

**An assessment of  
Rail Market Operations  
and Rail Traffic Safety in 2014**

**Dear Madams and Sirs,**

I am pleased to present to you an annual report on rail market operations and rail traffic safety in 2014.

The Office of Rail Transport (UTK) has produced this paper based on information provided by railway undertakings, infrastructure managers and organisers of public transport. The report reflects the changes on the Polish rail market, highlighting such phenomena as the growing number of freight railway undertakings and the emergence of new entities, including in particular railways established by regional governors to ensure an efficient system of regional transportation. Rail transport in Poland has also seen substantial rail-network investment. Some of the projects have been completed and their effects will be reflected in the next year's report.

In addition, this report provides a summary of the changes in rail traffic safety, identifying major problem areas. We are pleased to see that UTK's efforts have contributed to greater rail traffic safety.

I am confident this report will help you learn more about the major trends and interrelated developments on the Polish rail market. This is very important for entrepreneurs and rail traffic participants, and also other rail stakeholders in Poland.

Wishing you an interesting read and great success in your rail market efforts.

Regards,



Krzysztof Dyl



Krzysztof Dyl  
President of the Office of Rail Transport

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An aerial photograph of a city skyline, featuring several tall skyscrapers and a dense urban area. A large blue rectangular overlay is positioned in the lower half of the image, containing white text.

PART I:  
AN ASSESSMENT OF  
RAIL MARKET OPERATIONS  
IN 2014



# Background

This paper is an analysis of the state of the rail market in 2014.

It discusses the market situation from a dynamic perspective, with references and comparisons to 2013, and earlier years. Also, the paper outlines market parameters, shows trends and interrelated developments.

The main segments addressed include passenger transport, freight transport and infrastructure management. Also discussed is the market of traction services.

In addition to data from railway undertakings and managers, certain secondary sources of information were used for analysis and statistical research, including: the Polish Central Statistical Office (GUS), the Statistical Office of the European Union "Eurostat", the IRG-Rail (the Independent Regulator's Group – Rail), the European Commission working groups in charge of rail market monitoring and in charge of the regulatory bodies, as well as European organisations associating railway undertakings such as the International Union of Railways (UIC), the Community of European Railway and Infrastructure Companies (CER), and the International Union for Road-Rail Combined Transport (UIRR).





# 1. The passenger transport market

## 1.1. Changes in the European passenger transport markets

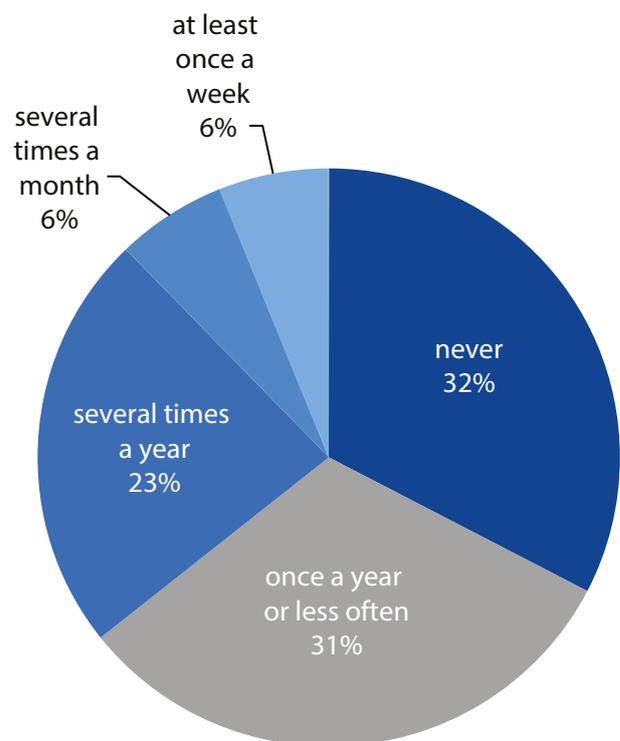
Since 2012 UTK has been a member of the Independent Regulator's Group – Rail (IRG-Rail). Each year, the Group issues the IRG-Rail Annual Market Monitoring Report, in which the Group's members present the specifics of their rail markets. Last report, published in April 2015, provides data for 2013. As latest Eurostat data were unavailable, this chapter presents IRG-Rail data and makes use of Eurobarometer's report on Europeans' satisfaction with rail services.

### 1.1.1. The significance of rail in passenger transport

As Eurobarometer's 2013 survey among EU residents shows (latest available data), a large portion of EU residents never travel by train. This is much more true for suburban rail (53% of EU residents do not use them at all) than for long-distance and regional trains (32% of respondents never use them). This is the case despite 83% of respondents living within 30 minutes of a station. While cars continue to be by far the most popular means of transport, the European Commission has pointed out that the average annual number of kilometres travelled by car per EU resident has been on the decline.

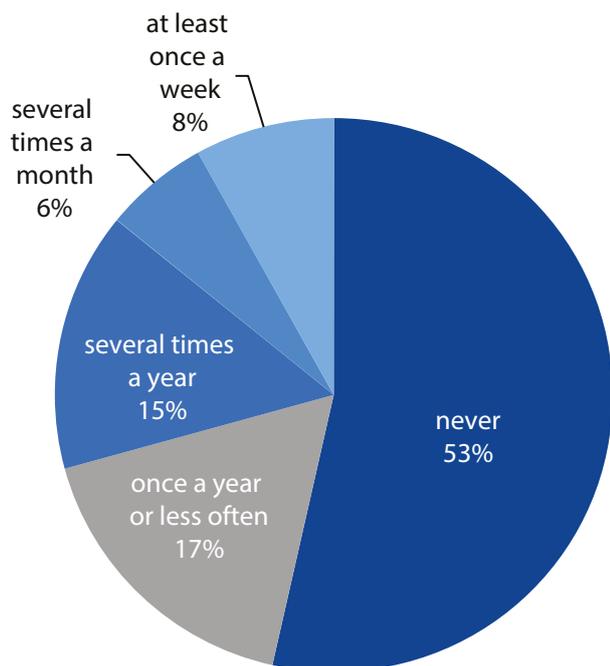
**A large portion of EU residents never travel by train**

**Fig. 1: The frequency of use of international and long-distance national and regional rail by EU residents in 2013**



Source: prepared by UTK based on Eurobarometer data

**Fig. 2: The frequency of use of suburban and agglomeration railway connections by EU residents in 2013**



Source: prepared by UTK based on Eurobarometer data

Long-distance and regional rail is the most frequently used by the residents of Luxembourg (used at least once a week by 16% of the population). More than one-tenth of the residents of the Czech Republic, Austria, the Netherlands and Slovenia also use these rail services at least once a week. With 3% Poland has one of the lowest percentages, while Greece has the lowest percentage (1%) in this respect. As many as two-thirds of the residents of Lithuania stated that they never use the services in question. For Poland, this proportion is relatively low at 35%.

