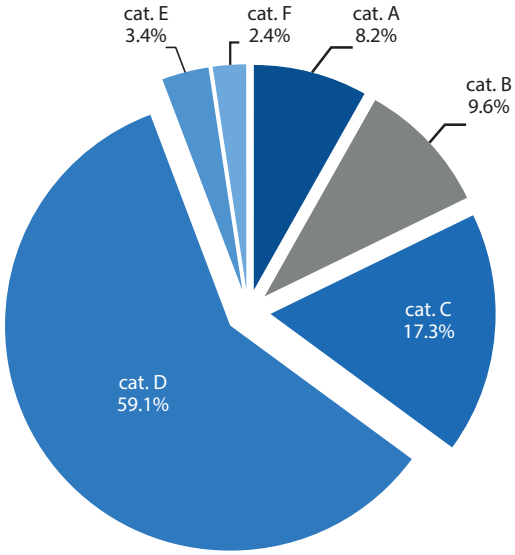
In 2015, two serious accidents occurred on level crossings.

On 11 July 2015, at an A-category crossing, on kilometre 23.506 of railway line No. 17 Łódź Fabryczna-Koluszki, train No. 65111 from Wrocław Główny to Olsztyn Główny, while the train was going past opened barriers, the crossing was entered from the side of track No. 2 by a passenger car which took an impact from the right side of the rear end; at the same time, another passenger car entered the crossing from the side of track No. 2, taking an impact from the train on its left, driver's side. The car was thrown 40 m away from its axis to track No. 2. As a result of the accident, the passenger from the second car died on the spot; the driver and the child from the backseat, both in severe condition, were transported to hospitals in Łódź. Identified to be its underlying cause was that the gatekeeper started opening the barriers after train No. 45104 drove by on track No. 2, even though train No. 65111 was approaching on track 1, of which the gatekeeper had been informed, and also the too early entrance of passenger cars onto the crossing (i.e. while the barriers were opening and the crossing signal lights were warning against entrance).

Following these major accidents, the Polish National Investigation Body (PKBWK) compiled reports on them, offering recommendations on how to improve safety standards.

About 60% of all level crossing events involved level crossings that had no warning (signal lights) or safety devices (full- and half-length barriers). Nearly 18% accidents took place on a crossing secured by barriers or half-length barriers (cat. A or cat. B). As compared to 2014, there were 8 accidents more (88.9%) and 3 accidents more (17.6%) involving categories A and B respectively. A significant drop in the number of events also took place on category C crossings – more than 18.2%. The percentage share of accidents on level crossings within the respective categories and pedestrian level crossings is presented on the figure below.

Fig. 84: Level crossing accidents broken down by level crossing categories in 2015



Source: prepared by UTK using the Rail Event Register data

As the presented data suggest, the number of accidents on level crossings with automatic signal lights and half-length barriers (category B and C crossings) is more than twice as low than on level crossings with only the so-called passive systems (category D crossings). As emphasised earlier, while D-category level crossings are the most numerous within the rail network, they should have the lowest traffic factor. A fact which might seem alarming is that in 2015 we witnessed an increased number of accidents on crossings with the most advanced (cat. A and B) safety systems; this stems, among other things, from the conduct of rail staff who open and close barriers too early or too late; drivers contribute to the problem by driving past other cars in front of a crossing or past closed half-length barriers.

The President of UTK believes, however, that a better picture of level crossing safety for individual categories is provided by the accident frequency ratio, which is the number of events at specific-category level crossings relative to the total number of such level crossings. The accident frequency ratio for specific-category level crossings is presented in the table and figure below.

Tab. 26: The accident frequency ratio by level crossing category for 2015

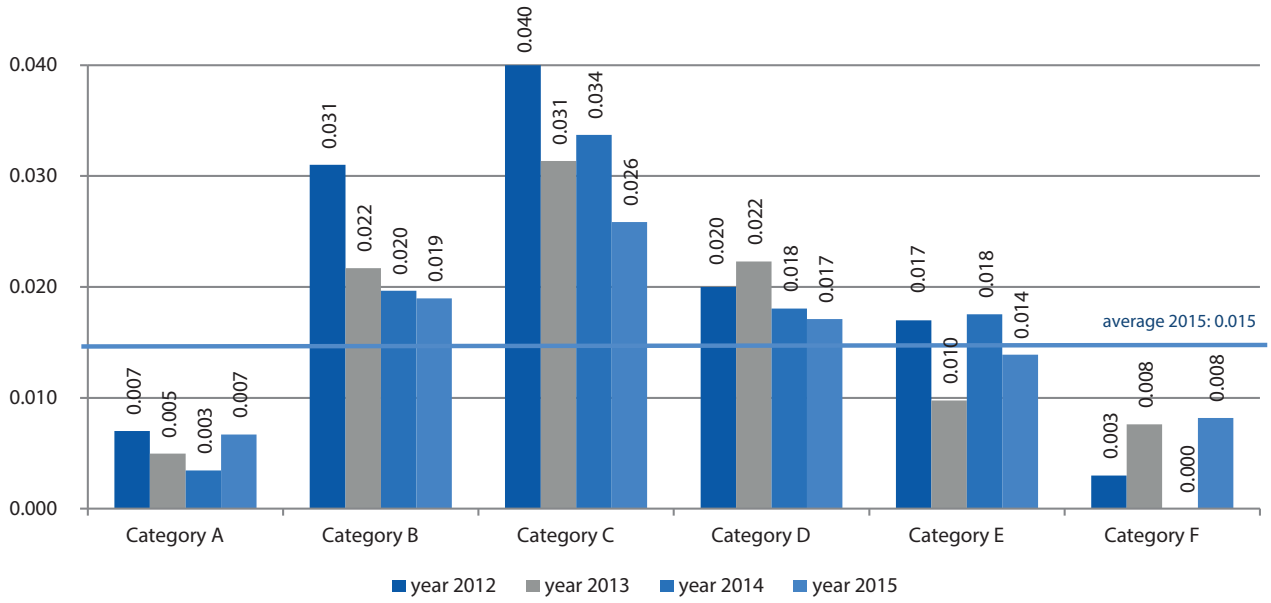
No.	Crossing category	Number of level crossings	Number of accidents	Ratio
1.	Category A	2 536	17	0.0067
2.	Category B	1 055	20	0.0190
3.	Category C	1 392	36	0.0259
4.	Category D	7 192	123	0.0171
5.	Category E	504	7	0.0139
6.	Category F	611	5	0.0082
7.	Total	13 290	208	-

Source: prepared by UTK using the Rail Event Register data

With the number of level crossings factored in, it becomes apparent that the highest accident frequency ratio is for level crossings with signal lights (category C) and then for level crossings with signal lights and half-length barriers (category B), and also level crossings without signal lights and protection systems (category D).

For comparison, the following figure presents ratios calculated for the years 2012-2015

Fig. 85: The accident frequency ratio by level crossing category in the years 2012-2015



Source: prepared by UTK using the Rail Event Register data

As regards events which occurred on level crossings and pedestrian level crossings, it is possible to distinguish groups of road users that were involved in events with rail vehicles. The table below distinguishes road users participating in level crossings and the number of events in which they took part.

Tab. 27: Road users in events on level crossings in the years 2013-2015

No.	Road users	Number of events		
		2013	2014	2015
1.	Drivers of passenger cars	173	138	126
2.	Pedestrians	21	25	30
3.	Drivers of commercial trucks	18	21	14
4.	Drivers of delivery trucks	17	10	11
5.	Drivers of agricultural tractors	7	3	5
6.	Cyclists	5	4	11
7.	Other	14	15	11
8.	**Total**	**255**	**216**	**208**

Source: prepared by UTK using the Rail Event Register data

Passenger cars comprise the most numerous group, having been involved in 60.6% of all events on the crossings in 2015. The second most numerous group are pedestrians (14.4%) who used level crossings or pedestrian level crossings. The third significant group (6.7%) are drivers of commercial trucks; drivers operating delivery trucks participated in 5.3% of events.

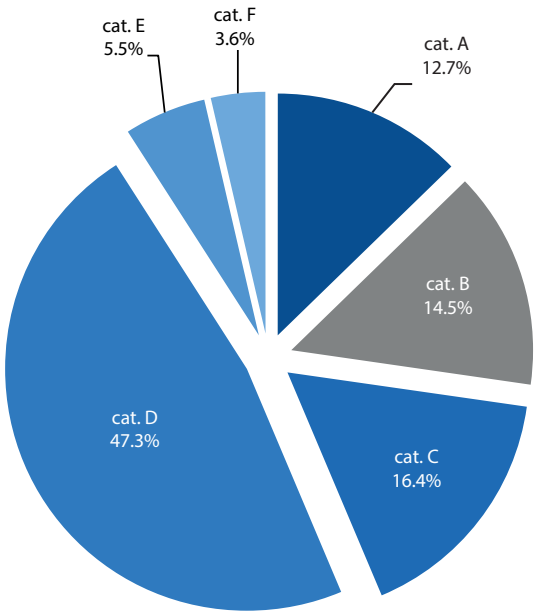
The table below and the accompanying figures present the number of fatalities and serious injuries by level crossing category.

Tab. 28: The number of injured in level crossing accidents by individual categories in the years 2013-2015

No.	Level crossing category	FATALITIES			SERIOUS INJURIES		
		2013	2014	2015	2013	2014	2015
1.	Category A	3	4	7	5	0	5
	change	-27.8%	+33.3%	+75.0%	-16.7%	-100.0%	-
2.	Category B	3	6	8	5	3	4
	change	-28.0%	+100.0%	+33.3%	+400.0%	-40.0%	+33.3%
3.	Category C	9	6	9	7	4	2
	change	-22.6%	-33.3%	+50.0%	+16.7%	-42.9%	-50.0%
4.	Category D	32	19	26	17	17	28
	change	+4.8%	-40.6%	+36.8%	-19.0%	0%	+64.7%
5.	Category E	2	8	3	3	1	2
	change	-33.3%	+300.0%	-62.5%	+50.0%	-66.7%	+100.0%
6.	Category F	3	0	2	0	0	0
	change	+100.0%	-100.0%	-	-	-	-
7.	**Total**	**52**	**43**	**55**	**37**	**25**	**41**
	change	**-16.1%**	**-17.3%**	**+23.3%**	**+2.8%**	**-9.6%**	**+64.0%**

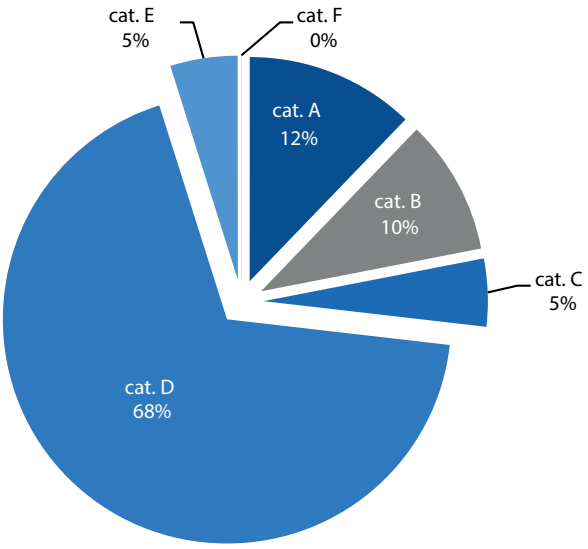
Source: prepared by UTK using the Rail Event Register data

Fig. 86: Fatalities by level crossing category in 2015



Source: prepared by UTK using the Rail Event Register data

Fig. 87: Serious injuries by level crossing category in 2015



Source: prepared by UTK using the Rail Event Register data

The bulk of level crossing accidents were caused by road users' non-compliance with traffic laws and insufficient care when entering and passing through level crossings. A notable cause was also the professional negligence of railway employees who operated category A level crossings, in that such employees failed to close barriers on time or opened the barriers after a train had passed without ascertaining whether there was another train approaching the crossing.

The analysis of data for all events allowed the identification of those level crossings where more than one event occurred. These crossings had varying (without a specific pattern) accident frequency rates. The exact locations of the crossings are provided in the table below and shown on the map.

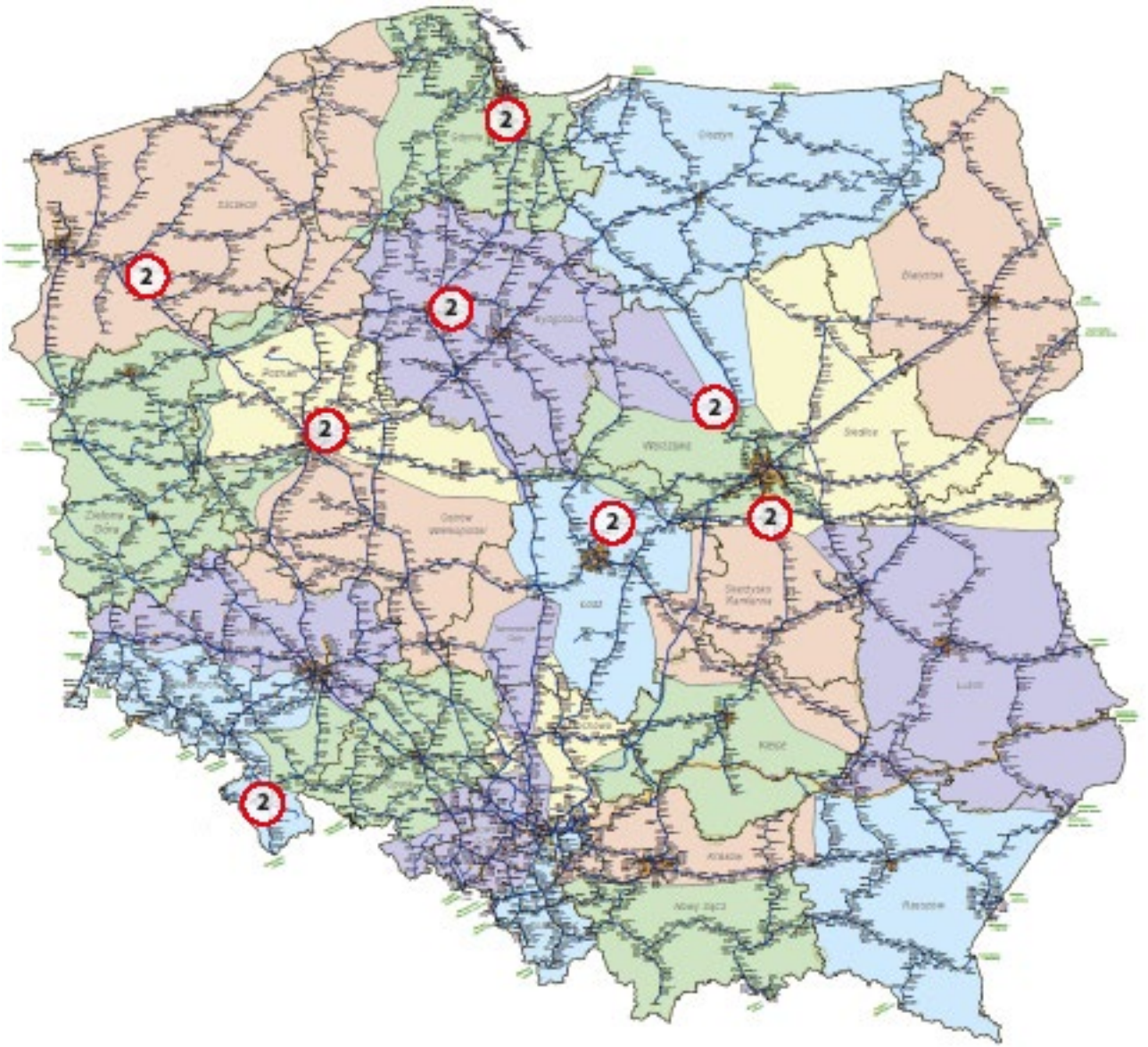
Tab. 29: Level crossings on which more than one event occurred in 2015

No.	Crossing category	Station/path	Number of events	Line No.	Km
1.	A	Warszawa Okęcie – Piaseczno	2	8	20 785
2.	A	Pruszcz Gdański – Gdańsk Południowy	2	9	324 528
3.	C	Pruszcz Gdański – Kotomierz	2	131	391 760
4.	C	Polanica Zdrój – Duszniki Zdrój	2	309	15 020
5.	D	Glinnik – Zgierz	2	15	52 586
6.	D	Gierałtowice – Budryk	2	27	5 288
7.	D	Czerwonak – Bolechowo	2	356	7 765
8.	D	Tarnowo Pomorskie – Ulikowo	2	403	120 616

Source: prepared by UTK using the Rail Event Register data

When analysing the above events, it should be noted that events did not reoccur on the same crossings as in 2014. An alarming fact, however, is that two events took place on A-category crossings. When the event occurred, the level crossing on the Warszawa Okęcie-Piaseczno path had no operating personnel. A rail vehicle ran into a road vehicle, and the rail commission in its post-accident recommendations indicated the need to take action to remove a pile of aggregate, which largely impeded visibility, and to request that the road manager replaces illegible G-1a and A-10 road signs and removes advertising boards which make road signs less visible. The other two events on A-category crossings involved pedestrians who attempted going past closed barriers.

Fig. 88: Level crossings on which more than one event occurred in 2015



Source: prepared by UTK based on the Rail Event Register and using the map drawn by PKP PLK S.A., www.plk-sa.pl.

8.4. Supervisory activities conducted on level crossings

Supervision of the technical condition, maintenance process and classification of road-railway level crossings (including illegal crossings) and the verification of entries in crossing-related documentation with the factual condition, with special regard to crossings on which railway events took place – these were the priorities of the President of UTK in the 2015 supervision plan.

It should be pointed that as part of supervision of the technical condition, maintenance, signalling systems and safety assurance for the users of level crossings, verification of the crossings was also carried out within activities connected with the supervision of the maintenance of railway infrastructure, the state of the infrastructure, and the maintenance process with regard to safety management systems, investment work on railway infrastructure, the safety of railway traffic, and the operation of railway sidings.

Supervisory activities conducted on level crossings

In the analysed period, i.e. from January to December 2015, more than 200 activities were carried out in this area, with over 450 level crossings subjected to the verification procedure.

In view of the fact that the supervision of the technical condition, maintenance and classification of intersections of rail and public roads are the priorities of the President of UTK, the number of controlled level crossings is steadily increasing.

Fig. 89: The number of level crossings subject to supervisory activities in the years 2013-2015

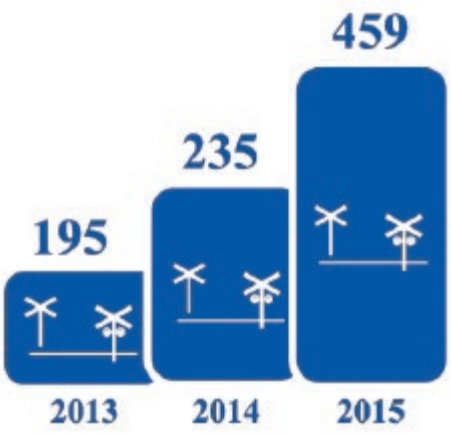


Fig. 90: Provinces with the largest number of level crossings undergoing verification in 2015 (only shares of more than 10%)

Nearly 60% of the crossings covered by supervisory activities in 2015 were located in the Dolnośląskie, Wielkopolskie, Śląskie, Małopolskie, Lubelskie and Mazowieckie Provinces.

In 2015, more than 95% of crossing-related activities were conducted on the network of PKP PLK S.A.

A fact worth stressing is that irregularities were found by the majority of supervisory activities to which level crossings were subjected in 2015. Such irregularities were in particular indicated in the maintenance of track infrastructure and the adjacent land. They pertained to limited visibility on crossings, incorrect road markings, poor technical condition of crossings, including their damaged surfaces, contaminated flangeways, and excessive traffic factors on level crossings.

For any irregularities found, the President of UTK issued recommendations on carrying out analyses and introducing remedial measures, and on presenting evidence to document the completed activities/remedial measures within a specified period.

8.5. Improving level crossing safety

As already mentioned, the bulk of events at single-level intersections of railway lines and roads is caused by third parties, i.e. pedestrians and car drivers who violate the traffic laws (although, admittedly, there are also accidents caused by failures of crossing devices or errors of gatekeepers). To improve level crossing safety, infrastructure managers undertake numerous investment and publicity efforts. The objectives being currently pursued include:

- phasing out level crossings and pedestrian level crossings (including illegal crossings) and replacing them with tunnels or viaducts, or footbridges;
- upgrading level crossings (to a better category) by fitting them with additional warning and proctecting devices;
- improving the maintenance of the existing level crossings and pedestrian level crossings;
- running social campaigns and increasing the presence of Railroad Guard and Police at level crossings.

Presented below is the level of the safety improvement efforts of PKP PLK S.A., the largest Polish infrastructure manager, which manages around 96% of the public rail network and active level crossings. This is to illustrate how Poland is striving for better level crossing safety. This infrastructure manager is in an admittedly good position, as, being the manager of the national rail network, it has been taking advantage of EU funds and many investment programmes. The table below presents the number of level crossings used over successive years on railway lines managed by PKP PLK S.A.

Tab. 30: The number of active level crossings used on the railway lines managed by PKP PLK S.A. in the years 2007-2015

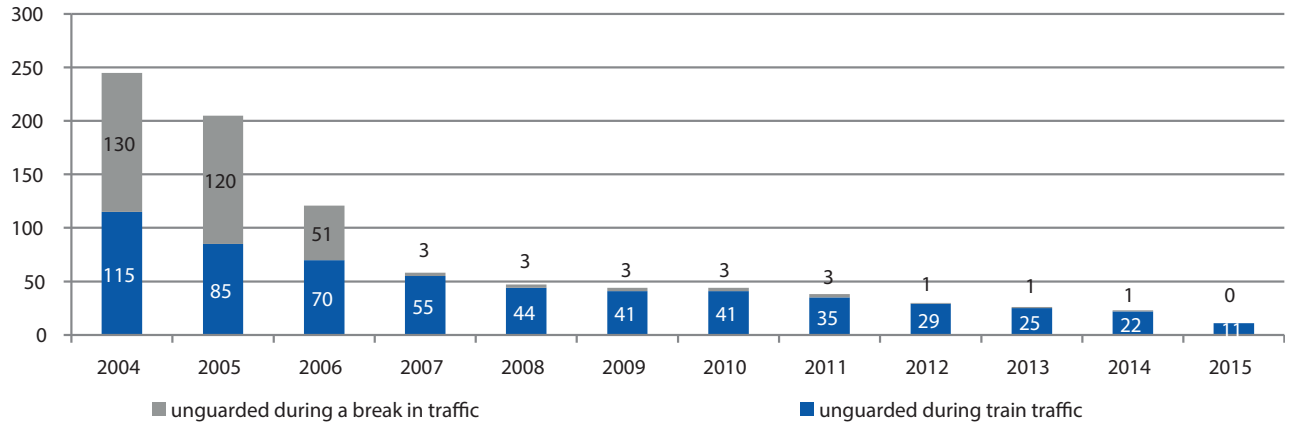
No.	Year	cat. A	cat. B	cat. C	cat. D	cat. F	Total
1.	2007	2 834	561	1 303	8 333	682	13 713
2.	2008	2 772 (-62)	645 (+84)	1 285 (-18)	8 362 (+29)	676 (-6)	13 740 (+37)
3.	2009	2 724 (-48)	665 (+20)	1 313 (+28)	8 314 (-48)	682 (+6)	13 698 (-42)
4.	2010	2 712 (-12)	684 (+19)	1 311 (-2)	8 270 (-44)	680 (-2)	13 657 (-41)
5.	2011	2 676 (-36)	728 (+44)	1 304 (-7)	8 155 (-115)	684 (+4)	13 547 (-110)
6.	2012	2 633 (-43)	789 (+61)	1 302 (-2)	7 967 (-188)	661 (-23)	13 352 (-195)
7.	2013	2 539 (-94)	812 (+23)	1 289 (-13)	7 386 (-581)	500 (-161)	12 526 (-826)
8.	2014	2 516 (-23)	856 (+44)	1 283 (-6)	7 158 (-228)	593 (+93)	12 406 (-120)
9.	2015	2 458 (-58)	1 045 (+189)	1 371 (+88)	6 801 (-357)	584 (-9)	12 744 (-156)

Prepared by UTK using data provided by the infrastructure manager (PKP PLK S.A.)

A long-standing level crossing-related problem has been one of the things to do with A-category crossings with suspended staffing due to personnel downsizing. Primarily, these are very rarely frequented level crossings in terms of both rail and road traffic and their suspension is sometimes only temporary, such as during hours with no rail traffic (e.g. night times). Starting from 2005, PKP PLK S.A. has been engaged in efforts to reduce A-category level crossings with suspended operating personnel. Within a period of 10 years, this has helped to reduce the number of these crossings from 245 (including 115 crossings unguarded during rail traffic hours and 130 crossings unguarded outside rail traffic hours) to 11 crossings unguarded during rail traffic hours.

For the number of A-category level crossings with suspended operating personnel, based on data accumulated in the years 2004-2015 (as at 31 December 2015), see the figure below.

Fig. 91: The number of A-category level crossings with suspended operating personnel within the rail network managed by PKP PLK S.A. in the years 2004-2015



Source: Prepared by UTK using data from the 2015 safety report by PKP PLK S.A.

The efforts undertaken by PKP PLK S.A. in the years 2004-2015 that facilitated a substantial reduction in the number of A-category level crossings, while varying from case to case, included reassigning operating personnel (gatekeepers), re-categorising level crossings, and also phasing out level crossings or closing road traffic for as long as such crossings remained unstaffed. PKP PLK S.A. is continuing to phase out A-category level crossings with no operating personnel as far as it is financially viable. In the years to come, the efforts addressing this problem will primarily include redevelopment and upgrade works as part of multilocal investment projects: „Safety improvement and elimination of operational hazards" – stage I (Infrastructure and Environment Operational Programme 7.1-59) and stage II (Infrastructure and Environment Operational Programme 7.1-80) and also local investment measures supervised by the PKP PLK S.A. Central Safety Office. The company's further efforts related to A-category level crossings with suspended operating personnel and negligible rail traffic (e.g. an average of 0.2 train per 24 hours) are driven by the railway line phase-out strategy.

In addition, the railway line upgrading works carried out by PKP PLK S.A. will include the reconstruction of level crossings and pedestrian level crossings, including their retrofitting with safety and/or warning devices. In many cases, the level crossings and pedestrian level crossings will be dismantled and replaced with viaducts (footbridges) or tunnels. While the most expensive, building two-level crossings is by far the only effective method to eliminate the risk of accidents at intersections of railway lines and roads.

In 2015, 681 crossings underwent redevelopment on the network of PKP PLK S.A., and, depending on a crossing, the scope of redevelopment included the provision of automatic level crossing signalling systems, the installation of CCTV devices, or the replacement of crossing surfaces. 118 viaducts were also built or redeveloped.

Redeveloping and upgrading level crossings is the subject of two separate investment projects. Below is some information on the material scope, progress, schedule and expected outcomes (as at 31 December 2015) of the projects.

Infrastructure and Environment Operational Programme, Action 7.1-59

"Safety improvement and elimination of operational hazards on level crossings – stage I"

From the start of the project until 31 December 2015, 107 crossings underwent redevelopment, which means a 90% completion of the plan. In 2015 alone, 104 crossings were redeveloped as part of the project. In total, the project amounted to PLN 127 million (source: The 2015 Annual Report of PKP PLK S.A.)

Infrastructure and Environment Operational Programme, Action 7.1-80

"Safety improvement and elimination of operational hazards on level crossings – stage II"

From the start of the project until 31 December 2015, 181 crossings underwent redevelopment, which means a 97% completion of the plan. In 2015 alone, 159 crossings were redeveloped as part of the project. In total, the project amounted to PLN 192.8 m (source: The 2015 Annual Report of PKP PLK S.A.).

The above-mentioned investment projects, as well as other activities (e.g. closing down of crossings), had a positive impact

on the quantitative structure of level crossings across various categories on the lines operated by PKP PLK S.A., as presented in the table above.

In order to reduce the risk of collisions on level crossings, in 2014 PKP PLK S.A. launched a project continued in 2015, under which special warning-speed reducing marking was placed on vehicles. The strips placed on the surface of access roads at an appropriate distance from a railway line are to warn drivers of road vehicles that they are approaching a hazardous spot, where special caution should be exercised. Protruding slightly, the strips generate characteristic vibrations and sounds, while their bright red colour acts as a visual information and warning signal. The project is designed primarily to improve the safety level on D-category crossings (without barriers or signal lights); where this is justified, however, such markings are also placed on B and C-category crossings.

From the start of the project until the end of 2015, the markings had been provided to access roads to 227 level crossings. PKP PLK S.A. is interested in continuing and developing the project; unfortunately, the Company has encountered some difficulties in its implementation, such as failure of the Police and road managers to issue the required permits, on the grounds that there was no legislation allowing this. While another problem is often encountered, i.e. the poor condition of the surface of roads, many road managers have declared their willingness to cooperate and work towards improving this situation so that horizontal signs can be provided where needed (source: The 2015 Annual Report of PKP PLK S.A.).

To improve safety at level crossings, PKP PLK S.A. also engages in publicity measures. This is especially important for D-category level crossings, as almost all accidents occurring there are caused by road vehicle drivers who are not careful enough when crossing railway lines. Indeed, some drivers tend to ignore the "STOP" sign or signal lights, bypass half-length barriers or pass under barriers just as they are coming down. Since 2005, PKP PLK S.A. has continued its "Safe crossing – a barrier against the risk" publicity campaign. The campaign is addressed to all road users (drivers, cyclists, pedestrians), both adults and children and young people, as well as to the media, businesses and institutions. The campaign is supported by governmental and non-governmental organisations, the Police, the army, the State Fire Service, transport companies, the media and the press, as well as famous persons from the world of culture and arts. The campaign efforts include educational visits to kindergartens, schools and driving schools, simulations of level crossing accidents, briefings and press conferences, family picnics, banners on cars, and also informational leaflets and posters. To bolster the campaign message, PKP PLK S.A. representatives take part in debates on safety, and join in radio and television programmes. The campaign is supported by, among others, the Railroad Guard, with active contribution from the President of UTK, through publicity and prevention activities at individual level crossings and promoting awareness among road vehicle drivers about the dangers of not being careful enough when crossing railway lines. In 2015, the campaign covered 10 817 level crossings, on which 2 404 vehicle users were admonished, and fines were imposed on 874 people who broke the regulations.

9. Vandalism within the railway network

Acts of hooliganism pose a significant threat to the safety of rail traffic and result in the temporary limitation or suspension of railway traffic.

The most common acts of hooliganism include:

- Theft of and damage to the railway infrastructure, including railway safety devices;
- Train robberies and theft of cargo;
- Pelting of trains;
- Placing obstacles on railroad tracks;
- Unauthorised emission of warning signals, resulting in the activation of the "Radiostop" system.

It should be noted that, in most cases, the perpetrators of these acts remain unknown. The possibilities of preventing such incidents are also limited given the lack of the appropriate resources within the railway system, and especially the railway protection services.

This chapter analyses the respective types of acts committed to the detriment of the railway system on the basis of data provided by infrastructure managers.

9.1. Theft of and damage to the railway infrastructure

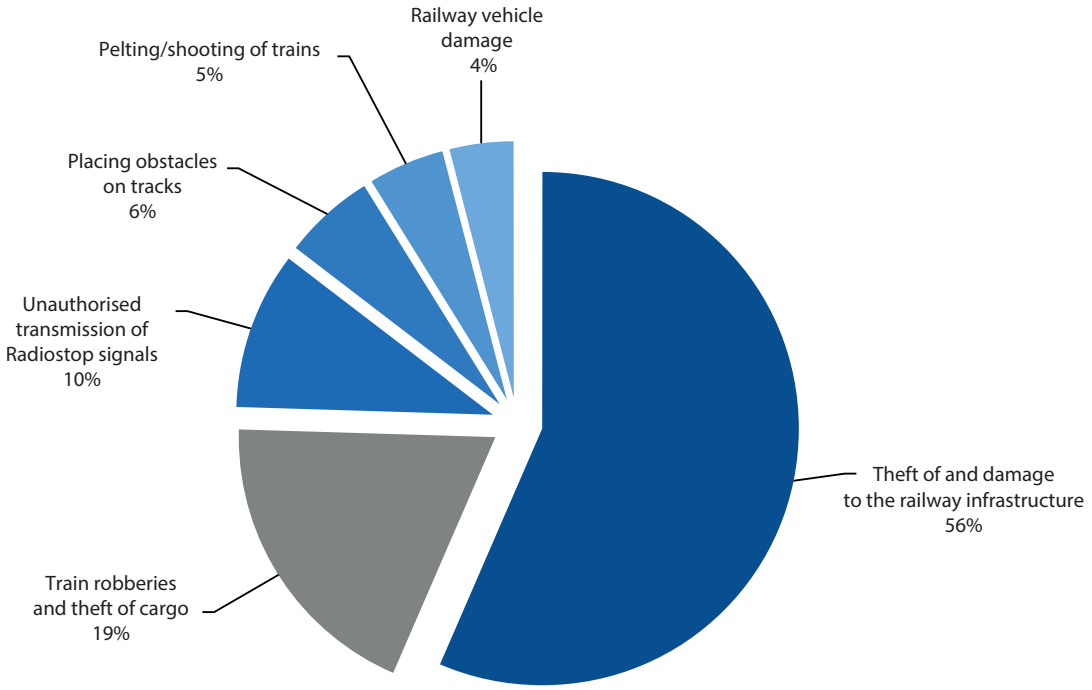
On the basis of the data provided by infrastructure managers, it can be concluded that the most common acts of vandalism which pose a significant threat to the safety of train traffic and result in temporary limitation or suspension of railway traffic are theft of and damage to railway safety devices (i.e. interlocking devices, electrical energy rail equipment, and tele-information equipment) and railroad surface elements.

A total of 3275 acts of this type were reported on active railway lines in 2015.

In comparison to 2014, there was a decrease in the number of incidents of theft of and damage to the railway infrastructure by 20.3%. The 2145 instances of theft accounted for two-thirds of all incidents of this type, whereas incidents of damage to the railway infrastructure amounted to 1130. However, theft to and damage of the railway infrastructure still constituted the largest part, 56.5%, of all acts of vandalism recorded on the active

railway lines in 2015. The percentage share of various types of vandalism is presented in the figure below.

Fig. 92: The percentage share of various categories of vandalism recorded in 2015



Source: prepared by UTK using data provided by infrastructure managers

In 2015 cases of theft of and damage to the railway infrastructure were reported countrywide, with their highest frequency, similarly to the preceding year, recorded in the Śląskie and Dolnośląskie Provinces, as presented in the table below. These incidents constituted almost half of all incidents of theft and acts of damage recorded in the whole country in 2015.

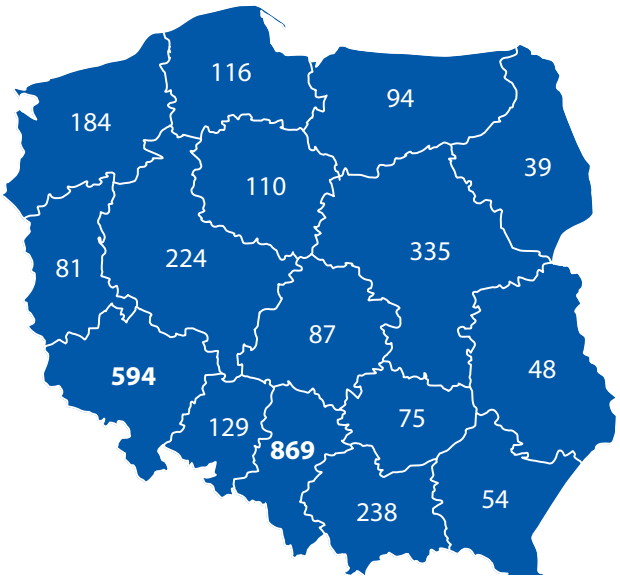
Tab. 31: Provinces with the highest incidence of theft of and damage to the railway infrastructure in 2015

No.	Province	Number of events	Percentage share
1.	Śląskie	869	26.5%
2.	Dolnośląskie	594	18.2%
3.	other provinces	1 812	55,3%
4.	Total	3 275	100%

Source: prepared by UTK using data provided by infrastructure managers

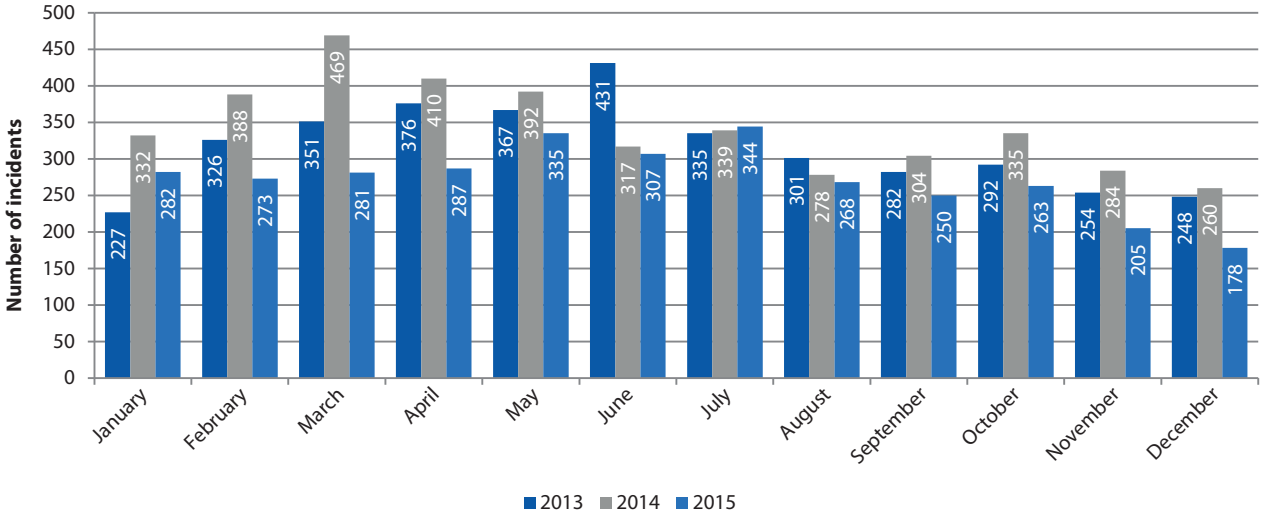
The map below presents the number of incidents of theft of and damage to the railway infrastructure in the respective provinces.