Only one in five Germans stated that they do not use long-distance and regional rail.

Suburban and agglomeration trains are most-frequently used by the residents of Austria and Germany (15% and 14%, respectively). Romania and Bulgaria are on the other end of the spectrum, with only 1% of their residents using suburban rail at least once a week. For Poland, this percentage is 3%, as in the case of long-distance rail. In Estonia 80% of the population never use suburban trains. The Netherlands is on the other end of the spectrum, with only one in three residents stating that they do not use suburban and agglomeration rail services at all.

High-speed rail (HSR) has been developing consistently both in Europe and internationally. HSR comprises lines with a minimum speed limit of 250 km/h and rolling stock designed to travel at this speed. According to UIC's data, no new high-speed lines went into service across the EU in 2014. Many countries, however, were expanding their high-speed rail systems.

**In 2014 no new high-speed lines went into service across the EU**

As many as 2 897 km high-speed lines were under construction, mostly in Spain (1 308 km). Further 757 km, 466 km, 201 km, and 125 km were under construction in France, Germany, Austria, and Italy, respectively. Poland is adapting its Central Railway Main Line from Warsaw to Katowice and Kraków to the speed of 250 km/h. High-speed lines are also under construction in Switzerland (72 km). The year 2014 saw the opening of further sections of the line between Ankara and Istanbul in Turkey, including 188 km of high-speed lines (250 km/h). Further 367 km of high-speed lines are under construction between other cities in Turkey.

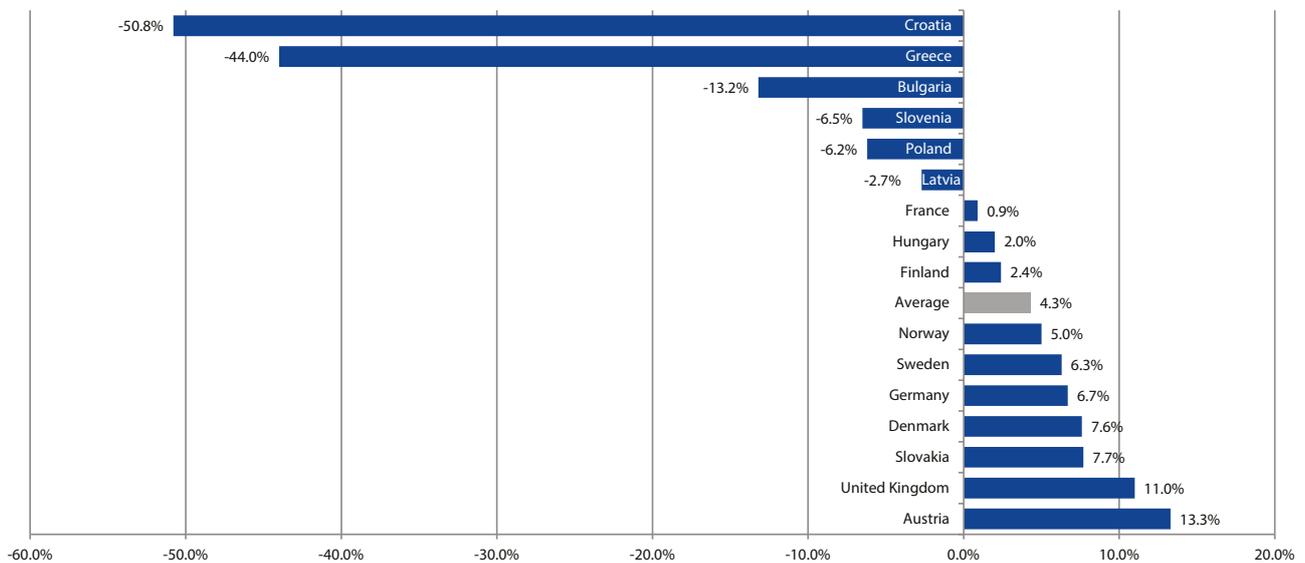
**Tab. 1: The length of high-speed lines enabling travel at ≥ 250 km/h in Europe (including Turkey) (in km) – as at 1 September 2014**

	Austria	Belgium	Germany	Spain	France	Italy	Netherlands	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	990	1 540	248	-	74	3 851	-	-
2004	-	137	906	990	1 540	248	-	74	3 895	-	-
2005	-	137	906	1 011	1 540	248	-	74	3 916	-	-
2006	-	137	995	1 193	1 540	876	-	74	4 815	-	-
2007	-	137	995	1 432	1 872	562	-	113	5 111	35	-
2008	-	137	995	1 520	1 872	744	-	113	5 381	35	-
2009	-	209	995	1 520	1 872	923	120	113	5 752	35	232
2010	-	209	995	1 972	1 896	923	120	113	6 228	35	232
2011	-	209	995	2 060	2 036	923	120	113	6 456	35	444
2012	48	209	1 013	2 060	2 036	923	120	113	6 522	35	444
2013	48	209	1 013	2 431	2 036	923	120	113	6 893	35	444
2014	48	209	1 013	2 431	2 036	923	120	113	6 893	35	632

Source: prepared by UTK on the basis of UIC data

## 1.1.2. The evolution of passenger rail transport in Europe

**Fig. 3: The evolution of transport performance in the IRG-Rail-reporting countries when compared to 2010**



Source: prepared by UTK based on IRG-Rail data

The above data on the evolution of transport performance in the years 2010-2013 relate to the IRG-Rail reporting countries. Between 2010 and 2013 Croatia recorded the biggest decline in passenger transport performance due to an over 50% drop in the number of international trains in the timetable for 2012/13. Greece experienced the second-biggest decrease in this respect, due to a general, crisis-related decline in the transport sector. In Latvia, the decrease in transport performance was due to the country's population falling by about 10% in the period in question.

Austria experienced the largest increase, which was attributable to several factors. First of all, more people used agglomeration rail as a result of the increased fuel prices and growing restrictions on parking in cities. In addition, 2012 saw the opening of the first section of the high-speed line (Vienna– St. Pölten), which attracted more passengers travelling between Vienna and Salzburg. The United Kingdom experienced the second-biggest increase in transport performance. This was primarily due to more people using rail services in the London agglomeration. Sweden and Norway expanded their rail packages in response to the growing population in major cities.