Fig. 93: Theft of and damage to the railway infrastructure in respective provinces in 2015



The number of theft and damage incidents throughout 2015 displayed certain fluctuations, as presented by the figure below. Over a span of three years, an increased number of incidents of theft of and damage to the railway infrastructure during spring months, and a drop in that number during winter months, can be noticed.

Fig. 94: Theft of and damage to the railway infrastructure in 2013-2015 by month



Source: prepared by UTK using data provided by infrastructure managers

A significant part (over 58%) of incidents such as theft of and damage to the railway infrastructure in 2015 involved interlocking devices, which are crucial to the safety of railway traffic. The percentage share of the respective groups of devices is presented in the table and figure below.

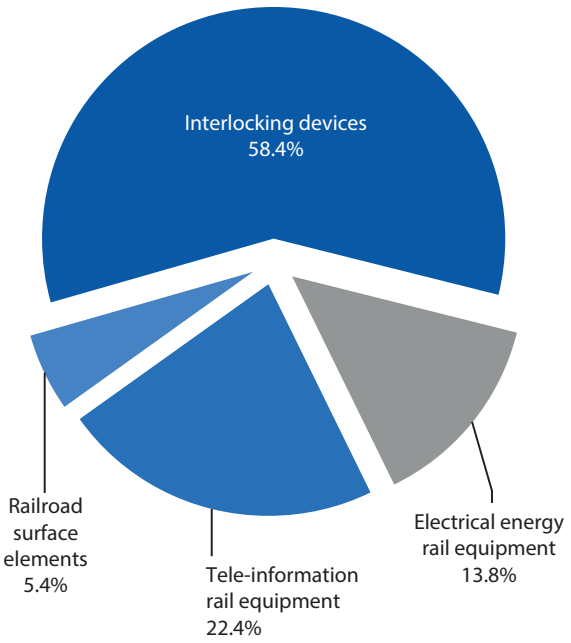
Tab. 32: Theft and damage targets in 2015

No.	Theft and damage targets	Number of incidents	Percentage share
1.	Interlocking devices	1 911	58.4%
2.	Electrical energy rail equipment	453	13.8%
3.	Tele-information rail equipment	733	22.4%
4.	Railroad surface elements	178	5.4%
5.	**Total**	**3 275**	**100.0%**

Source: Prepared by UTK using data provided by infrastructure managers

Over 58% of all cases of theft of and damage of the railway infrastructure in 2015 concerned interlocking devices.

Fig. 95: The percentage share of various groups of railway theft and damage targets



Source: Prepared by UTK using data provided by infrastructure managers

The primary consequence of the theft of and damage to those devices are defects and failures of traffic control systems, resulting in lower traffic safety. In view of the fact that interlocking devices constitute a complicated and intertwined system, the theft of even a small element of it can lead to inability to manage railway traffic in an organised manner, along approved and secured paths.

Furthermore, the instances of the theft of and damage to railway equipment have significant consequences for railway undertakings, passengers, and freight transport customers. The basic problems in this respect are delays and cancellations of train services, caused by limited rail track throughput and a decrease

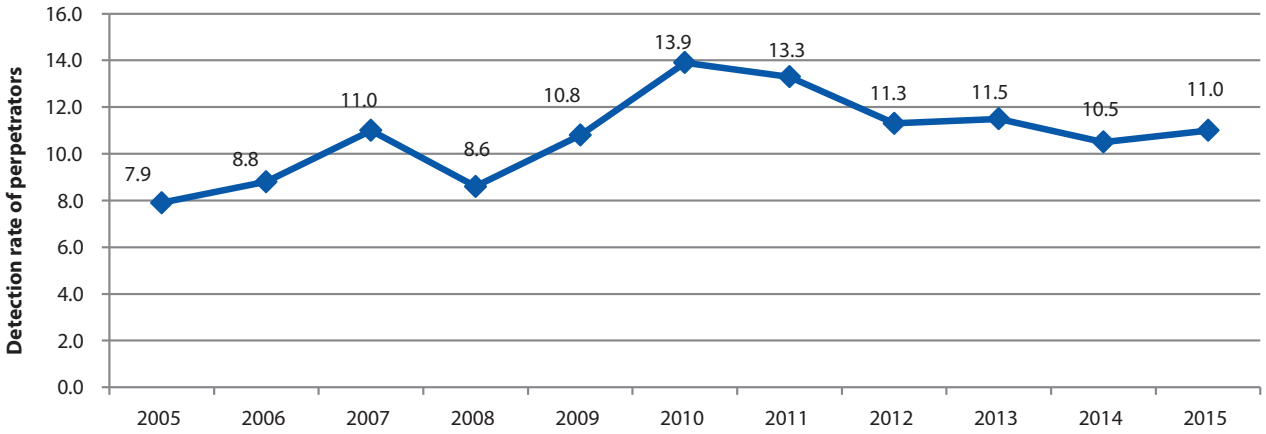
Delays of passenger trains caused by thefts of and damage to the railway infrastructure amounted to 74 410 minutes, which is almost 52 days.

in train speed. In extreme cases, the theft of particular devices can result in long-term traffic suspension and the necessity to provide substitute transport. Incidents of theft of electrical equipment, such as traction network devices, have particularly burdensome consequences for the railway system. They result in considerable train delays, lasting up to over a dozen hours, resulting from the necessity to rebuild the damaged line devices, to provide diesel locomotives, drag electric trains or to temporarily divert railway traffic.

For instance, in 2015, passenger train delays caused by incidents of theft of or damage to the railway infrastructure amounted to 74 410 minutes, or nearly 52 days. It is worth noting that frequent situations of this type, resulting in delays and disturbances of the railway traffic, have an adverse impact on the image of the railway transport and the services offered by various railway undertakings. Delays of freight trains were even greater, though not as burdensome to the general public – still, they also generale costs and disturb the operations of companies that do not receive their deliveries on time. Freight-train delays in the period in question amounted to 138 616 minutes, or 96 days.

Moreover, the detection rate of theft perpetrators is low. As revealed by data provided by the Railroad Guard, it had increased insignificantly in comparison to the previous year and amounted to 11%.

Fig. 96: The detection rate of the perpetrators of crimes and offences such as theft of and damage to railway safety devices



Source: prepared by UTK using data provided by the Railroad Guard

Theft of and damage to the railway infrastructure also generate considerable economic costs for infrastructure managers. The costs of the repair or replacement of railway safety devices (interlocking devices, tele-information and electrical energy rail equipment) stolen or damaged in 2015 were estimated to exceed PLN 16 m, including the costs of repairing or replacing those devices on active rail lines, which amounted to almost PLN 11 m.

The above shows that the occurrence of the theft of and damage to railway infrastructure has serious implications for both railway sector entities and railway customers. Therefore, it seems advisable to determine the causes of such events. While damage to railway devices appears to be driven mainly by hooliganism, in theft cases the economic factor seems to prevail. Most, if not all, of the elements stolen from railway premises eventually reach scrap yards, where they are sold for cash.

As shown above, theft of and damage to the railway infrastructure brings grave consequences to both railway sector entities and railway customers. Therefore, it seems advisable to reflect upon the causes of such incidents. While damage to railway devices appears to be driven mainly by hooliganism, theft is essentially an economic issue. Most, if not all, elements stolen from railway areas eventually reach scrap yards, where they are sold for cash.

With the aim of combating theft of and damage to the railway infrastructure, building on the activities initiated in 2012, the President of UTK is participating in the work being part of "The memorandum on cooperation towards counteracting the incidences of infrastructure theft and damage."The Memorandum, initiated by the presidents of three regulatory offices, i.e. the Office of Electronic Communications (UKE), the Energy Regulatory Office (URE) and the Office of Rail Transport (UTK), has also been signed by entities operating in the telecommunications, energy and railway sectors (acting as signatories), that are willing to participate in the activities falling within their scope. This initiative was endorsed by the Police in its preventive actions aimed at theft and property damage, which contributes to cooperation in that respect.

The steps taken by the national infrastructure manager for the protection of the railway infrastructure were:

- Raising the awareness of local government authorities granting permissions for scrap yards in terms of property theft, and especially devices directly affecting the safety of the railway traffic;
- Notifying, in writing, the appropriate company of the PKP Group about incidents of theft and apprehensions of perpetrators, including information that the aggrieved party can report the perpetrators to law enforcement authorities and claim damages in court;
- Making joint rounds of railway lines by the Railroad Guard and the Operation division;
- PKP PLK S.A. in order to determine the places of most frequent theft incidents and develop common actions at the level of the enterprise;
- Supervising and monitoring rail paths with planned closures carried out by network trains in order to ensure safety, and supervision over interlocking devices;
- Deploying increased forces of the Railroad Guard to rail lines at risk, including plain-clothed guards; a thorough analysis of incident sites;
- Appointing a working team in the Railroad Guard Headquarters, the aim of which is to analyse incidents of theft of contact lines committed so far and develop methods of counteracting such incidents;
- Using "phototraps" along sections of railway lines that are the most at risk and in places where elements of the railway infrastructure are stolen.

9.2. Train robberies and the theft of cargo

The second most frequent acts of hooliganism are train robberies, often accompanied by incidents of theft of cargo. A total of 1100 incidents of this type were reported countrywide in 2015, which accounts for 19.0% of all acts of hooliganism that were monitored in 2015. The number of such incidents had decreased by 35.6% in comparison to the preceding year, in which 1707 incidents were recorded.

This category of acts of hooliganism committed within the railway network includes the so-called dumping, which is an intentional opening of the doors of freight wagons carrying bulk material (usually coal or coke), with the intention of tipping the wagon's load onto the tracks. In most cases, it is not possible to remove all such cargo from the tracks, which consequently becomes an easy target for thieves. The cargo left on the tracks may be hit by another train, which constitutes an actual risk of accident.

The largest number of train robberies and incidents of theft of cargo was reported in the Śląskie Province – 73.5% of all incidents of this type. The proximity of coal mines in this region seems to be the factor, as coal is the main target of theft of rail wagon cargo. Other goods stolen from trains include coke, scrap and fuel from tank wagons.

In order to support the railway protection services supervised by infrastructure managers, railway undertakings often hire property protection agencies, specialising in providing services to railway sector services, to protect specific trains. The employees of these agencies render their services both when trains are on the move and while at standstill. Such protection covers not only coal and coke trains, but also trains carrying liquid fuels and cars. Railway undertakings also take steps aimed to minimise the risk of theft from railway wagons by using better security methods; unfortunately, this is not always possible, especially in the old-generation wagons. Railway undertakings operating newer rolling stock have an easier task, as their wagons cannot be unloaded from the side (only from the top), which makes it impossible for thieves to open the side wagon doors.

9.3. Pelting of trains

Another problem related to hooligan acts within the railway area, monitored by the President of UTK, are the cases of trains being pelted with stones or other objects that are mainly thrown off viaducts and footbridges located over the tracks. This is a very serious issue, which diminishes the safety of rail transport. 278 such incidents were reported in 2015, which accounted for 4.8% of total vandalism acts within the railway network presented in this chapter.

The highest number of pelting incidents in 2015 was reported in the Mazowieckie Province – 59 incidents, the Śląskie Province – 49, the Zachodniopomorskie Province – 25, and the Pomorskie Province – 24, which amounts to over half of all train pelting incidents. The data is presented in the table below. In the Mazowieckie and Śląskie Provinces the concentration of train pelting incidents was the highest also in the preceding year.

Tab. 33: Train pelting in 2015

No.	Province	Number of incidents	Percentage share
1.	Mazowieckie	59	21.2%
2.	Śląskie	49	17.7%
3.	Zachodniopomorskie	25	9.0%
4.	Pomorskie	24	8.6%
5.	other provinces	121	43.5%
6.	**Total**	**278**	**100.0%**

Source: prepared by UTK using data provided by infrastructure managers

Train pelting poses a real threat to the safety of railway traffic. Occasionally, this results in injuries of train drivers, who are crucial to ensuring the safety of train journeys. One can easily imagine the possible consequences of a train driver being hit with a stone, becoming unconscious and losing control over the train. Although train pelting accounts for nearly 4% of all acts of vandalism and the number of such incidents had decreased in the recent years, the President of UTK monitors

the phenomenon due to its possibly serious consequences for the health and lives of persons in trains, both railway workers and passengers.

Each collision with track obstacles creates the need to inspect the train to check whether it can continue its journey and to identify any potential damage, and it may require a suspension of train traffic, depending on the scale of the damage.

9.4. Obstacles on tracks

Another category of hooligan incidents involves the placing of obstacles on railway tracks. The total number of incidents involving the intentional placing of obstacles on railway tracks in 2015 reached 334, accounting for 5.8% of all acts of hooliganism monitored by the President of UTK in 2015. Compared to the preceding year, there was a decrease in the number of such incidents by 5.4% (from 353 to 334). The most frequent objects placed on railway tracks were stones, branches, and logs. Other objects occasionally placed on railway tracks were concrete slabs and other heavy objects.

The concentration of these incidents was the highest in the Wielkopolskie Province – 52 cases, the Śląskie Province – 44, the Zachodniopomorskie Province – 34, and the Pomorskie Province – 32, which constitutes almost half of all reported incidents involving placement of obstacles on railway tracks.

Tab. 34: Placing obstacles on railway tracks in 2015

No.	Province	Number of incidents	Percentage share
1.	Wielkopolskie	52	15.6%
2.	Śląskie	44	13.2%
3.	Zachodniopomorskie	34	10.2%
4.	Pomorskie	32	9.6%
5.	other provinces	172	51.5%
6.	Total	334	100.0%

Source: prepared by UTK using data provided by infrastructure managers

The most serious consequences of collisions with track obstacles include damage to the train braking system, mainly valves, which results in their opening and decreased pressure within the main tube, leading to sudden train braking. Some cases also result in damage to other components of the train (such as wipers and lights damage, or chassis scratches and breakages). Therefore, each collision with track obstacles creates the need to inspect the train for the possibility of the continuation of its journey and the identification of any potential damage. This might lead to the suspension of train traffic. In certain cases, the involvement of other workers, such as wagon controllers, might be required in order to verify the technical possibility of continuing the journey after sudden train stopping.

Nevertheless, one should note that most incidents involving the placing of obstacles on tracks have relatively minor consequences. Some obstacles are removed by the train personnel, who managed to stop the train in time before it hit an obstacle. Therefore, it may seem that the issue of obstacles on tracks is currently not crucial to railway safety; however, the President of UTK has decided that it should be monitored with a view to assessing the actual scale of this phenomenon. It should be borne in mind that even those events that appear insignificant can actually lead to much more dangerous situations, and with no reaction on the part of relevant services, this phenomenon may escalate.

It also seems that, similarly to the previously discussed cases of train pelting, incidents involving the placing of obstacles on railway tracks might partly stem from the lack of other attractive free-time activities available to teenagers, and from their low awareness of possible threats. An effective way of preventing such incidents could, therefore, be to launch social campaigns raising public awareness in terms of possible dangers stemming from such actions and encouraging the public to intervene when seeing any attempts to commit such offences.

9.5. The unauthorised emission of "Radiostop" signals

The unauthorised emission of the "Radiostop" alarm signals through the railway radio communications system, which results in the activation of the "Radiostop" system, is yet another serious problem encountered within the railway network. Receiving such a signal by devices in a traction vehicle leads to the automatic activation of the train braking system. Generally speaking, this system causes the stopping of a railway vehicle in motion in the event of a threat to traffic safety. It is activated by pressing the "Alarm" button on a radiophone that starts to transmit a special sound signal, following which the self-braking devices are switched on to stop all railway vehicles within reach.

In 2015, a total of 575 incidents of unauthorized emissions of the "Radiostop" signals were reported (a decrease by 1.5% in comparison to 2014, from 584 to 575), most of which occurred in the Mazowieckie Province – 139 (an increase by 8.9% in comparison to 2014), the Małopolskie Province – 84 (by 30.6%), and the Śląskie Province – 64 (by 1.6%), which accounts for slightly over 50% of all incidents of this type. The data is presented in the table below.

Tab. 35: Unauthorised emission of the "Radiostop" alarm signals in 2015

No.	Provinces	Number of incidents	Percentage share
1.	Mazowieckie	139	24.2%
2.	Małopolskie	84	14.6%
3.	Śląskie	64	11.1%
4.	other provinces	288	50.1%
5.	**Total**	**575**	**100.0%**

Source: prepared by UTK using data provided by infrastructure managers

Despite the insignificant decrease in the number of unauthorised emissions of the "Radiostop" alarm signals in comparison to the previous year, its frequent occurrence (statistically, 3 incidents per 2 days), especially in Warsaw and its surroundings, constitutes a serious problem, as it may simultaneously affect a large number of trains and result in serious interruptions in train traffic.