The average evolution of transport performance for all countries in question was 4.3%. Poland recorded a clear decline in transport performance between 2010 and 2013.

## 1.2. Intermodal competition on the Polish passenger transport market

According to GUS data, the total number of passengers for all transport modes in 2014 was 708.9 m, which means a decrease of 4.1% compared to the previous year and a striking 42.6% decrease compared to 2001. Road transport experienced the largest decrease (of 6.3%). One should bear in mind, however, that these data do not concern private transport, public transport and transport companies with a workforce of up to nine people. GUS data show that in 2014 passenger rail transport recorded a slight decrease of about 0.5% compared to 2013, and 19% compared to 2001. Air and inland-waterway transport recorded a growth of 1.9% and 2.5%, respectively. It is important to note that the statistics for air transport include both scheduled and non-scheduled transport, and the statistics for inland-waterway transport include coastal transport. Air transport stands out as the only mode to have experienced growth in 2014 relative to 2001 (reaching almost 127%). This is attributable to the changing transport behaviour and the growing popularity of travelling long distances by air.

According to GUS data, the average distance covered by passengers in all modes of transport amounted to 72.6 km, which was 5 km more than in 2013, and 24.1 km more than in 2001. At 59.9 km, the average distance covered in rail transport fell by 2.4 km compared to 2013. The lowest average distance was

invariably recorded in inland-waterway transport. It fell from 13 km to 12 km. The main contributors to the general increase in

the average distance include road transport (increased by 6.4 km to 50 km) and air transport (increased by 62.3 km).

**Tab. 2: The number of transported passengers in Poland in the years 2001-2014**

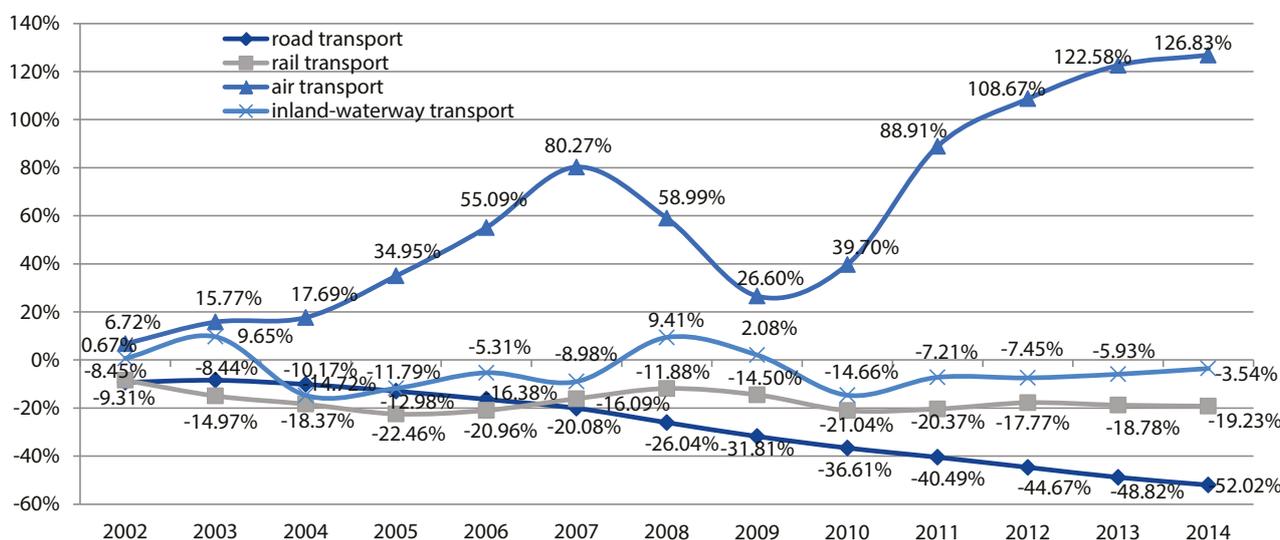
the number of transported passengers in Poland in the years 2001-2014														
transport mode	year													
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
in m passengers														
in total	1 236,00	1 124,50	1 111,15	1 083,92	1 045,71	1 020,95	1 004,71	964,66	902,95	838,18	807,42	779,16	738,95	708,91
road transport	898,71	815,04	822,88	807,28	782,03	751,47	718,27	664,67	612,88	569,65	534,87	497,29	459,95	431,19
rail transport	332,22	304,14	282,50	271,20	257,60	262,60	278,75	292,74	284,05	262,33	264,54	273,18	269,82	268,35
air transport	3,44	3,67	3,98	4,04	4,64	5,33	6,19	5,46	4,35	4,80	6,49	7,17	7,65	7,79
inland-waterway transport	1,64	1,65	1,80	1,40	1,44	1,55	1,49	1,79	1,67	1,40	1,52	1,52	1,54	1,58

Source: prepared by UTK based on GUS data

Road transport continues to be the largest contributor to the volume of transported passengers (60.8% at the end of 2014), although its share has been decreasing consistently (a decrease of 1.4 percentage points compared to 2013). Rail transport, on the other hand, increased its share from 36.5% to 37.9%. It is important to remember, however, that the statistics for road transport do not include certain types of transport, as mentioned earlier. With a share of 1.1% at the end of 2014, air transport continues to be a growing contributor. Inland-waterway transport had a minor share of 0.22% (increased by 0.01 percentage points).

According to GUS data, compared to 2013, the average distance covered in rail transport decreased by 2.4 km to 59.9 km

**Fig. 4: The evolution of the number of passengers in individual modes of transport in 2014/2002 (2001=0%)**



Source: prepared by UTK based on GUS data

Transport performance in 2014 grew by 3.1% to 51.5 billion passenger-kilometres. Road transport experienced the largest increase (of 7.6%). Considering the lower number of passengers transported, this means that long-distance bus transport was on the rise. According to GUS data, rail transport performance dropped by 4.4%. This decrease is much more significant than the decrease in passengers transported. In comparison, air transport performance grew by 5.6%, whereas for inland-waterway transport, it decreased by 5%.

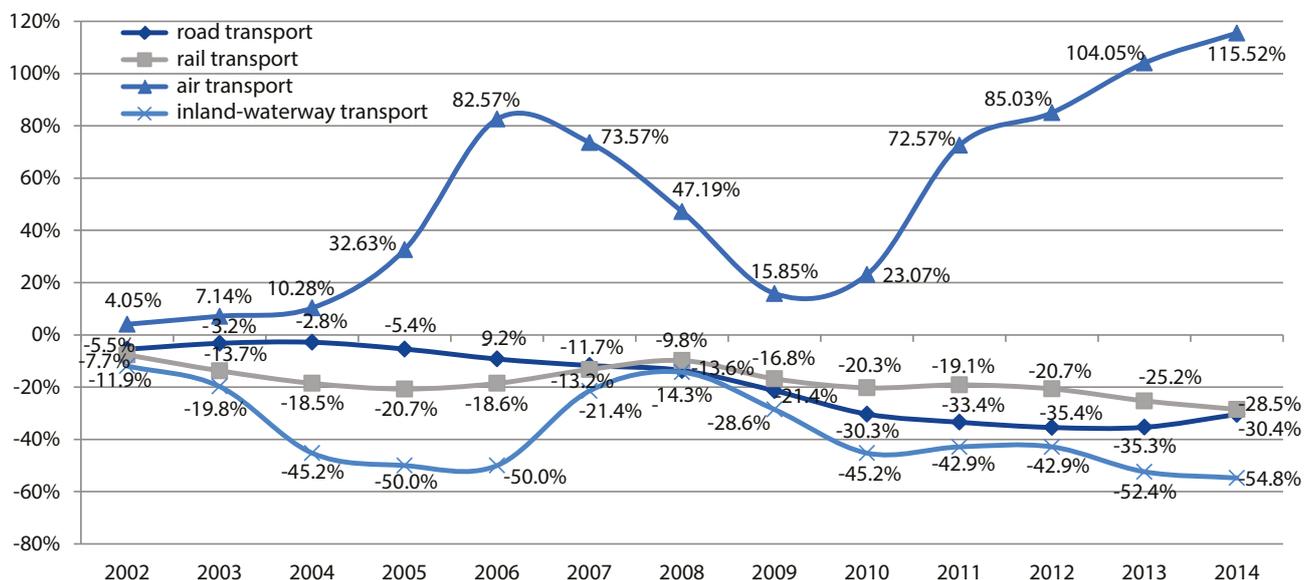
In 2014 the share of rail transport in the passenger transport market, in terms of transport performance, amounted to 31.2%, which is a decrease of 2.4 percentage points. Rail has experienced this decrease for the fourth consecutive year. At 41.9%, road transport grew for the first time since 2009 (by 1.8 percentage points). Air transport had a share of 26.9%, which is 0.7 percentage points more compared to 2013.

**Tab. 3: Transport performance in passenger transport in Poland in the years 2001-2014**

the passenger transport market in Poland in the years 2001-2014														
transport mode	year													
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	in m passenger-km													
in total	59 919	56 753	56 282	55 518	55 654	58 156	58 016	56 512	50 525	47 432	49 893	49 726	49 940	51 463
road transport	30 996	29 295	29 996	30 118	29 314	28 130	27 359	26 775	24 375	21 600	20 635	20 012	20 039	21 564
rail transport	22 469	20 749	19 383	18 305	17 815	18 299	19 495	20 263	18 692	17 918	18 169	17 826	16 797	16 061
air transport	6 412	6 672	6 870	7 071	8 504	11 706	11 129	9 438	7 428	7 891	11 065	11 864	13 084	13 819
inland-waterway transport	42	37	34	23	21	21	33	36	30	23	24	24	20	19

Source: prepared by UTK based on GUS data

**Fig. 5: The evolution of transport performance in individual modes of transport in 2014/2002 (2001=0%)**



Source: prepared by UTK based on GUS data

**In 2014 in Poland 1.33 m less passengers were transported than in 2013**

### 1.3. The Polish passenger rail transport market

**Łódzka Kolej Aglomeracyjna and Koleje Małopolskie entered the market in 2014**

#### 1.3.1. Polish passenger railway undertakings

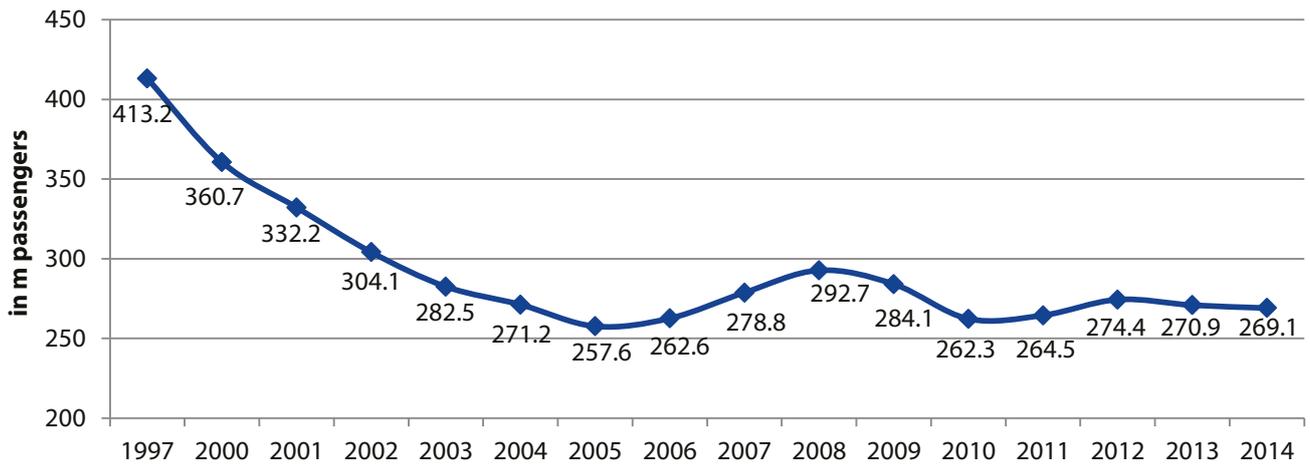
The year 2014 saw another decrease in the number of passengers. On standard gauge lines (excluding narrow-gauge lines), 1.33 m less passengers were transported than in 2013 (a 0.5% decrease). The decrease was less substantial than in 2013, which recorded 3.5 m less passengers (1.3%) compared to 2012.

Compared to 2013, in 2014 the number of railway undertakings involved in passenger rail transport increased from sixteen to eighteen. Łódzka Kolej Aglomeracyjna started providing passenger transport services on 15 June 2014, and Koleje Małopolskie opened business on 14 December 2014. The two undertakings had a 0.13% and 0.01% contribution, respectively, to the total number of passengers.

The changes involving shorter travel times on some routes were introduced as late as in December 2014, along with the 2014/2015 timetable. It is important to note that over last 10 year, the number of passengers has remained at the level of 260-290 m passengers a year.