9.6. Train damage

In 2015, a total of 234 incidents of train damage incidents were reported, most of which took place in the Mazowieckie Province – 56 incidents, the Zachodniopomorskie Province – 28, the Wielkopolskie Province – 27, and the Dolnośląskie Province – 26 incidents, which accounts for almost 60% of all incidents of this type (no data available for the year 2014). The most frequent ones were breaking window panes and graffiti. Such actions involve the costs of repairing damaged cars and result in train delays of up to several hours. The data is presented in the table below.

Tab. 36: Train damage in 2015

No.	Province	Number of incidents	Percentage share
1.	Mazowieckie	56	23.9%
2.	Zachodniopomorskie	28	12.0%
3.	Wielkopolskie	27	11.5%
4.	Dolnośląskie	26	11.1%
5.	other provinces	97	41.5%
6.	**Total**	**234**	**100.0%**

Source: prepared by UTK using data provided by infrastructure managers

It should be noted that all types of vandalism reported in 2015 display a downward trend in comparison to the preceding year, as a result of steps taken by rail-market entities and joint activities within e.g. "The memorandum on cooperation towards counteracting the incidences of infrastructure theft and damage." However, the cooperation with the Police and the Prosecutor's Office needs to be strengthened to increase the detection rate of such incidents, which will positively affect a further decrease in the number of acts of vandalism within the railway network.

10. Dangerous goods transport safety

Dangerous goods transport is regulated by the provisions of "Regulations concerning the International Carriage of Dangerous Goods by Rail" (RID) comprising Appendix C to the Convention concerning International Carriage by Rail (COTIF), signed by Poland, and the "Rules for Transportation of Dangerous Goods to the Agreement on International Goods Transport by Rail" (SMGS). The obligation to observe RID also arises from Directive 2008/68/EC of the European Parliament and of the Council on the inland transport of dangerous goods, which was implemented into the Polish legal regime by the Transportation of Dangerous Goods Act of 19 August 2011.

A safety adviser on the transport of dangerous goods, whom every undertaking participating in the transport of such goods is obliged to appoint, is responsible for supporting measures that prevent personal, property and environmental risks arising from the transport of dangerous goods. The conditions that must be met to obtain an adviser's licence are specified in detail in the Transportation of Dangerous Goods Act.

Every entrepreneur who runs a business in the field of the transport of dangerous goods or their loading, unloading or packing is obliged to observe the laws and procedures in force. All participants in the transport of dangerous goods have their obligations depending on the content of the transported parcel. The largest scope of these obligations is imposed on the consigner and the railway undertaking. The consigner must know the characteristics and properties of goods, because they form the basis for the selection of appropriate packaging, on which the undertaking places labels and prepares transport documentation.

In Poland approx. 90% of transported dangerous goods include petroleum and petroleum products (petrol, diesel oils), industrial gases (mainly propane-butane) and sulphuric acid. The loss of control over their transportation can lead to the release of substantial quantities of flammable, toxic, poisonous, radioactive, explosive, etc. substances. Also, the decompression of liquids or gases under a pressure other than atmospheric pressure can pose a threat to human life and health, and can lead to the destruction or serious contamination of the environment.

The continuous development of the transport industry requires appropriate steps to be taken to ensure the proper level of safety of the transported goods.

In order to prevent associating this increase in the transport of dangerous goods with a simultaneous growth in danger and probability of accident, it is necessary to unconditionally enforce the applicable rules and regulations in the transport practice.

The most important tasks of the President of UTK in respect of the transport of dangerous goods by rail include the supervision and monitoring of the observance of their obligations by railway undertakings, infrastructure mangers and side-track users in the field of safety of the transport of dangerous goods by rail.

10.1. Events involving dangerous goods

The system of monitoring the transport of dangerous goods is maintained based on reports prepared by safety advisers on the transport of dangerous goods. The Transportation of Dangerous Goods Act obliges participants in the transport of dangerous goods to draw up two types of reports:

- "An annual report on activities in the transport of dangerous goods" referred to in Article 40 (2) of the Transportation of Dangerous Goods Act;

- "Report on occurances during the carriage of dangerous goods" in line with chapter 1.8.5. of RID or Appendix 2 to the "Rules for Transportation of Dangerous Goods to the Agreement on International Goods Transport by Rail" (SMGS). The obligation of drawing up such reports arises when dangerous goods are released to the environment or in the event of a risk of imminent loss of cargo, bodily injury, rolling-stock or environmental damage, or in the event of an intervention by the authorities. In addition to the aforementioned obligation, there are other criteria depending on the transport of specific classes of materials.

In 2015 UTK received six "Reports on occurances during the carriage of dangerous goods", as required under RID or Appendix 2 to SMGS, which informed of events involving dangerous goods, that took place in 2015, i.e. one less than in 2014.

One of the occurances described in the reports took place at a station, four on lines, and one on an unloading site. In four cases cargo was lost, one case entailed a derailment, and one event was attributed to a technical cause – a spontaneous perforation in a heat-receiving location. Four of these events were caused by attempts to steal cargo. There were no injuries and fatalities.

Furthermore, the "Annual reports on activities in the transport of dangerous goods", the submission of which was mandatory for entities participating in the transport of dangerous goods, included 20 events not requiring the preparation of the Report referred to in RID or Appendix 2 to SMGS. The most common causes of events were leaking and loosely fitted valves or activities of third parties (track incursions). When compared to 2014, in which information about 20 incidents was collected based on annual reports filed by participants in the transport of dangerous goods, the number or events associated with the transport of dangerous goods which did not require the preparation of the Report referred to in RID or Appendix 2 to SMGS remained at the same level. The causes of the discussed events also remained similar.

The following table illustrates the failure rate calculated on the basis of the number of events that took place during the transport of dangerous goods in relation to the transported tonnes of dangerous goods.

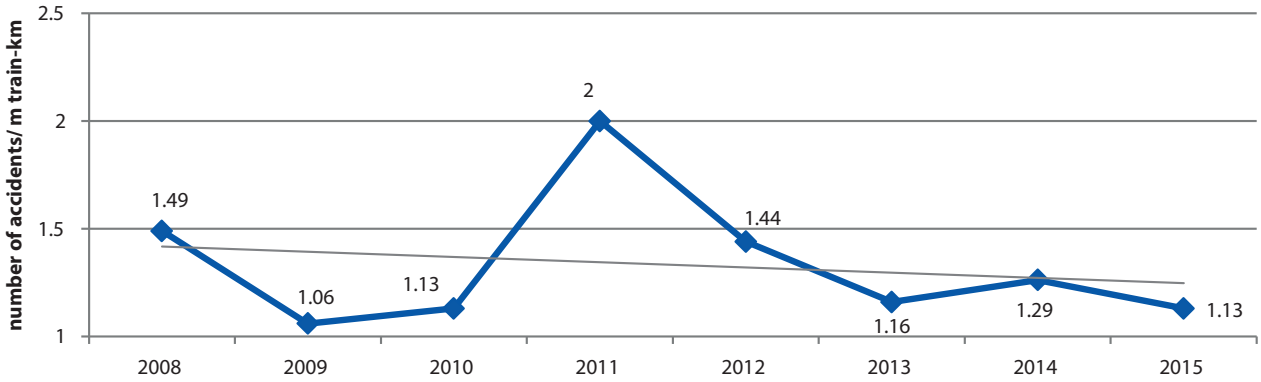
Tab. 37: The number of events during the transport of dangerous goods in the years 2008-2015

No.	Year	Transport volume (thousand tonnes)	Number of events	Failure rate
1.	2008	19 425	29	1.49
2.	2009	19 816	21	1.06
3.	2010	22 096	25	1.13
4.	2011	23 009	46	2.00
5.	2012	21 486	31	1.44
6.	2013	21 523	25	1.16
7.	2014	20 976	27	1.29
8.	2015	22 965	26	1.13

Source: Prepared by UTK on the basis of "Annual reports on activities in the transport of dangerous goods" for 2008-2015

The graphical representation of data is illustrated in the next figure, which also features a trendline.

Fig. 97: Failure rate in the transport of dangerous goods



Source: Prepared by UTK on the basis of "Annual reports on activities in the transport of dangerous goods" for 2008-2015

The above-presented data allow for the conclusion that both the volume of the transport of dangerous goods and the number of events remained in 2015 at a level similar to the year before, with a slight increase in the volume of transported goods. The above resulted in a decrease in the failure rate as regards the transport of dangerous goods, when compared to the year before. In 2014 this rate amounted to 1.29, while in 2015 it equalled 1.13. Of note is also the fact that last year, similarly to the year before, there were no events that caused fatalities or substantial losses.

When it came to the level of safety of the transport of dangerous goods by rail in 2015, taking into account the volume of transport of dangerous goods (approx. 20 million tonnes a year) and

the number of accidents (in 2015 only six serious events were reported), it did not deteriorate in relation to the preceding year.

10.2. The control of the transport of dangerous goods

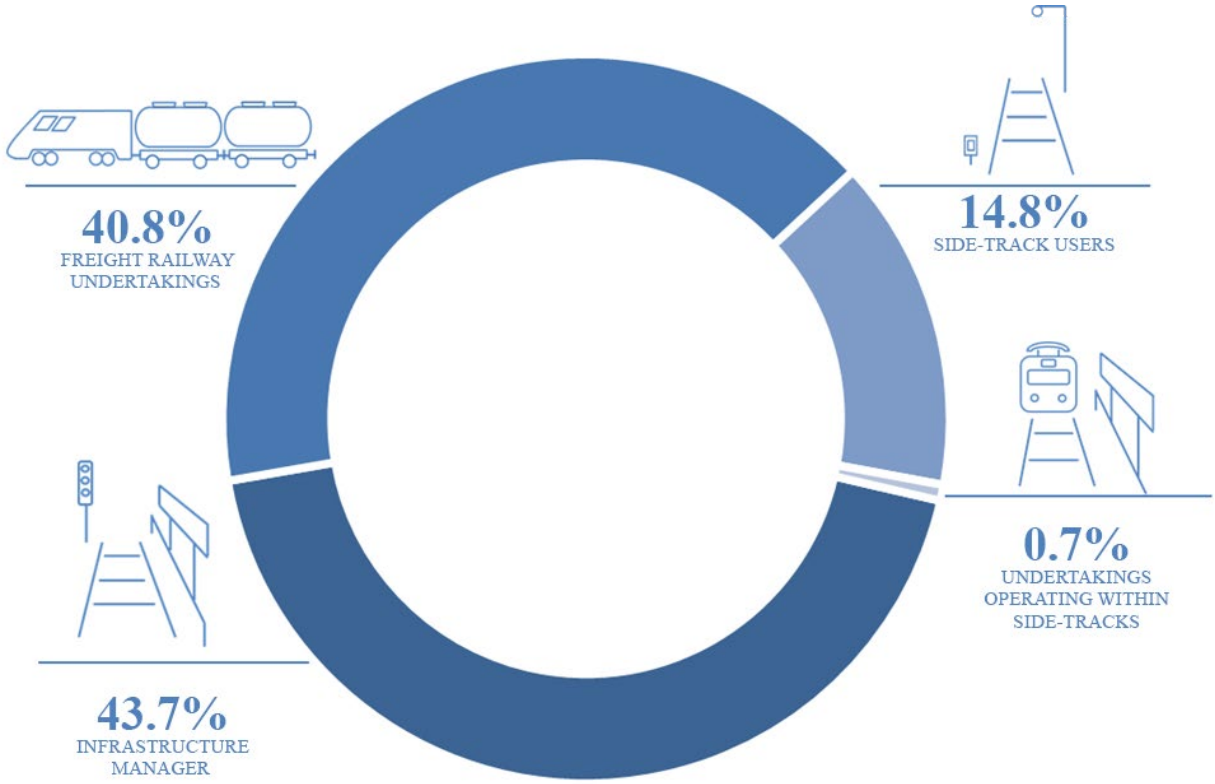
Pursuant to the Rail Transport Act, the responsibilities of the President of UTK in respect of the cohesion of the rail system, including supervision over technical solutions which impact on the rail traffic safety and rail system safety, include the control of the transport of dangerous goods.

The President of UTK exercises supervision over all participants in the transport of dangerous goods that perform activities connected with such transport, and especially railway infrastructure managers, railway undertakings, side-track users, undertakings operating within side-tracks and other participants in the rail market, as specified in Section 1.4 of RID and Section 1.4 of Appendix 2 to SMGS, that are subject to legal regulations on the transport of dangerous goods by rail included in the Transportation of Dangerous Goods Act as well as in legislation subordinate to this Act.

In 2015 the President of UTK conducted a total of 142 supervisory activities in respect of the rail transport of dangerous goods and pressure equipment – nearly 27% more than in 2014.

The highest number of activities were conducted in relation to railway infrastructure managers – 62 (43.7%) and licensed freight railway undertakings – 58 (40.8%). Further activities concerned other participants in transport, including side-track users and undertakings running transport operations within side-tracks or stations.

Fig. 98: The types of entities subjected to supervisory activities in 2015 in respect of the transport of dangerous goods



The current supervisory activities of the President of UTK in respect of the transport of dangerous goods by rail include the verification of:

- the conformity of the performed transport of dangerous goods with the requirements provided for in RID and the Act;
- the technical condition of vessels, packaging and transport equipment for the transport of dangerous goods;
- the technical condition of the means of transport used for transport, as well as its marking and equipment;
- the training of persons who perform the transport of dangerous goods and activities connected with such transport, as well as the appointment of an appropriate adviser on the transport of dangerous goods.

Any violation of responsibilities resulting from the provisions of the Transportation of Dangerous Goods Act or rules and regulations binding on the Republic of Poland, including international agreements, can result in the imposing of a fines ranging from PLN 200 to PLN 10 000.

It is worth noting that they are imposed obligatorily, following an administrative procedure, only for violations enumerated in the appendix to the Transportation of Dangerous Goods Act.

Other violations, not mentioned in this appendix, can be sanctioned only by the commonly applicable penal law.

Fig. 99: The results of supervisory activities in respect of dangerous goods in 2015

In connection with the conducted supervisory activities, irregularities were identified in 90 cases (which constituted 60.6% of all conducted activities), including irregularities associated with infrastructure for the transport of dangerous goods, inappropriately maintained documentation, inappropriate marking of railway vehicles and the lack of emergency sidings equipment.

Taking into account the number of irregularities found in relation to the number of conducted activities, the highest ratio was observed in relation to the Alwernia S.A. side-track user – on average, as many as 11 irregularities per 1 supervisory activity. An equally high level of this indicator was identified in relation to: ISD Huta Częstochowa sp. z o.o. – 10, Gaspol S.A. – 7, Infra SILESIA S.A. – 6.5, Polski Gaz S.A. and CTL Chemkol sp. z o.o. – 5.

This largely proves a low level of safety culture, which manifests itself in the non-observance of entities' own safety regulations (safety management systems, internal regulations, etc.).

Most irregularities were identified in respect of the inappropriate preparation or the lack of transport documents, as well as the technical condition and equipment of emergency sidings for wagons carrying dangerous goods – 11.5%. An equally high percentage was associated with irregularities in respect of safety of the transport of dangerous goods and dangerous goods of high risk by rail (TWR) – 8.5%, as well as the marking and technical state of railway vehicles – 8.1%. Of note is that this list was drawn up based on the documented irregularities from the general scope of the checklist in the transport of dangerous goods. Other irregularities found (not included in Figure 13), amounting to nearly 39%, were classified as "other identified irregularities or remarks" and concerned in particular the maintenance of rail infrastructure.

Broken down by the type of entity, the highest number of irregularities was identified among infrastructure managers – 56.3%.

Fig. 100: Irregularity indicators – the number of irregularities found against the number of activities carried out