**Fig. 6: The number of passengers in passenger rail transport in the years 1997-2014<sup>1</sup>**

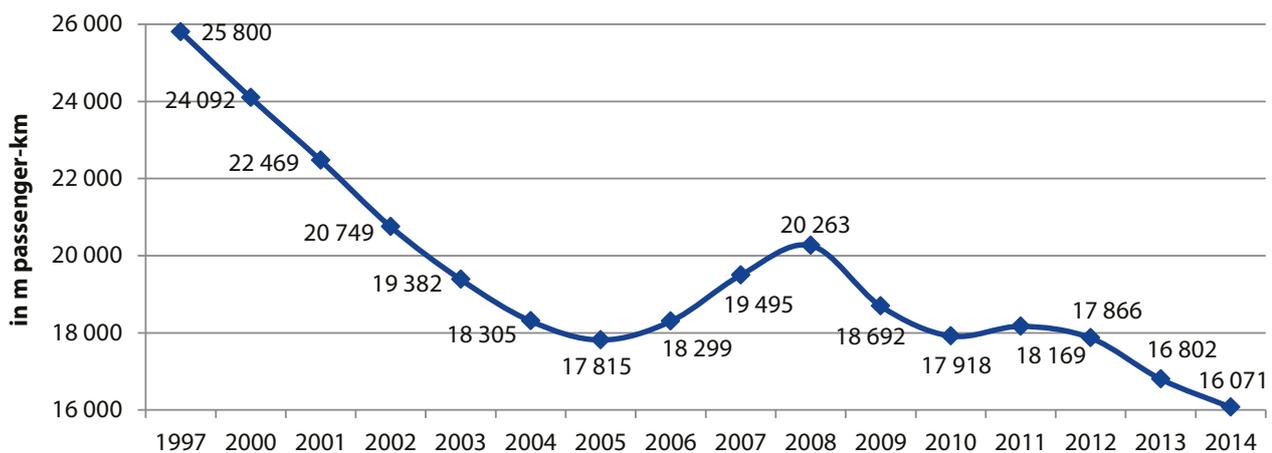


Source: prepared by UTK

Transport performance decreased more than the number of passengers did. The passenger market in 2014 had a transport performance of 16.1 bn passenger-kilometres compared to 16.8 bn passenger-kilometres in 2013, which means a 4.3% decrease and a continuing downward trend. Also, the average travel

distance per passenger has been on the decline for another consecutive year; in 2014 it was 59.7 km, which is 2.4 km less than the year before (a 3.9% decrease). As recently as in 2011 the indicator was much higher (68.8 km), so the 2014 indicator reflects the substantial loss in long-distance rail services.

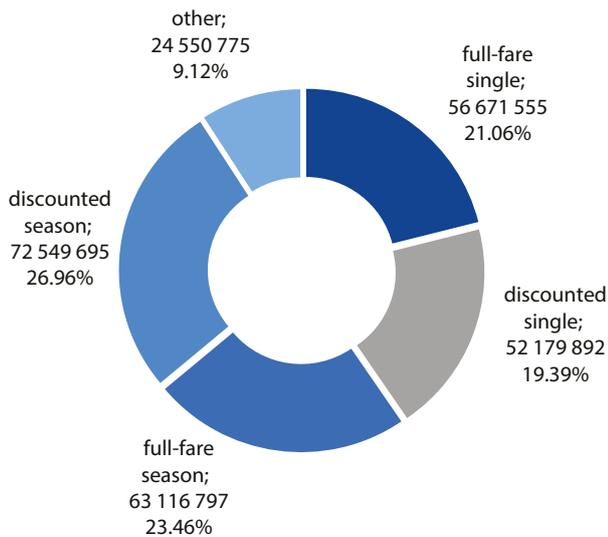
**Fig. 7: Transport performance in passenger rail transport in the years 1997-2014**



Source: prepared by UTK

<sup>1</sup> Figures 6 and 7 show 2007-2013 data including the number of passengers of narrow-gauge rail, whose performance in recent years were of marginal significance to the market at large. The 2014 data do not include the number of passengers of narrow-gauge rail.

**Fig. 8: The number of passengers with respective types of tickets in 2014**

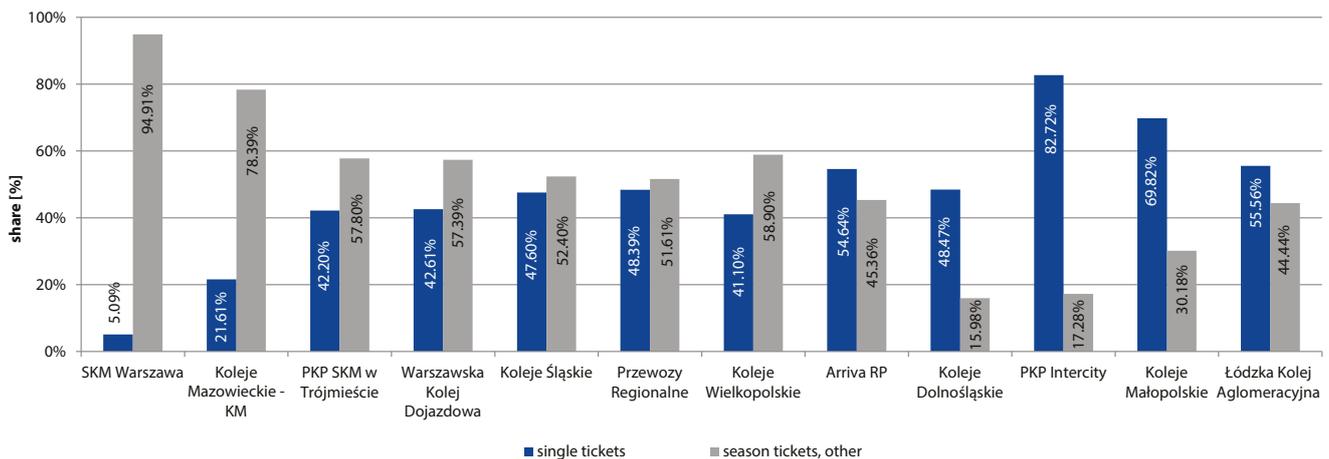


Source: prepared by UTK

In 2014 single tickets were bought by 40.5% of passengers (compared to 40.6% in 2013). This reflects the decreasing share of long-distance journeys relative to daily short-distance journeys. The share of season-ticket journeys was 50.4% (for the total of discounted and full-fare tickets). This is a decrease compared to 2013 (51.2%). The percentage of discounted season-ticket users also slightly changed (from 26.7% in 2013 to 27.0% in 2014).

An increase of 0.9% was recorded for tickets sold under agreements with institutions. A typical example of such tickets are multimodal tickets for municipal transport, Szybka Kolej Miejska (Warsaw Fast City Rail, SKM), and also selected sections of Warszawska Kolej Dojazdowa (Warsaw Commuter Rail, WKD) and Koleje Mazowieckie (Mazowieckie Railways). Municipal transport and rail transport is integrated in Wrocław and Poznań. The new player on the market, Łódzka Kolej Aglomeracyjna (Łódź Agglomeration Railway), implemented such integrated ticket system from the very beginning of its operation.

**Fig. 9: The share of single and season tickets by undertaking in 2014**



Source: prepared by UTK

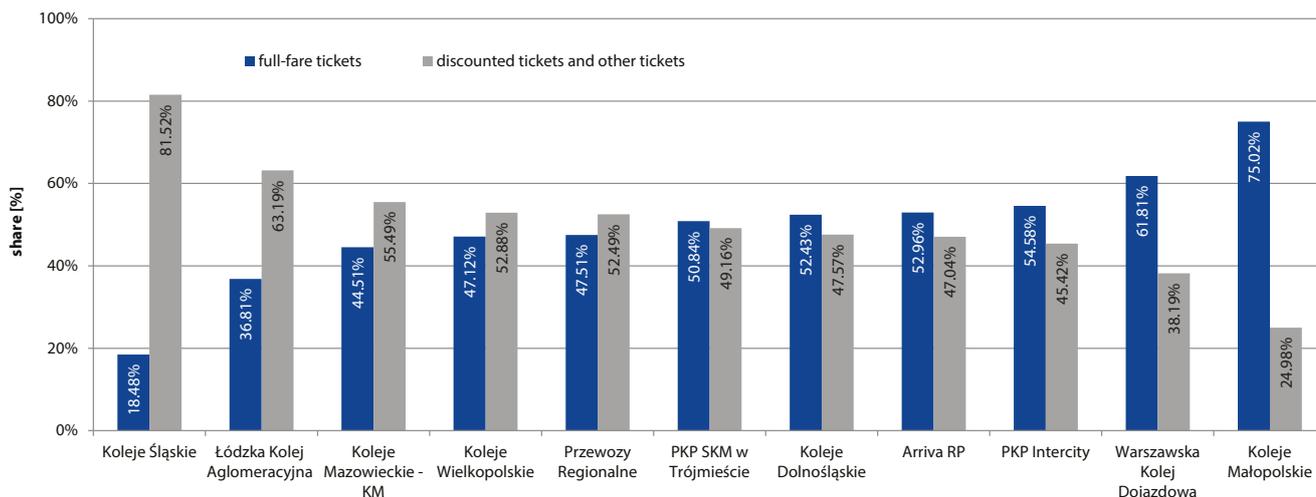
For most undertakings operating and the agglomeration and provincial levels, season tickets made up a prevailing portion of their ticket-sales mix, with SKM Warszawa and Koleje Mazowieckie continuing to stand out in this respect.

Like in 2013, PKP Intercity experienced a substantially lower, by as much as 8.8%, percentage of season tickets bought in 2014 by school or work commuters.

A reverse trend was observed for Koleje Wielkopolskie, Arriva RP and Koleje Dolnośląskie, which recorded increased sales of season tickets by 12.8, 6.5 and 4.0 percentage points, respectively. It is worth noting that despite the regional nature of these undertakings, single tickets were the most popular in 2013. For Koleje Wielkopolskie, an undertaking established by the local government of the Wielkopolskie Province, this substantial increase in season tickets means that in 2014 a larger percentage (58.9%) of passengers used season tickets.



**Fig. 10: The share of full-fare tickets by undertaking in 2014**

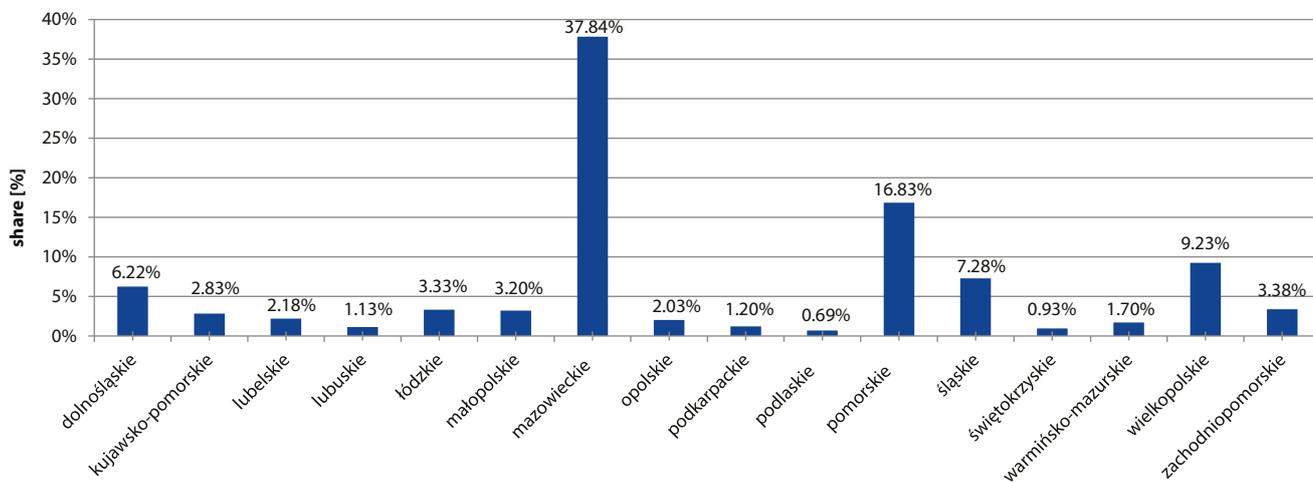


Source: prepared by UTK

Many companies did not record any changes in the percentage of full-fare tickets sold. One of these companies is Koleje Śląskie, which provides a wide range of discounts and special offers. Warszawska Kolej Dojazdowa had a relatively small percentage of discounted tickets (38.2%). The above chart does not include SKM Warszawa due to the specific nature of its tariff. With the Warsaw City Travel Card, passengers may use rail and municipal transport services within the Warsaw agglomeration.