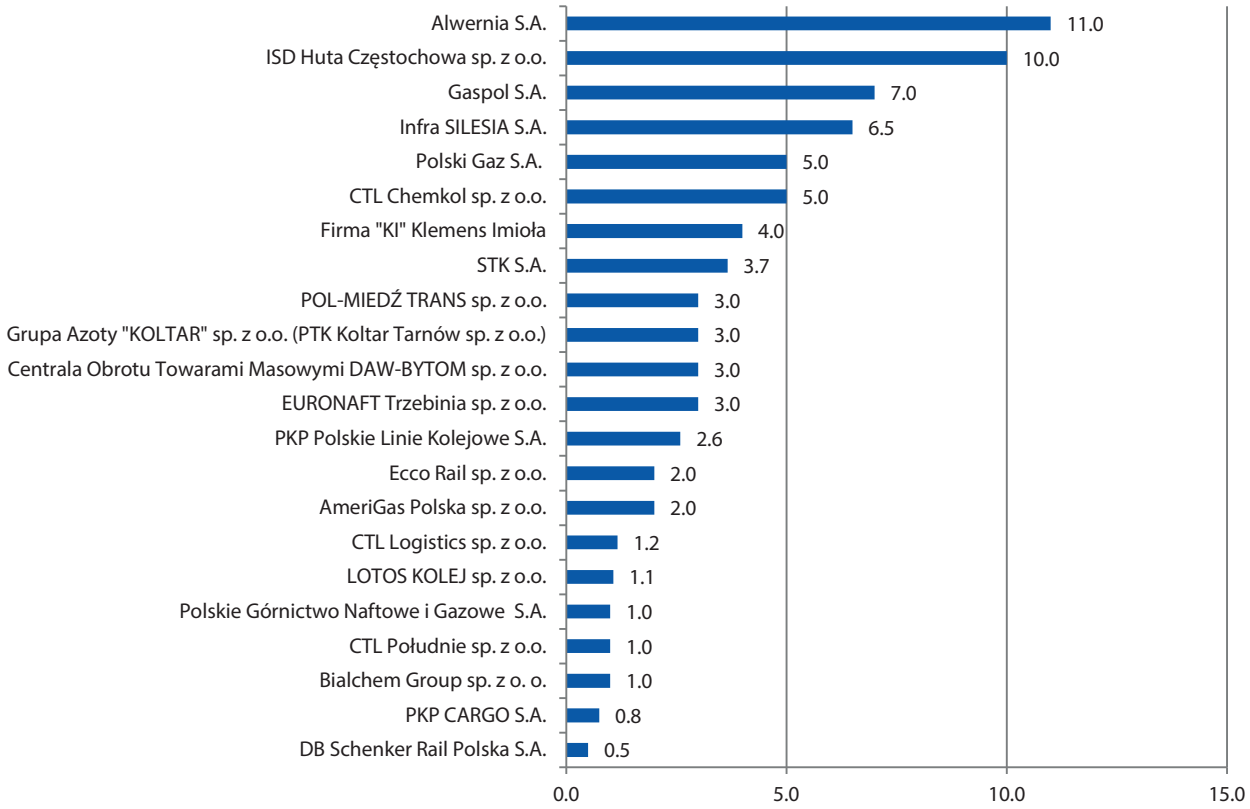
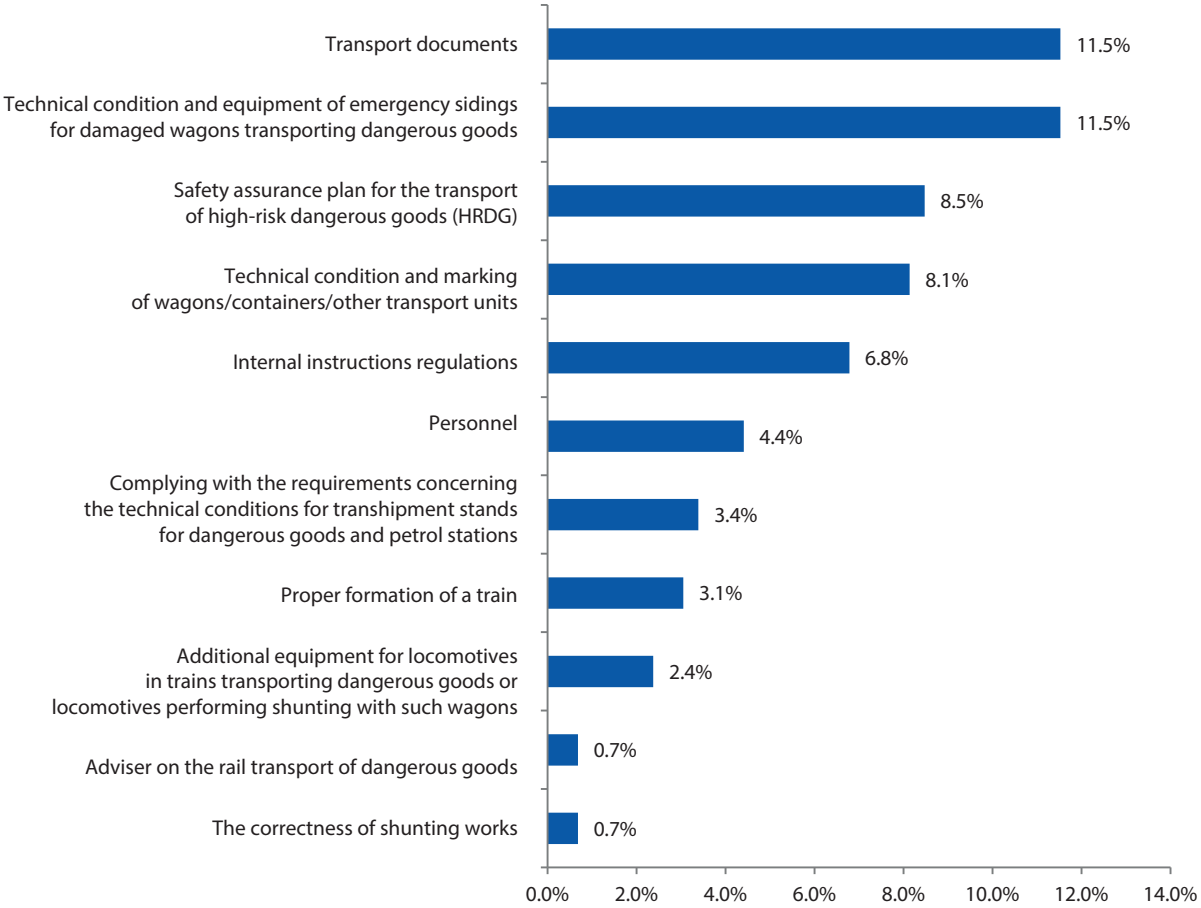


Fig. 101: A graphic presentation of irregularities identified during supervisory activities – a general scope



For irregularities in the transport of dangerous goods, the President of UTK can impose financial penalties on entities, in line with the rules specified in the appendix to the Transportation of Dangerous Goods Act. In 2015 the President of UTK issued 14 decisions imposing financial penalties for irregularities identified during supervisory activities concerning the transport of dangerous goods (this number also includes decisions to discontinue proceedings). The total value of financial penalties amounted to PLN 26 250, of which 50.1% were penalties imposed on railway undertakings, and 49.9% on side-track users.

It should be also highlighted that although irregularities were found as a result of a substantial number of activities, the President of UTK could impose penalties only for those irregularities that are specified in the appendix to the Transportation of Dangerous Goods Act.

Fig. 102: Financial penalties imposed in 2015 – by entity type

PLN 26 250 *The total amount of penalties imposed in 2015 for violations in the transport of dangerous goods*

The total amount of penalties imposed in 2015 on railway undertakings for violations in the transport of dangerous goods **PLN 13 150**

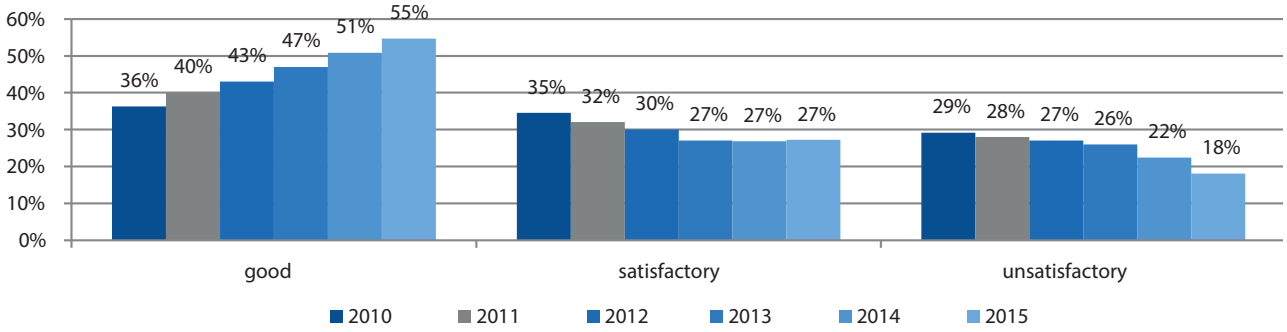
PLN 13 100 *The total amount of penalties imposed in 2015 on side-track users for violations in the transport of dangerous goods*

11. The assessment of the technical state of railway infrastructure

The largest railway infrastructure manager in Poland, PKP PLK S.A., which holds more than 96% of the whole generally accessible rail network, in its "Safety report for 2015" submitted to the President of UTK, assessed that the state of 18% of infrastructure was unsatisfactory (including 2% in bad condition) and 27 % was satisfactory. This in total makes up 45% of infrastructure which warranted more or less serious reservations in respect of the condition of railway superstructure.

As a result of maintenance & repair and investment works conducted in 2015, as at 31 December 2015, a 3% improvement, in relation to the state as at 31 December 2014, was recorded.

Fig. 103: The assessment of technical state of railway infrastructure of PKP PLK in the years 2010-2015



Source: Prepared by UTK using data from the 2015 safety report by PKP PLK S.A.

The abovementioned assessment was conducted according to the following criteria:

- good – only maintenance works required, individual surface elements requiring exchange, no restrictions;
- satisfactory – up to 30% of surface elements requiring exchange, reduced maximum time-table speed or speed limits;
- unsatisfactory – comprehensive exchange required, maximum time-table speed reduced significantly or numerous speed limits.

Upgrades and other activities connected with the improvement of the state of railway lines are one of the most important tasks assigned to PKP PLK S.A.. These tasks are financed by the company – as a national manager – from own resources as well as from the Railway Fund.

The Company conducts a wide-scale programme of modernisation and renewal of railway lines. The scope of individual investment projects usually includes comprehensive replacement of railway superstructure, railway traffic control devices and (traction and non-traction) electrical power engineering, as well as modernisation of level crossings and their removal and replacement by two-level crossings. The replacement of old, used and damaged elements of railway infrastructure and technical elements with new ones, using modern technology, allows for substantial improvement of operating parameters of the railway lines (mainly the maximum permissible speed) and at least the retention of, or more often the improvement of, the level of railway traffic safety.

It is expected that on the sections of railway lines that underwent modernisation or revitalisation the risk of incidents or operational difficulties due to poor technical state of infrastructure and/or infrastructure failures will be notably lower. Similarly, it is expected that the frequency of accidents at level crossings will decrease thanks to additional security devices and user alert devices (i.e. reclassification to a higher category).

In 2015, PLN 7 477.2 m were spent on investment works conducted in the rail network managed by PKP PLK. 828 km of tracks, 1 271 turnouts and 681 rail-road level crossings were upgraded, and 118 two-level crossings were constructed.

As a result of modernisation activities, the condition of infrastructure is gradually improving, but its overall quality should still be assessed as deviating from both needs and standards. Due to the technical condition of the infrastructure, to ensure safe train traffic, operational restrictions are being introduced. These extend travel times, making rail transport less attractive, mainly by maximum time-table speed reductions. A detailed presentation of speed limits by cause is demonstrated in the table below.

Tab. 38: The selected causes of temporary and permanent train speed restrictions

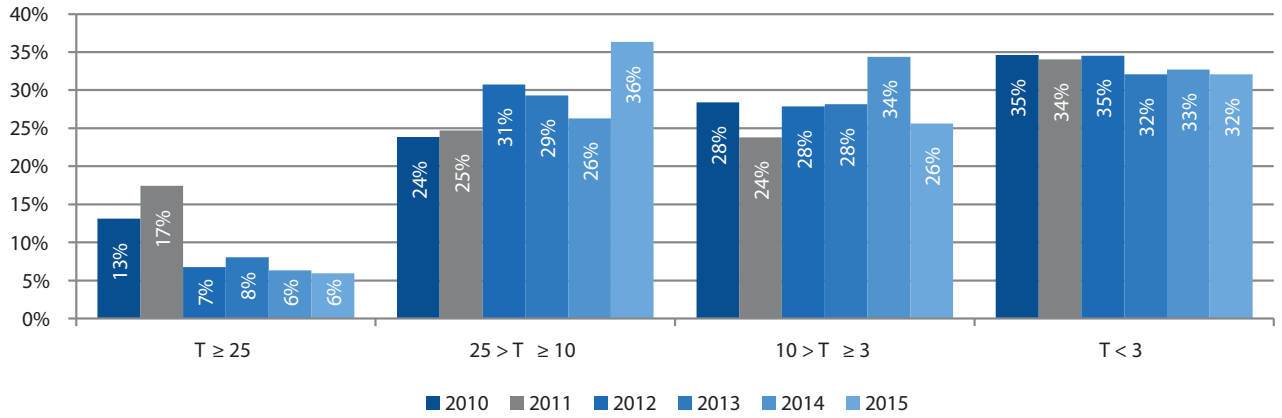
No.	The cause of speed limit introduction	31.12.2014		31.12.2015		Difference	
		Number [pcs]	Per distance [km]	Number [pcs]	Per distance [km]	Number [pcs]	Per distance [km]
1.	Bad technical condition of the track	1263	1366	1025	1110	-238	-256
2.	Bad technical condition of the facility	359	36	341	35.6	-18	-0.4
3.	On level crossings	1108	140	765	155	-343	+15
4.	Next to works sites	37	61	97	79	+60	+18

Source: Prepared by UTK using data from the 2015 safety report by PKP PLK S.A.

The presented data indicate that over the last year the number or speed limits, as well as the length of tracks they concerned, decreased. In the case of poor technical condition of the track, this difference amounted to more than 12%, and, for level crossings, to 31%. However, despite extensive repair and modernisation works conducted within the rail network and the lower number of speed restriction, the bad technical condition of infrastructure remains a serious problem. This necessitates further investments in railway transport infrastructure, without which it will be impossible to make this means of transport more attractive and safer.

The share of lines on which annual transport load in 2015 exceeded 25 m tonnes per annum remained at the level identical to the year before, i.e. 6%. The most numerous group among the operated lines were those on which transport load exceeds 10 million tonnes per annum. This group increased from 26% to 36%. These data are presented in the figure below.

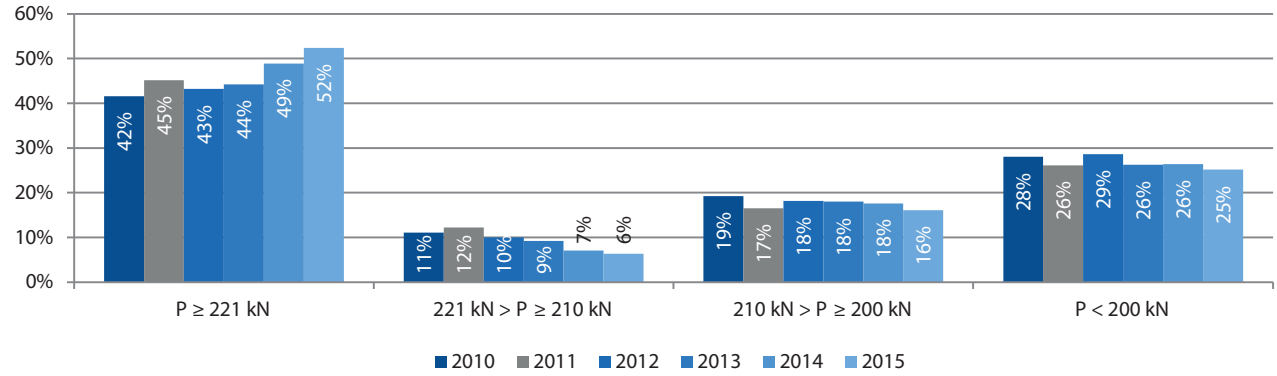
Fig. 104: The share of railway line length by average annual transport load in the years 2010-2015



Source: Prepared by UTK using data from the 2015 infrastructure parameters report by PKP PLK S.A.

In 2015 the share of railway lines with a permissible axle load exceeding or equal to 221 kilonewtons (22.5 tonnes) per axle – increased from 49% to 52%. The share of lines with a permissible load from 210 to 221 kN dropped from 7% last year to 6% and remained the lowest share.

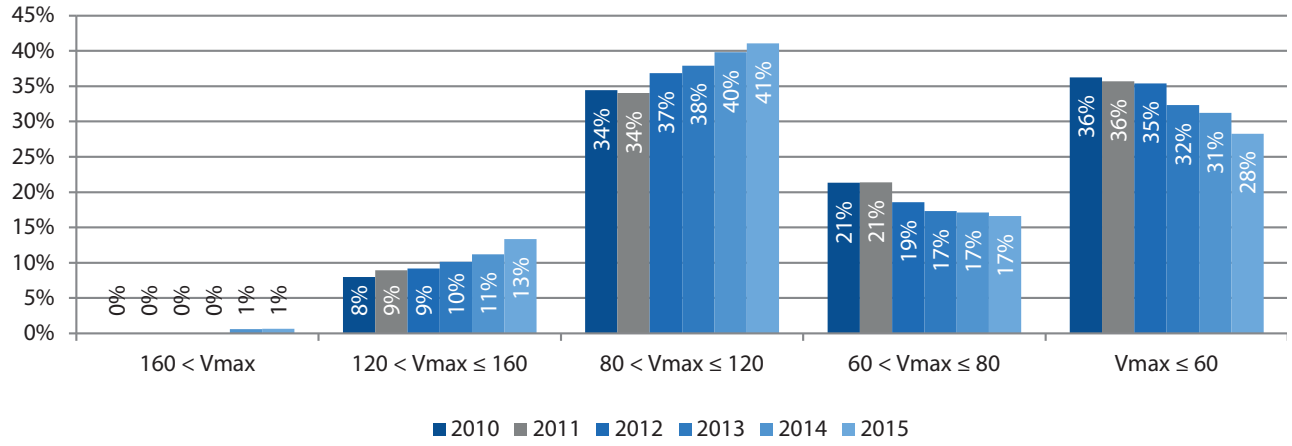
Fig. 105: The share of railway line length by permissible axle load in the years 2010-2015



Source: Prepared by UTK using data from the 2015 infrastructure parameters report by PKP PLK S.A.

In the present 2015/2016 timetable, based on PKP PLK S.A data, the total length of track adapted for trains travelling at speeds of 120-160 km/h increased from 5 250 km to 5 944 km (21.9% of the total track length managed by the national manager of railway infrastructure). Polish railway infrastructure already makes it possible to carry out transport activities at speeds exceeding 160 km/h. On 14 December 2014, ED250 Pendolino started running at a speed of 200 km/h in the Zawiercie – Olszamowice section. The maximum speed, which is 200 km/h, was introduced in the section from 125.200 km to 212.200 km (i.e. the Olszamowice – Zawiercie line), excluding 151.900 km – 155.430 km (Włoszczowa Północ Station) and 142.850 km – 149.500 km (with level crossings). The total length of sections with the allowed speed of 200 km/h amounts to 76.820 km. Works on adapting subsequent sections to the speed of 200 km/h are underway (the Biała Rawska – Strzałki section with Biała Rawska junction post). There are plans to include in the 2017/2018 timetable another section, from Grodzisk Mazowiecki to Idzikowice (from 5.000 km do 79.289 km), with a speed of 200 km/h in passenger traffic.

Fig. 106: The share of railway line length by maximum speed in the years 2010-2015



Source: Prepared by UTK using data from the 2015 infrastructure parameters report by PKP PLK S.A.

Tracks which allow train traffic at speeds exceeding 160 km/h, whose length is 179 km, currently make up less than 1% of all lines. The condition of railway line infrastructure is gradually improving. This is due to increased time-table speeds on 2 525 km of lines, with reduced speeds on 615 km of lines (a positive balance of +1 910 km of lines, according to PKP PLK S.A. data). Extensive track replacements (828 km in 2015) greatly contributed to this improvement.

11.1. Supervisory activities carried out by the President of UTK in respect of railway infrastructure maintenance

In 2015 the number of supervisory activities in respect of railway infrastructure and adjacent land maintenance amounted to nearly 300, 90% of which included activities conducted in a PKP Polskie Linie Kolejowe S.A. network.

At the same time, it should be highlighted that the maintenance of railway infrastructure is also verified as part of other supervisory activities, including safety measures for project

work, side-track use, inspection runs at the manager's site and the implementation of recommendations included in post-inspection statements and administrative decisions. In 2015 the total number of supervisory activities in this field amounted to more than 1000.