For three companies, different proportions are evident compared to 2013. For PKP SKM, the percentage of discounted tickets in 2014 was: 49.2% (53.2% in 2013), for Arriva RP: 47.0% (50.5% in 2013), and for Koleje Mazowieckie: 55.5% (50.0% in 2013).

**Fig. 11: The share of the number of checked-in passengers in respective provinces in 2014**



Source: prepared by UTK

108.1 m passengers were checked-in in the Mazowieckie Province, which made up almost 38% of all passengers. The share of this Province increased by 1.1 percentage points compared to 2013. The Pomorskie and Wielkopolskie Provinces had the second and the third largest contribution, respectively, to the total number of checked-in passengers. The Podlaskie Province had the lowest share in this respect, followed by the Świętokrzyskie, Lubuskie, and Podkarpackie Provinces.

Compared to 2013, five provinces had a larger share in the number of checked-in passengers. These included the Mazowieckie and

Dolnośląskie Provinces (a 0.7 percentage-point increase), and also the Śląskie (a 0.1 percentage-point increase), Wielkopolskie (a 0.1 percentage-point increase), and Kujawsko-Pomorskie (a 0.01 percentage-point increase) Provinces.

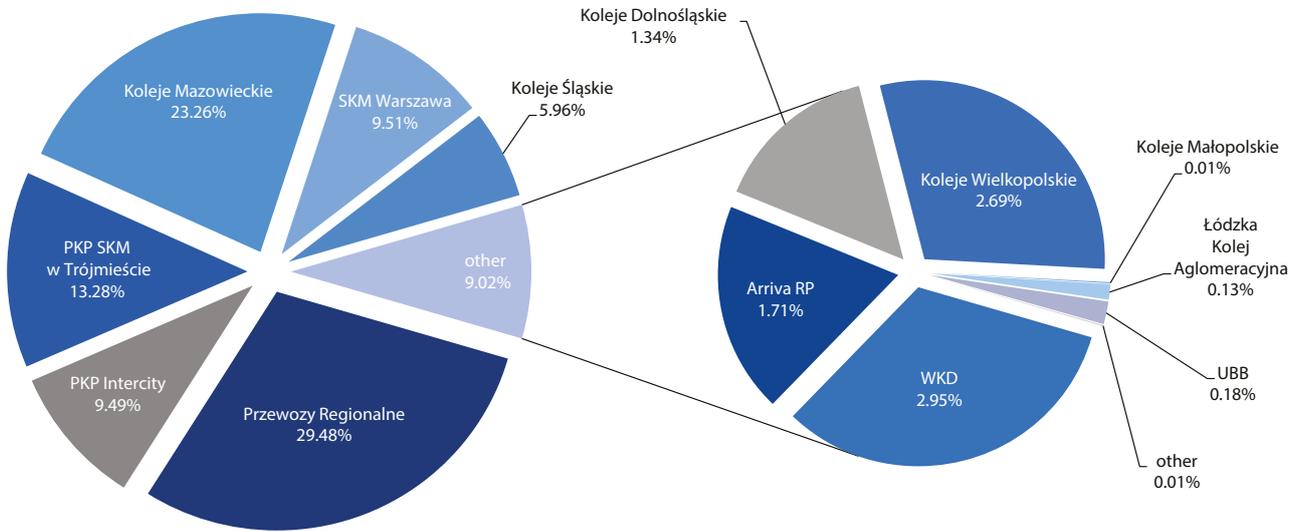
In absolute terms, increased numbers of checked-in passengers were recorded in the Mazowieckie (2.5 m passengers), Dolnośląskie (1.9 m), Wielkopolskie (0.3 m) and Śląskie (0.3 m) Provinces.

**108.1 m passengers were checked-in in the Mazowieckie Province, which made up almost 38% of all passengers**

In absolute terms, decreased numbers of checked-in passengers were recorded in the Kujawsko-Pomorskie (0.01 m), Lubuskie (0.04 m), Warmińsko-Mazurskie (0.2 m), Lubelskie (0.3 m), Podlaskie

(0.3 m), Zachodniopomorskie (0.3 m), Podkarpackie (0.4 m), Świętokrzyskie (0.6 m), Pomorskie (0.6 m), Małopolskie (0.9 m), Opolskie (1.2) and Łódzkie (1.3 m) Provinces.

**Fig. 12: The market share of passenger transport undertakings per the number of passengers in 2014**



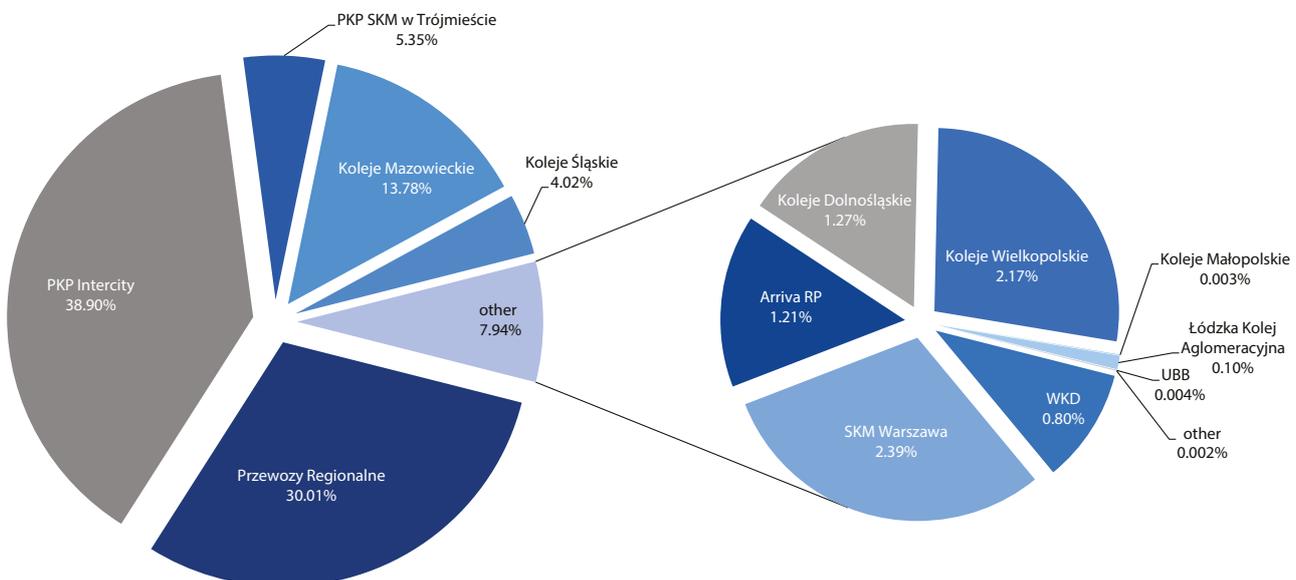
Source: prepared by UTK

Like in the previous year, the largest 2014 market share in terms of the number of passengers was recorded by the local-government company of Przewozy Regionalne, although it had 5.5 m, or 6.5%, less passengers than a year before, which is its all-time low. This is partly attributable to the takeover of transport services by separate companies operating in individual provinces: Koleje Wielkopolskie recorded 1.8 m more passengers (a 34.1% increase) and Koleje Dolnośląskie had 1.2 m more passengers (a 48.8% increase). Koleje Śląskie, another local-government company, had 0.3 m less passengers compared to 2014 (a 2% decrease). In this context, it is important to note the market situation of Arriva RP, whose number of passengers soared by 2.1 m (an 84%