A series of irregularities was identified over the course of conducted activities, with the most prevalent ones including:

- inappropriate condition of road surface on crossings, access roads and walkways;
- the non-implementation of post-inspection recommendations following from road-surface diagnostics, technical examinations of vehicles and crossing examinations;
- the lack of regular maintenance of superstructure;
- inappropriate location, the lack of or illegible indicators;
- the presence of trees and bushes within a distance that poses a rail traffic safety risk;
- the lack of ongoing track monitoring and not taking measurements for railway infrastructure maintenance frequently enough;
- the non-performance of surface repair works resulting from technical examinations, track and turnout measurements, and of rail traffic control device maintenance;
- the use of worn-out or damaged wooden rail track sleepers, inappropriate maintenance of fastening and coupling connections, soiled crushed-stone ballast;
- irregularities in the operation of railway turnouts;
- deficiencies in documentation on crossings, incomplete signage.

As a result of the conducted supervisory activities, the President of UTK instigated administrative proceedings which culminated in the issue of administrative decisions on the irregularities in respect of railway infrastructure maintenance.

11.2. Inspections regarding the causes for applying the auxiliary signals

An auxiliary signal is a visual signal used to authorise train movement in specific situations, such as the failure of rail traffic control devices, or in the circumstances defined in the Regulation on the general traffic conditions. The President of UTK believes that the prolonged use of auxiliary signals or written orders in railway traffic is unacceptable. In consequence, supervisory activities were taken in respect of infrastructure managers, including especially PKP PLK S.A., as regards the reasons for deploying auxiliary signals and the procedures related to such deployments.

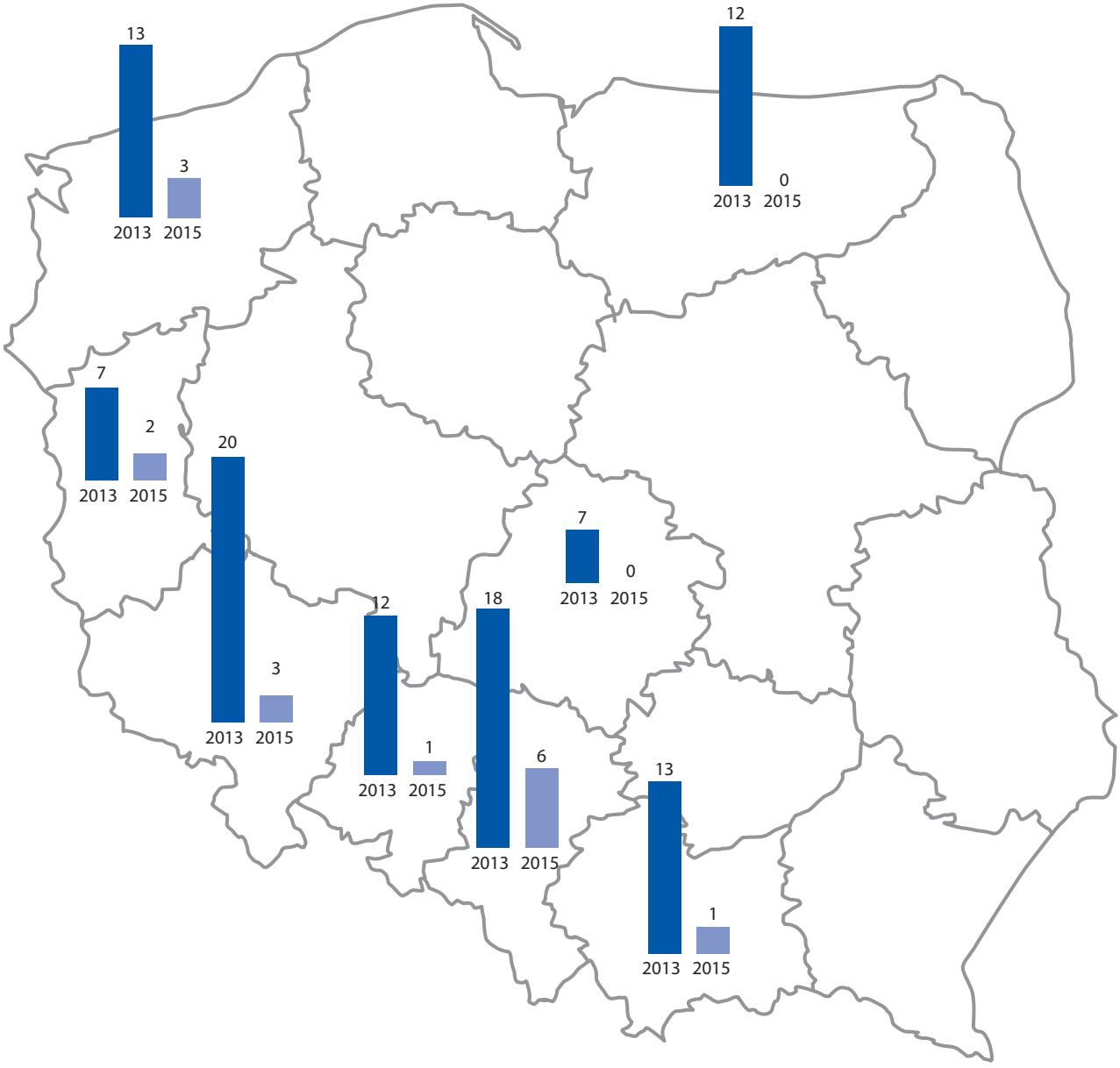
In 2013 the highest number of stations/traffic posts on which traffic was managed using auxiliary signals for more than 3 days was located in the Dolnośląskie Province. This made up 15% of all locations. A relatively high number of such cases was also reported in the Śląskie Province (13.5%), Małopolskie and Zachodniopomorskie Provinces (9.8%), and Warmińsko-Mazurskie, Pomorskie and Opolskie Provinces (9.0%). The share of other locations did not exceed 7.0% in respect of the remaining provinces.

It is worth highlighting that in 2015, as a result of supervisory activities, we managed to decrease the number of locations in which traffic was managed using auxiliary signals for a long time in each of the aforementioned provinces. In Wielkopolskie, Łódzkie and Warmińsko-Mazurskie Provinces train traffic managed using auxiliary signals was eliminated completely.

It should be also added that owing to such measures, it will be possible to eliminate long-lasting and unjustified management of rail traffic using auxiliary signals.

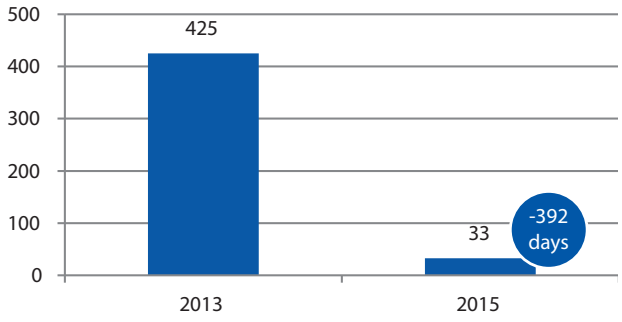
Owing to the inspection and administrative activities undertaken we have succeeded in decreasing the number of locations in which traffic was managed using auxiliary signals for a long time by more than half when compared to 2013.

Fig. 107: The number of locations within the PKP PLK S.A. network in which traffic management using auxiliary signals for a long time was restricted or eliminated (compared to 2013 and 2015)[1]



[1)] *Including provinces in which the number of such locations was reduced by at least 60%*

Fig. 108: The average number of days of applying auxiliary signals as at the end of 2013 and 2015



Owing to the inspection and administrative activities undertaken, the number of cases in which the infrastructure manager has eliminated, or has taken urgent measures to eliminate, an unjustified and prolonged use of auxiliary signals has been steadily growing.

It should be underlined that such measures made it to the list of priorities of the President of UTK in 2013-2015 and will be continued in 2016.

12. The assessment of the technical state of railway vehicles

The technical state of rolling stock, in addition to the state of railway infrastructure described in the previous chapter, is another factor greatly determining rail traffic safety. Unlike infrastructure, however, railway vehicles are used by several dozen railway undertakings. Due to very limited time between the statutory deadline for the submition of the annual Safety Report by railway undertakings and infrastructure managers, and the time limit for the submission of this Assessment, it impossible to clarify all doubts about data provided by the aforementioned entities to guarantee their consistency and quality. Based on the material collected from annual reports filed by the entities, it was possible to identify specific problems. This was done, however, on the basis of data pertaining to a sample of approx. 70-80% of vehicles.

The state of rolling stock in passenger and freight traffic is not satisfactory, due to both the age of the rolling stock and its structure. The main problem is the obsolete design and heavy wear of most passenger wagons, and especially electric multiple units, resulting in high service and maintenance costs. Another issue is the shortage of locomotives suitable for high-speed travels.

In Poland passenger rail transport is provided using classic passenger wagons, usually compartment wagons (long-distance trains and, to some extent, regional trains), double decker wagons (regional services), electric multiple units (regional trains) and diesel or electric engine vehicles.

When it comes to freight transport, the main problem is the low percentage of wagons adapted for new transport technologies and the high average age of these wagons. Railway undertakings invest in new freight locomotives; however, the number of new locomotives included in the rolling stock of railway undertakings operating in Poland is not enough to compensate for the number of locomotives that are being removed from operation.

66% of owners assessed the state of their freight wagons as good or very good. 58% of passenger wagons were assessed as good or very good. In this case the age of rolling stock is much more diverse, as in addition to passenger wagons, multiple units and railbuses, which constitute a bit younger rolling stock, should also be taken into account.

12.1. Rolling stock failure rate

When analysing the issue of the technical state of railway vehicles within this chapter, the President of UTK focused on analysing information on risks associated with rolling-stock operation obtained from devices for detection of state of emergency in rolling stock (DSAT) installed within the PKP PLK S.A. network.

Rolling stock operation is associated with the occurrence of various malfunctions that have a negative impact on the rolling stock itself and railway infrastructure alike. Early detection of such malfunctions makes it possible to provide transport services safely, and, therefore, to mitigate risks associated with accidents.

DSAT devices detect malfunctions posing risks to rail traffic safety, including overheated axle-boxes, wheel deformations, overheated brakes and excessive dynamic vehicle-track interaction.

In 2015 devices for detection of state of emergency in rolling stock (DSAT) installed in railway lines managed by PKP PLK S.A. generated a total of 11 015 alarm signals, 8 177 of which were cases confirmed by an authorised employee. Employee-unconfirmed information (approx. 26%) was generated due to irregularities in the functioning of DSAT devices.

These devices detected 1000 cases of overheated axle-boxes in vehicles (713 alarms and 287 warnings), including 687 cases confirmed by an authorised employee of the railway undertaking.

Most state-of-emergency cases in rolling stock detected by DSAT devices – 4 468 – concerned overheated brakes (581 alarms and 3 887 warnings), including 3 569 cases confirmed by an employee. Brake system malfunctions are prevalent failures in rolling stock that can cause a fire or the destruction of axle-boxes or the wheels and steering system, and, consequentially, a railway accident.

The next group – 2 664 cases (113 borderline cases and 2 551 warnings) – concerned excessive dynamic loads – abnormal blows in the railroad bed, which was also important in respect of infrastructure operation. The detection of such a state of emergency results in the removal of a locomotive or wagon from traffic.

1 959 cases concerned wheel-ring deformations (772 alarms and 1 187 warnings), 396 of which were confirmed cases. Wheel-ring deformations cause faster infrastructure wear.

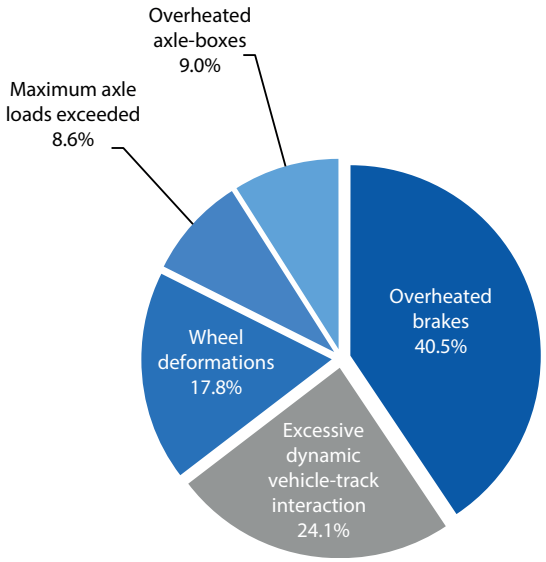
Furthermore, DSAT devices detected 944 cases of exceeding standard axle loads, associated with wagon overloading.

Tab. 39: Alarm signals generated by DSAT devices in 2014 and 2015

No.	States of emergency detected	Number of states of emergency in 2014	Share [%]	Number of states of emergency in 2015	Share [%]
1.	Overheated brakes	3 994	32.8%	4 468	40.5%
2.	Excessive dynamic vehicle-track interaction	3 625	29.7%	2 664	24,1%
3.	Wheel deformations	2 668	21.9%	1 959	17.8%
4.	Exceeding maximum axle loads	984	8.1%	944	8.6%
5.	Overheated axle-boxes	918	7.5%	1 000	9.0%
6.	Total	12 189	100.0%	11 035	100.0%

Source: Prepared by UTK using data from the 2014 and 2015 safety report by PKP PLK S.A.

Fig. 109: The structure of alarm signals generated by DSAT devices in 2015



Source: Prepared by UTK using data from the 2015 safety report by PKP PLK S.A.

Within the "Safety improvement programme" adopted by PKP PLK S.A., by the end of 2017 the number of DSAT devices used in the rail network managed by PKP PLK S.A. should amount to 200. In 2015, in connection with modernisation works carried out by the company, 5 new devices were installed, resulting in an increase in the number of devices in the network from 187 in 2014 to 192 devices used at the end of 2015, which translated into improved safety on key railway lines.

Furthermore, "The Ie-31 guidelines on the drawing up of regulations for use of terminals for devices for detection of state of emergency in rolling stock on the move" – arrange and specify issues connected with the use of terminals for DSAT devices, and regulate the rules of cooperation between railway undertakings and infrastructure mangers – were developed. This will substantially contribute to the improvement of rail traffic safety.

As part of research and development of DSAT devices, attempts were made to expand the market of DSAT device manufacturers (leading to the obtaining of a permit of the President of UTK to use certain devices in the rail network) – a new test site on Line No. 1 in Krężce.

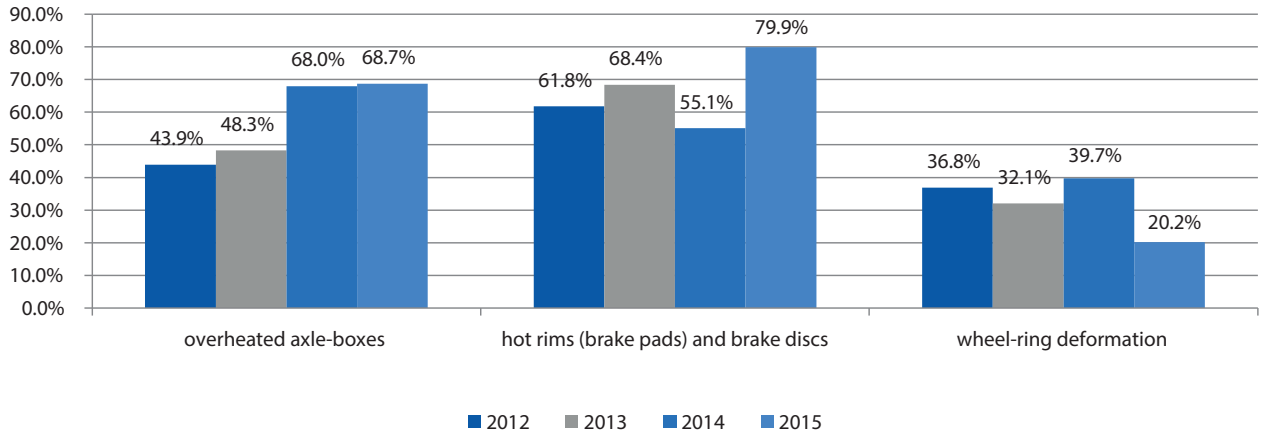
In 2015 PKP PLK S.A. continued its activities referred to as "The implementation of IT solutions for the technical diagnostics of rail traffic control devices". The aim of these activities is to develop a

model of supporting diagnostics using IT tools in the field of rail traffic control devices, which will result in the commencement of the implementation of new rules and IT tools to schedule tests and inspections, diagnostic testing reporting and work execution and time reporting. In 2015 PKP PLK S.A. engaged in a simultaneous technical dialogue with external contractors, which can provide their services in respect of IT systems. A pilot run of IT solutions for diagnostics was prepared at the premises of the Railway Lines Plant in Bydgoszcz.

The implementation of modernisation-oriented projects at PKP PLK S.A. will make it possible to detect and remove from traffic defective rolling stock that causes faster railway wear (rails and turnouts) and poses a risk to rail traffic safety. The new devices will comply with basic railway interoperability requirements included within TSIs.

The chart below presents the percentage share of actual states of emergency identified by DSAT devices in the PKP PLK S.A rail network.

Fig. 110: The confirmability ratio of states of emergency indicated by DSAT devices between 2012 and 2015



Source: The 2012-2015 safety reports by PKP PLK S.A.

12.2. Freight-wagon maintenance

In 2016 entities in charge of the maintenance of freight wagons provided the President of UTK with annual reports of entities in charge of maintenance in 2015, which included data on the number of maintained wagons and the number of repairs at individual maintenance levels. The reports were submitted by 53 entities in charge of freight-wagon maintenance. The presented data indicated that as at 31 December 2015, 85 722 wagons were included in the freight-wagon maintenance management system referred to in Regulation 445/2011. When it came to the wagons in question, 158 495 repairs were conducted at the P2 level, 11 979 repairs at the P3 level, 4 299 repairs at the P4 level, and 4 514 repairs at the P5 level (no data on P1-level repairs were collected). The tables below present data on the number of freight wagons included in the maintenance system, as well as on repairs carried out at individual maintenance levels.

The classification of the repair levels of freight wagons results from the Regulation of the Minister of Infrastructure of 12 October 2005 on the general technical conditions for railway vehicle operation (consolidated text: Journal of Laws of 2016, item 226).

Tab. 40: Freight wagons included in the maintenance system in 2014-2015

No.	Wagon type	2014	2015
1.	Freight wagons	82 899	85 722

Source: prepared by UTK on the basis of reports by entities in charge of maintenance

Tab. 41: The number of repairs conducted at individual maintenance levels in 2014-2015

No.	The number of repairs conducted by maintenance level	2014	2015
1.	P2	154 374	158 495
2.	P3	13 520	11 979
3.	P4	4 728	4 299
4.	P5	9 119	4 514
5.	Total	181 741	179 287

Source: prepared by UTK on the basis of reports by entities in charge of maintenance

There are no comprehensive data from all entities in charge of freight-wagon maintenance. It is worth highlighting here that the difference between the number of freight wagons for which reports of entities in charge of maintenance were submitted and the number of freight wagons entered into the register of railway vehicles results from the fact that not every freight wagon in the register has an entity in charge of its maintenance ascribed to it, and also from the fact that not all entities in charge of maintenance submitted their annual reports of an entity in charge of maintenance. In addition, some wagons owned by them is intended for scrapping, and due to this fact, they were not included in the aforementioned statistics (they had been phased out). At the beginning of the reporting year, the number of freight wagon included in the maintenance system amounted to 83 814 wagons and increased to 85 722 at the end of 2015.

In 2015 entities reported 143 648 freight-wagon defects. In respect of the P2 level, not all entities recorded the number of repairs, and some entities indicated their numbers for several similar types of wagons. Last year there were 989 events reported which entailed wagons included in the maintenance system. Most of these concerned issues associated with mechanical damage resulting from the loading and unloading of cargo. There were cases connected with the attempts of stealing transported cargo, whose side-effect was damage to wagons.

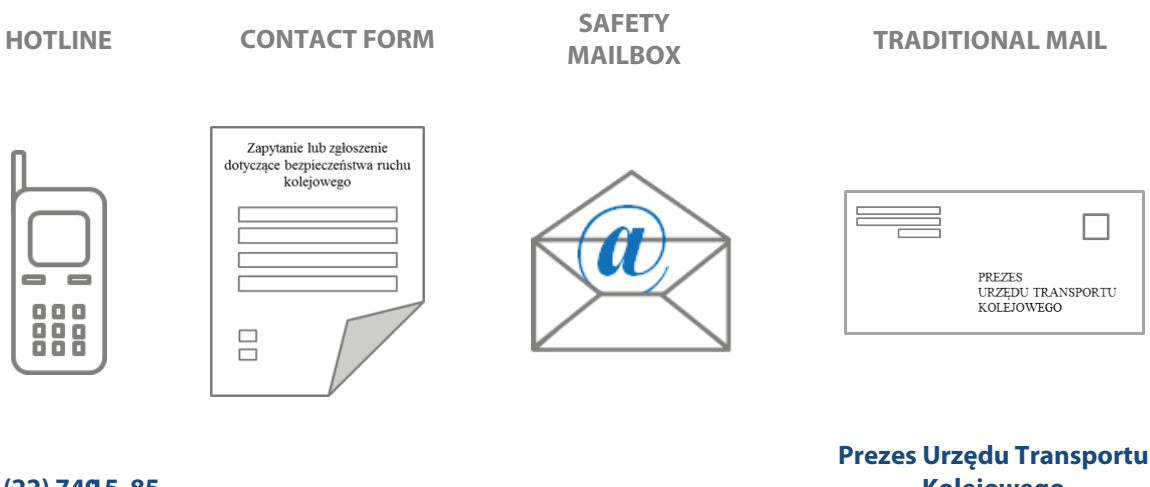
318 out of 324 planned internal audits were carried out. The difference results from the audits being rescheduled or abandoned due to the processes of internal department merger in a given entity. Based on the collected data, in should be concluded that entities in charge of the maintenance of freight wagons placed considerable emphasis on the carrying out of internal audits scheduled for 2015, as their findings can significantly contribute to further improvement in the implemented systems.

13. Additional activities of the President of UTK carried out in respect of improving rail traffic safety and promoting a culture of safety

13.1. Reporting irregularities in rail traffic safety

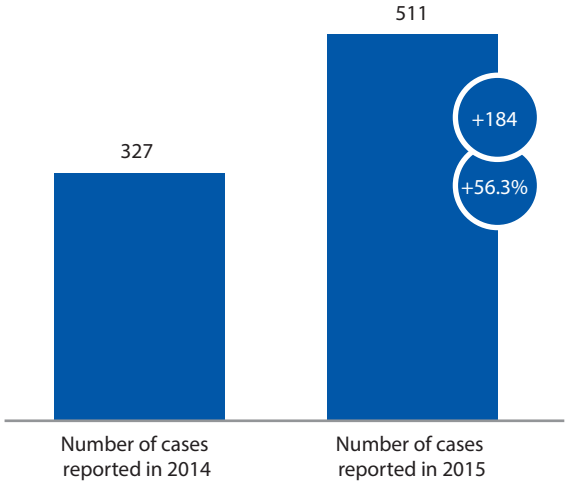
In order to meet the expectations of the public and the rail market in the field of traffic safety and the top quality of rail services, the President of UTK launched a special hotline, where people can submit all their complaints and applications connected with rail traffic safety. In addition to the aforementioned form of communication, cases can be reported using a contact form on the website of the Office of Rail Transport, as well as by electronic and traditional mail.

Fig. 111: Available forms of safety reporting



As many as 511 cases connected with rail traffic safety were reported in 2015 alone, using the hotline and other dedicated means of contact (an over 56% increase compared to 2014). Immediate supervisory and inspection measures were taken in all cases. Most of these measures confirmed the presence of irregularities in the operation of rail market entities. Swift reactions by the President of UTK contributed to the elimination of potential rail traffic safety hazards.

Fig. 112: Improvement in citizens' awareness of their ability to influence safety



13.2. Task force for monitoring the safety of the rail sector in Poland

As part of the implementation of safety monitoring activities by the President of UTK, a special task force was set up at UTK. Its objective is to identify alarming trends and new threats to safety, and to inform interested entities of those trends and threats.

The UTK President's Task Force for monitoring the safety level of the rail transport in Poland was established under Regulation No. 9 of the President of UTK of 22 August 2014.

The activities of this special task force include not only monitoring events, but also influencing the market in such a way as to prompt entities to implement immediate and appropriate preventive measures to ensure the proper level of safety in rail traffic.

The key responsibilities of the Task Force include in particular: identifying sources of information regarding the safety of the national railway sector, analysing information on the safety of the national railway sector with a view to identifying alarming events and trends, establishing an optimal mode of communication with the sector and sharing information on the identified issues related to the safety of the national railway sector or initiating preventive measures to be adopted and deployed by railway sector entities as well as eliminating any irregularities found in this area.

In 2015 the team held 7 meetings addressing:

- locomotive runway,
- events under B04 and C44 categories (involving a train passing a "Stop" signal);
- events connected with train uncoupling;
- accidents at level crossings;
- antiterrorist procedures;
- poor operational condition of rolling stock;

In 2015 the number of reported irregularities related to railway traffic safety increased by over 56% (compared to 2014).

- events connected with dispatching a train to an occupied track.

The meetings of the task force may also be attended by people who are not its members, provided they have been invited by the chairperson. In 2015 the meetings of the task force were attended by representatives of infrastructure managers, railway undertakings and rolling stock maintenance and repair plants.

The meetings of the task force constitute a basis for new activities aimed at ensuring rail transport safety. When determining the type and scope of such activities, it is very helpful to draw from the knowledge and experience of entities currently operating on the rail market. The knowledge and experience of certified railway undertakings, authorised infrastructure managers and other entities interfacing with the rail system translates into the development and undertaking of effective measures in this field by the President of UTK.

This confirms that the organisation of Task Force meetings makes it possible for the rail market entities to take additional measures to improve safety, as well as for the President of UTK to improve the available and implemented tools for safety analysis and monitoring.

Furthermore, the Task Force meetings constitute a response of the President of UTK to frequently occurring events which can considerably influence rail safety. This facilitates a proactive approach with an eye to ensuring the quickest possible response to any dangerous and potentially dangerous incidents. As the President of UTK reaches out to participants in the rail market, the organisation of such events is certainly justified. The Task Force meetings allow for an extensive exchange of informa-

tion and experience, and also bolster cooperation between the entities and the national safety authority. The operation of the Task Force has a positive impact on the level of rail traffic safety. The Task Force meetings not only have disciplinary and supervisory functions, but also contribute to the promotion of best practices and better understanding of the causes of the phenomena that compromise rail traffic safety.

13.3. Register of Entity-Specific Risk Parameters

The Register of Entity-Specific Risk Parameters (RPRP) is an online platform with reporting and analytical functions, based on data sent by entities. As part of the model proposed, the safety level indicators were developed, for both individual entities and railway market segments. This model is based on four general indicators, defined on a quarterly basis, for various types of railway entities. Irrespective of the entity type, these indicators are defined on the basis of four auxiliary indicators:

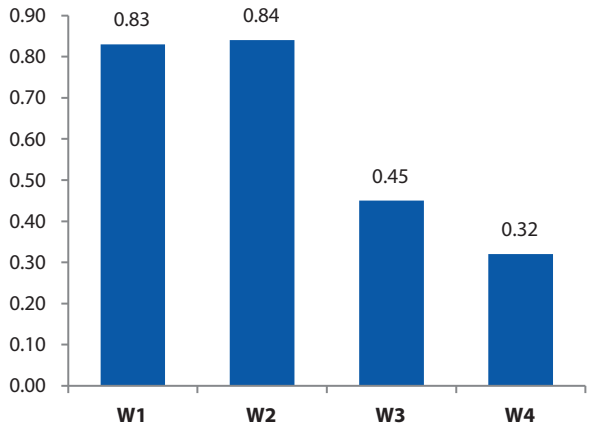
W1 – Reference Risk Value (RRV), determined based on the methodology taken from the Commission Decision of 5 June 2009;

W2 – Total number and consequences of railway events in the analysed period;

W3 – Data connected with the implemented and certified SMSs of individual entities;

W4 – Data as regards vehicles operated by a given entity.

Fig. 113: The average value of individual safety-level indicators in Q4 2015



Results obtained from RPRP software are used primarily to determine the order of supervisory activities, as well as during the implementation of the supervision plan of the President of UTK. The function of the developed model of rail traffic safety indicators in Poland is to determine areas targeted by the supervisory activities.

Data entered in the application make it possible to determine the general safety of railway entities in Poland in a measurable manner. The safety indicators for every passenger railway undertaking, freight railway undertaking and infrastructure manager are calculated analogously, which makes it possible to determine the scope of risk of the business activities of every individual entity.

These indicators allow for periodic assessments of entities on a specific scale, and thereby to establish a hierarchy of all participants in the rail market in terms of their safety levels.

Summing up, the analysis of the values of constitutive indicators helps to set the direction of future supervisory activities. Especially evident is the need for the intensification of activities related to the supervision over security management systems, and also in respect of railway vehicle maintenance, as the average W3 and W4 indicators were the lowest in these fields. Thus, systemic controls of 79 different entities operating in the rail market were planned for 2016. It should be highlighted that in some cases more than one inspection of a given entity was planned, due to separate proceedings in each plant/branch of a given entity.

13.4. Exchanging experience with foreign entities

Poland engages in regular and extensive railway-related cooperation with partners from the Netherlands on the basis of a Memorandum of Cooperation of 2010. This has made it possible to organise several meetings and workshops, during which partners shared their experience and best practices, e.g. in the field of rail traffic safety.

On 4-5 November 2015 a seminar entitled "The system of training and examining drivers and driver candidates in the Netherlands" was held. The seminar was organised by the President of UTK with the assistance of the Dutch Ministry of Infrastructure and the Environment and the Panteia company from Zoetermeer, the Netherlands. Invited participants included entities involved in the training and examination of drivers, candidates for drivers, railway undertakings, representatives of Dutch organisations involved the training and examining of drivers, i.e. the examination centre – Veiligheid & Vakmanschap Railvervoer and the training centre – STC – Group.

The President of UTK confirmed his desire of introducing a new model of driver training and examination, which are currently carried out by the same entities. Nevertheless, feedback from small and medium-sized enterprises, which might feel discriminated against in the training process, is important. To facilitate equal access to the market, it is suggested to continue public consultation with UTK. Participants in the meeting assured themselves of their close cooperation and will continue to work together on a new model of training and examining drivers, anticipating cooperation also at the legislative level.

When it came to rail traffic safety, the President of UTK agreed on potential topics of further cooperation.

13.5. Guidebooks on the practical application of the requirements of common safety methods

The President of UTK, taking into account the needs of the rail market, prepared and presented guidebooks on the practical application of the requirements of a common safety method:

- for monitoring, which is to be used by railway undertakings and infrastructure managers after the receipt of a safety certificate or safety authorisation, and by entities in charge of maintenance (CSM-M);
- on risk evaluation and assessment (CSM-RA).

The objective of the aforementioned guidelines is to make it easier for the rail market entities to meet the requirements necessary to obtain safety documents issued by the President of UTK: safety certificates, certificates for entities in charge of the maintenance of freight wagons, and safety authorisations.

These guidebooks should at the same time contribute to a better implementation of processes ensuring that the rail market entities operate in a safe manner, which will, in turn, translate into improved safety in the entire rail system.

In other words, monitoring activities carried out by railway undertakings are aimed at controlling the correct use and efficiency of their own safety management systems. Owing to the monitoring process, railway undertakings will be able to determine which areas of its activity fail to achieve the required safety indicators and require special attention. The monitoring process is thus the necessary source of information needed to identify and remove – quickly enough – defects in the used safety and maintenance management systems, which would otherwise lead to accidents, incidents or other undesirable situations.

Managing the risks associated with the introduced organisational, technical and operational changes involves the identification of hazards in the railway undertaking's operation and the implementation of preventive measures aimed at reducing this risk to an acceptable level. To put it differently, the proper and reliable implementation of this process allows the management of a given enterprise to make sure that the introduced changes are appropriately managed, and that risks associated with them can be effectively controlled. Without a dependable risk-identification process, enterprises cannot effectively analyse risks associated with changes.

Both the aforementioned process are therefore of key importance to ensuring the safety of rail operations, and the efficiency of their implementation is directly reflected in rail system safety. For this reason, the President of UTK deemed it necessary to provide railway undertakings with comprehensive support, in the form of the presented guidebooks, in the implementation of these processes in their safety and maintenance management systems.

The guidebooks are based on the analysis of actual experiences of entities in the rail sector and the current state of knowledge of safety and maintenance management systems. They describe alternative solutions that make it possible to adapt the monitoring and risk management processes to the nature of activities. Also identified were crucial areas requiring special attention and diligent approach, without which the effectiveness of both processes would be compromised. Furthermore, the presented guidebooks supplement and explain EU legal regulations in respect of common safety methods.

According to the President of UTK, the use of the developed guidebooks, including a comprehensive set of practical tips and examples illustrating how to ensure the efficiency and reliability of the risk management and monitoring processes will surely contribute to the elimination of many threats in rail traffic and improvement in the general condition of rail traffic safety.

13.6. Work on the List of the President of UTK

The List of the President of UTK that is currently in force was published on 26 September 2013. In the first half of June 2015, using the NOTIF-IT platform of the European Railway Agency (ERA), the List of the President of UTK was notified in terms of the relevant national technical specifications and standardising documents the use of which makes it possible to meet the essential rail system interoperability requirements, which was connected with new TSIs entering into force. At the same time, work on a new List of the President of UTK has commenced. It will provide for national regulations in the areas included in the regulation on authorising the placing into service (special cases, open points, EC verification of the national part subsystem).

Is should be indicated, however, that during the period in which the List of the President of UTK applied, there was a change in the legal context. Special attention should be given to the safety aspect of products used in railway operation. The new form of the List of the President of UTK, which is employed directly in the process of authorising the placing of products into service (acceptance certificates, conformity to type assessment), will form an update and supplement of technical standards and safety criteria of products used in the individual types of rail

structures, equipment and vehicles. This update will also make it possible to bring national requirements in line with the new TSIs. The verification of the List of the President of UTK and the dating and updating of standards are aimed at increasing safety requirements through the use of consistent and aligned regulations.

It should be indicated, however, that one of the main objectives of determining the national technical requirements included in the List of the President of UTK is to ensure rail traffic system safety and safe railway traffic control. The standards indicated in the List of the President of UTK include national safety requirements. Therefore, by verifying conformity with the List of the President of UTK, a given product or subsystem can be confirmed as meeting the requirements in respect of, i.a., safety.

13.7. National safety regulations

Among the crucial successes in cooperation with ERA was the publication of the Polish National Legal Framework (NLF) in the Reference Document Database (RDD) system. NLF is a document that is drawn up based on a reference document, published on the basis of Article 27 (4) of Directive 2008/57/EC, which describes national rules for the placing in service of vehicles. National safety authorities of EU Member States publish NLF in the RDD IT system. The RDD is a database managed by ERA.

The purpose of reference documents (some of which constitute NLF) is to streamline proceedings connected with the placing in service of vehicles by:

- determining all parameters to be checked in conjunction with the placing in service of vehicles;
- identifying all national laws and regulations applied by the Member States in respect of placing in service of vehicles;
- linking every applicable provision of law with one of the parameters to be checked in conjunction with the placing in service of vehicles;
- classifying all rules in groups A, B or C, in line with section 2 of Annex VII to Directive 2008/57; and
- estabishing the national legal framework covering the placing in service of vehicles.

The publication of NLF was crucial in terms of rail traffic safety when it came to the import of products (rail vehicles) from other EU Member States to the Republic of Poland. The presentation of Polish railway-related requirements in the European system contributed to clearer requirements applicable to products that are to be used in Poland.

13.8. Safety management system workshops

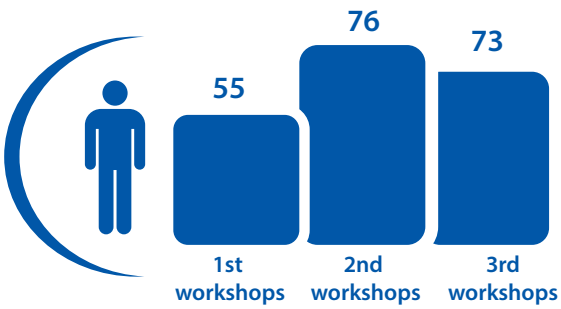
To meet the needs of the rail market, the President of UTK launched in 2015 a series of free-of-charge Safety Management System Workshops dedicated to representatives of market entities responsible for rail market safety.

The main objective of this project is to transfer experience and knowledge obtained during the present supervisory activities of the President of UTK, and to improve knowledge of safety, and also to continuously improve the safety and maintenance management systems available to enterprises.

Among the topics discussed at meetings held so far, there were such matters as:

- the supervision of the President of UTK over Safety Management Systems in rail transport (SMS and MMS);
- the correct classification of events in rail transport;
- administrative proceedings by President of UTK in the light of conducted supervision;
- the supervision by the President of UTK over side-tracks and level crossings;
- the supervision by the President of UTK over the work of examination boards;
- a process approach to including side-tracks in SMSs of railway undertakings;
- legal basis allowing for changes to safety certificates;
- improving the safety culture;
- monitoring safety in practice, including examples of the most frequent irregularities in this regard.

Fig. 114: The number of participants in individual safety management system workshops



13.9. "Together creating safe railways"

In 2015 a series of meetings between UTK employees and representatives of local rail markets started within the "Together we create safe railways"campaign.

The main objective of these meetings is to establish positive relations between the market and the Office to create a safe and competitive rail transport market in Poland. At workshops and discussion panels, employees of the Office eagerly shared their experience gained during supervisory activities, as well as answered questions and clarified entrepreneurs' doubts connected with rail activities.

Below you can find a list of issues discussed thus far:

- the supervision by the President of UTK over management systems and administrative proceedings;
- the safety of side-track use – how to eliminate irregularities and improve rail traffic safety;
- legal matters concerning the supervision by the President of UTK over the rail market;
- the selected aspects connected with the maintenance of railway vehicles, review of the most common irregularities identified in the course of the supervisory activities of the President of UTK;
- the skills of railway staff;
- the approval of the maintenance system documentation and internal regulations;
- the issuance of safety certificates, authorisations and attestations;
- the process of placing in service of structures, vehicles and devices, the issuance of authorisation for the placing in service of interoperable subsystems, and railway vehicle registration.

13.10. "Fridays with UTK – top class safety"

Starting from 4 December 2015, meetings entitled "Fridays with UTK – top class safety" are held biweekly on Fridays, at 9:00–15:00, in the UTK office, Warsaw, and in its seven Local Branches.

During these meetings, representatives of the Supervision Department and UTK Local Branches answer all questions concerning rail traffic safety, including administrative and supervisory proceedings conducted by the President of UTK. It is the perfect opportunity to clarify all doubts, whether technical, formal or legal.

13.11. An agreement with the Civil Aviation Authority on transport safety

On 27 October 2015 the President of UTK concluded with the President of the Civil Aviation Authority an agreement on cooperation in air and rail transport safety in Poland.

The parties to this agreement committed themselves to exchange information on the currently implemented procedures of supervision over rail and air transport safety, and also to inform each other of supervisory instruments – in respect of which UTK already has substantial experience – as well as of the effectiveness of such instruments.

As a result of this agreement, both these institutions gained access to databases connected with air and rail events. The documents made available thus far include safety analysis and lessons learned, as well as risk estimation models and safety-management training materials.

13.12. Cooperation with the National Labour Inspectorate

In line with the agreement between the President of UTK and the Chief Labour Inspector on the rules of cooperation between the President of UTK and the National Labour Inspectorate (PIP), joint supervisory activities were conducted in 2015. These included the PKP PLK S.A., an infrastructure manager, and concerned the observance of labour law and OHS regulations, as well as the safety and coordination of rail traffic during the planned track closures associated with this work.

It is worth emphasising that the procedures governing inspection activities are different at UTK and PIP. Consequently, while inspections take place in the same place and at the same time, each of the aforementioned authorities prepares their own post-inspection documentation, which includes inspection reports, follow-up reports, orders and oral instructions and decisions. The aforementioned procedural differences result from UTK and PIP being bound by separate laws and regulations.

Furthermore, on 21 and 22 May 2015 representatives of UTK took part in a joint training meeting with PIP. At this meeting, participants exchanged experience and discussed in detail the scope of inspections carried out by both institutions in the field of rail traffic safety, track work, working time of drivers, and also reflected on the areas of joint action.

13.13. Cooperation with national safety authorities from other Member States

On 21 July 2015 a Polish-Lithuanian agreement was signed in the office of the Lithuanian National Safety Authority, Vilnius,

on cooperation in the field of supervising entities operating in Poland and Lithuania based on part B safety certificates issued by both these countries.

Under this agreement, the parties will exchange information on the result of supervisory activities over entities holding part B safety certificates issued in other countries.

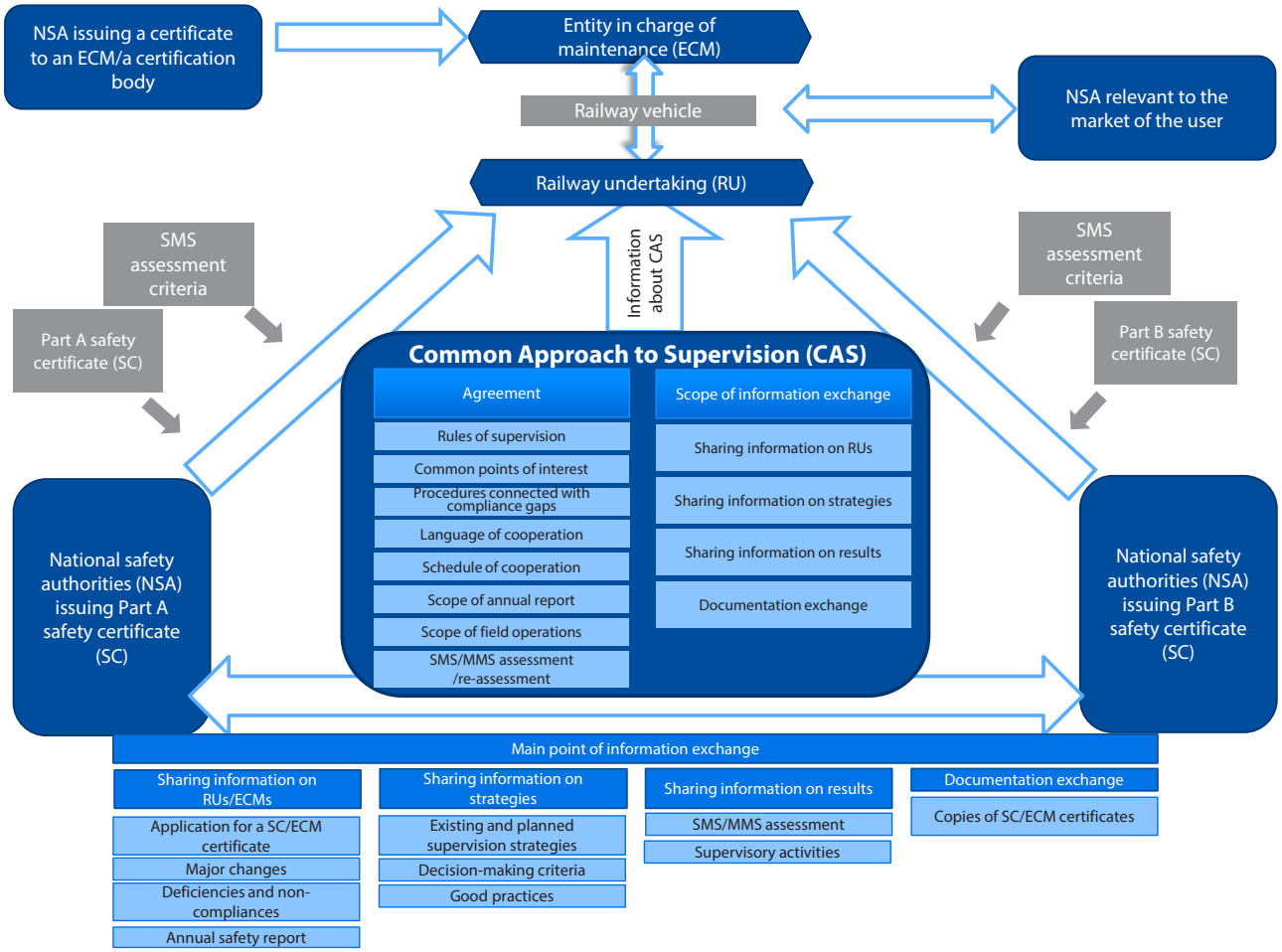
In connection with the signing of the agreement and the course of the meeting between the Polish and Lithuanian NSAs, it was determined that some discrepancies were present in individual areas of the supervision systems used by the NSAs of Poland and Lithuania, and therefore that:

- there was a need for organising annual meetings of representatives of both NSAs, including of operational staff, which would facilitate the adoption of a uniform approach to joint supervision over entities that the agreement in question concerned;
- the condition for obtaining comprehensive information on entities operating in both countries is the steady exchange of information specified in the supplement to the agreement between the Parties;
- other approaches and partially different scopes of supervisory activities can potentially bear fruit in terms of extending the operations of individual NSAs;
- the use of different tools that support and coordinate the planning and performance of supervisory activities can help to expand the functional and analytical potential of the tools in the future.

Is should be added that in 2015 the cooperating Polish and Lithuanian NSAs carried out the first exchange of information within the scope agreed on in the concluded agreement.

The principles of the agreement at hand are presented in the diagram below.

Fig. 115: The model of the Common Approach to Supervision – CAS



14. Summary and conclusions

The presented information proves that the improvement in rail traffic safety in Poland continued in 2015. The number of railway accidents is steadily decreasing: from over 700 accidents in 2012-2013 to 671 in 2014 and 638 in 2015. As far as rail accident casualties are concerned, unfortunately we recorded an increase in the number of deaths in 2015. When compared to 2014, the number of deaths in 2015 increased from 208 to 228, and the number of serious injuries dropped from 95 to 93. The accident ratio, i.e. the relationship between the number of accidents and the operational performance (train-km), also improved. While in 2014 the ratio equalled 3.19, in 2015 it amounted to 2.92. Also, the failure rate as regards the transport of dangerous goods was at a level similar to the preceding years. In 2015 this rate amounted to 1.13, while in the preceding years it equalled 1.29 and 1.16.

It is clear the effectiveness of the supervisory activities conducted by the President of UTK directly translates into the level of rail traffic safety. In this regard, the significant increase in the number of supervisory activities carried out by the President of UTK is especially of note. When compared to 2014, the number of supervisory activities increased by 9% (from 2 884 to 3 144). Furthermore, the President of UTK issued 1 794 more post-inspection recommendations than in 2014 (3 906 post-inspection recommendations). Financial penalties imposed on rail-market entities in 2015 totalled PLN 1.2 m. This amount is 14% lower than a year before.

The reasons for this improvement in rail traffic safety are attributable not only to the implementation of the executive powers of the President of UTK, but also to his initiatives aimed at the dissemination of knowledge and solutions ensuring safe operations on the rail market. This primarily includes the setting up of the Task Force for rail traffic safety, the launching of the Register of Entity-Specific Risk Parameters and the implementation of the provisions of the *Memorandum on cooperation in counteracting infrastructure theft*.

This improvement would not have been possible without effective market monitoring tools, including primarily the registers kept by the President of UTK and the reporting obligations of entities operating in the railway sector. An ongoing analysis of the sources of information available to the President of UTK allows for the identification of developments with adverse impact on rail traffic safety, thus helping to take immediate countermeasures.

The quality and technical condition of railway infrastructure unquestionably influence rail traffic safety. According to the President of UTK, while the condition of infrastructure requires a thorough improvement, some signs of progress in this regard could be seen in 2015. This was another year in which lines were being upgraded to high-speed transport. In the period in question the main infrastructure manager in Poland, PKP PLK S.A., modernised 828 km of railway lines, 1 271 turnouts and 681 road-railway level crossings, and also constructed 118 two-level crossings. The collected data also demonstrate a decrease in the number of operational restrictions introduced due to the poor technical condition of tracks (a 12% decrease compared to the preceding year). The condition of railway line infrastructure is also gradually improving, as reflected in increased time-table speeds on 2 525 km of lines, with decreased speeds on 615 km of lines.

As mentioned above, in the present 2015/2016 timetable, based on PKP PLK S.A data, the total length of track adapted for trains

travelling at speeds of 120 – 160 km/h increased from 5 250 km to 5 944 km (21.9% of the total track length managed by the national manager of railway infrastructure). Polish railway infrastructure already allows trains to run at speeds exceeding 160 km/h. Tracks which allow train traffic at speeds exceeding 160 km/h, with a total length of 179 km, currently make up less than 1% of all lines.

Regarding the rail traffic safety-related challenges to be faced by the President of UTK in the near future, it should be indicated that the impact of third parties on the rail system, and especially of unauthorised people within railway areas, road users passing rail-road level crossings in a dangerous way and individuals intentionally causing damage to the rail system, still remains a problem. The percentage of accidents involving third parties remained very high in 2015, and was similar to the one recorded in 2014, i.e. over 70% (70% in 2015 and 72.4% in 2014).

In the context of level crossing safety, it is worth mentioning that in particular § 6 and § 10 of the Regulation of the Minister of Infrastructure and Development of 20 October 2015 on technical conditions to be met intersections or railway lines and side-tracks with roads, and their location, are not conducive to the improvement or traffic safety on level crossings. Under the current state of law, if it is possible to categorise a crossing as, for example, a cat. C or D crossing, the manager is not legally bound to include such a crossing in a higher category (as it was the case under the regulations previously in force). The currently applicable provisions of the Regulation provide for the obligation of including a crossing in a higher category only when it can be classified as a cat. A, B or C crossing, excluding cat. D crossings. According to the President of UTK, restricting (in § 6) the obligation of including a given rail-road level crossing to a higher category only to situations in which a crossing can be classified as a cat. A, B or C crossing (excluding cat. D) can have serious repercussions for rail safety, including: intentional classifying rail-road level crossings to lower categories, by invoking the provisions of the aforementioned Regulation introduced on 14 November 2015, to reduce the amount of investment outlays for equipping the given crossing with an appropriate protection system.

The impact of third parties on rail system safety is a particularly difficult challenge for the President of UTK due to his restricted ability to influence these entities. In the coming years the President of UTK will continue his efforts focusing on the dissemination of knowledge and best practices aimed at reducing the negative impact of third parties on rail traffic safety. These activities will include the campaign entitled "Safe crossing – stop for your life," which will see the involvement of the President of UTK. At the same time, the President of UTK indicates that the conclusions made in "An Assessment of Rail Market Operations and Rail Traffic Safety in 2014" remain relevant. These conclusions are:

- the need for converting level crossings into two-level crossings;
- the need for modernising level crossings by installing modern devices and upgrading the categories of the crossings;
- the need for providing railway fencing, especially in urban areas, and constructing multi-level pedestrian crossings over and under the tracks, equipped with facilities helping to use them;
- the need for amending the Polish legal system, which shifts the entire responsibility for level crossing maintenance to the managers of railway infrastructure.

In 2015 an increase in the number of accidents was recorded in the following categories: dispatching, arriving or running of a rail vehicle along an inappropriately laid out and unprotected signalling block section or inappropriate servicing of rail traffic control devices (cat. 03, an increase of 26.7%), and a rail vehicle running into another rail vehicle or other obstacle (cat. 13, an increase of 66.7%).

While in the accident group the increase in the number of events in respective categories was not particularly substantial, in the group of incidents there was a significant increase in specific categories, resulting from, e.g.: accepting a railway vehicle at a station on a closed or occupied track (cat. 42, an increase of 150.0%) a railway vehicle passing a "Stop" signal or another place before which it should have stopped, an unauthorised starting of the train (cat. 44, an increase of 25.7%), a damaged or poorly maintained wagon (cat. 54, an increase of 123.0%), people jumping on or falling off the train, a forceful approach or sudden braking of a railway vehicle, not resulting in casualties (cat. 65, an increase of 58.3%).

As indicated above, the increase in the number of incidents connected with the poor technical condition of rolling stock recorded in 2015 could have stemmed from the activities undertaken by the President of UTK to enforce the correct classification of such events. This increase in the number of incidents connected with the technical condition of rolling stock is even more concerning if we take into account that 2015 was another year of implementing a new system for the supervision of the maintenance of rail vehicles, which should contribute to an improvement in the field in question. Therefore, the President of UTK will focus on analysing the causes of this phenomenon.

A decrease in the number of incidents was observed in respect of events caused by dispatching, arrival or running of a rail vehicle along an inappropriately laid out and unprotected signalling block section or inappropriate operation of rail traffic control devices (cat. 43, a decrease of 29.6%), irregularities connected with loading (cat. 50, a decrease of 28.6%) and events caused by damage to or poor technical condition of a rail vehicle with traction (cat. 53, a decrease of 11.1%).

Due to the invariably high number of events in the B04 and C44 categories, involving a train passing a "Stop" signal or any point in which the train is required to stop, or an unauthorised starting of the train, the President of UTK paid special attention to these events. In 2015 a 31.0% decrease in the number of B04 accidents was recorded in relation to 2014. Of note is the fact, however, that the number of events (accidents and incidents) in this category remained at an unchanged level (64 events in both 2014 and 2015).

The causes of the aforementioned events are usually related to the so-called human factor – for example, not exercising enough caution, inadequate observation of the area in front of the train, misreading signalling equipment, inappropriate cooperation between the drivers and the train supervisor, starting the train not in line with the instruction of the traffic controller in the wrong direction, the lack of driver's reaction to all shunting signals transmitted directly before the event, or excessive speed in relation to local conditions. According to the President of UTK, the number of events in this category could be significantly reduced by the utilisation of technical safeguards installed in vehicles and railway infrastructure.

Statistical data indicate that the number of events caused by the poor condition of or damage to railway infrastructure also decreased by 20.0% in 2015 in relation to the year before. This, however, still remains a significant percentage of all accidents, and is the main cause of events taking place within the railway system, with a share of 25.8%.

Furthermore, the conclusions drawn from the conducted supervisory activities show that the potential to improve rail transport safety lies within the safety management systems of railway undertakings and infrastructure managers. Despite a decrease in the number of identified irregularities, in relation to the number of carried-out supervisory activities (comparing 2015 to 2014), it should be underlined that as a result of the analysis of irregularities identified during system inspections, the following issues were identified:

- the lack of appropriate system implementation;
- inappropriate risk management;
- ignorance of processes and procedures among staff;
- intentional inobservance of the adopted standards;
- the lack of the internal flow of information connected with rail traffic safety.

In this aspect, it should be highlighted that at present great emphasis is being put on the proactive approach to safety, improving the knowledge and competences of the staff to identify threats and introduce appropriate risk control measures, as opposed to a reactive approach, in which the knowledge on accidents is used mainly to prevent them in the future. The effectiveness and continuous improvement of systems must be monitored on an ongoing basis, and procedures must be checked in practice. For this reason, the implemented safety management systems are subject to ongoing verification.

The conclusion made by the President of UTK in previous years – that the basic task of all parties involved in the safety of the national rail system should be a responsible conclusion of the process of transition from a system in which safety is based mainly on rigid rules stipulated by the State administration to a system which relies primarily on the full responsibility of undertakings operating on the basis of available uniform tools for the management of the safety of its operations – continues to be relevant. This applies especially to the system of managing the competence of railway staff, which is currently in the transition period due to changes in legislation, as the key element of ensuring rail traffic safety.

Figures

Tables

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