increase) compared to 2013, as Arriva RP took over the paths on some electrified lines in the Kujawsko-Pomorskie Province.

The market entry of two new undertakings – Łódzka Kolej Aglomeracyjna and Koleje Małopolskie – in 2014 was a minor factor in the lower number of the passengers of Przewozy Regionalne. These two undertakings indeed recorded a relatively poor performance. On aggregate, the local-government companies and Arriva RP carried 5.2 m more passengers than in 2013, whereas Przewozy Pasażerskie had 5.5 m less passengers. This means an aggregate decrease of around 350 thousand passengers.

**Fig. 13: The market share of passenger railway undertakings by transport performance in 2014**



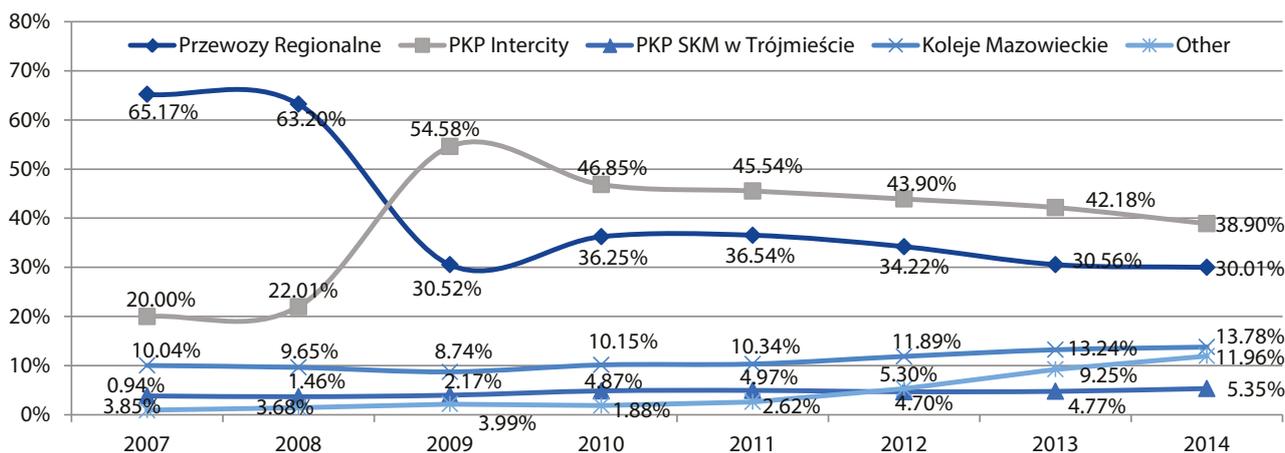
Source: prepared by UTK

The average distance of passenger transport for PKP Intercity was almost 245 km in 2014

PKP Intercity had a 38.9% (a decrease of 3.3 percentage points) and Przewozy Regionalne a 30.0% (a decrease of 0.6 percentage points) share of transport performance, which makes them the largest contributors in this respect. Despite the mere 9.5% share in the number of transported passengers, PKP Intercity had the largest contribution to transport performance thanks to long-distance inter-regional and international routes. The average distance of passenger transport in this company in 2014 was about 244.9 km (an increase of 14.3 km compared to 2013). Other companies have clearly lower market shares (although they are rising) in transport performance. These include

Koleje Mazowieckie (13.8%, an increase of 0.5 percentage points), PKP SKM w Trójmieście (5.4%, an increase of 0.6 percentage points), Koleje Śląskie (4.0%, an increase of 0.2 percentage points), SKM Warszawa (2.4%, an increase of 0.4 percentage points). Koleje Wielkopolskie and Arriva RP recorded a substantial increase in their market shares of 0.7 percentage points each.

Fig. 14: The shift in market shares by transport performance in the years 2007-2014



Source: prepared by UTK

### 1.3.2. Polish passenger rail market structure

In 2014 the number of passengers decreased from 270.4 m to 269.1 m (an approx. 0.5% decrease). Like in 2013, the largest decrease was recorded for fast train services. The TLK affordable fast train category PKP Intercity train services underwent numerous revisions in 2014. Many routes between major Polish agglomerations, such as Kraków-Wrocław and Łódź-Kraków, were discontinued. The frequencies of some trains were reduced to only one or two days a week (e.g. Kraków-Świnoujście and Bydgoszcz-Katowice). Some lines were shortened, such as Przemyśl-Zielona Góra (the line ended in Wrocław) and Rzeszów-Zielona Góra (the line ended in Poznań). The above factors, as well as the ongoing railway-line upgrades, which caused longer travel times, delays and the need to use substitute transport, made the number of passengers in this category decrease from 27.4 m to 21.5 m (an over 21% decrease).

International train categories (eurocity and euronight) also recorded a drop. In 2014 these trains carried 1.16 m passengers, while in 2013

In 2013 PKP Intercity carried a total of 30.7 m passengers, while in 2014 this figure decreased to 25.5 m

Arriva RP recorded an 84% increase in the number of passengers

this figure was 1.29 m (a decrease of approx. 130 thousand passengers).

It is important to note, however, that other train categories recorded increased numbers of passengers. This was particularly evident for the intercity trains. This category closed the year 2014 with a 38% increase in carried passengers (over 2.8 m passengers).

Despite the increase in one of the categories, PKP Intercity lost a substantial number of passengers in 2014. In 2013 the company carried a total of 30.7 m passengers, while in 2014 this figure decreased to 25.5 m (a 17% decrease). In addition to the above-mentioned revisions, which were a major factor in the lower number

of fast-train passengers, the lower number of passengers using trains on regular paths, e.g. in daily commutes to work, also had an impact.

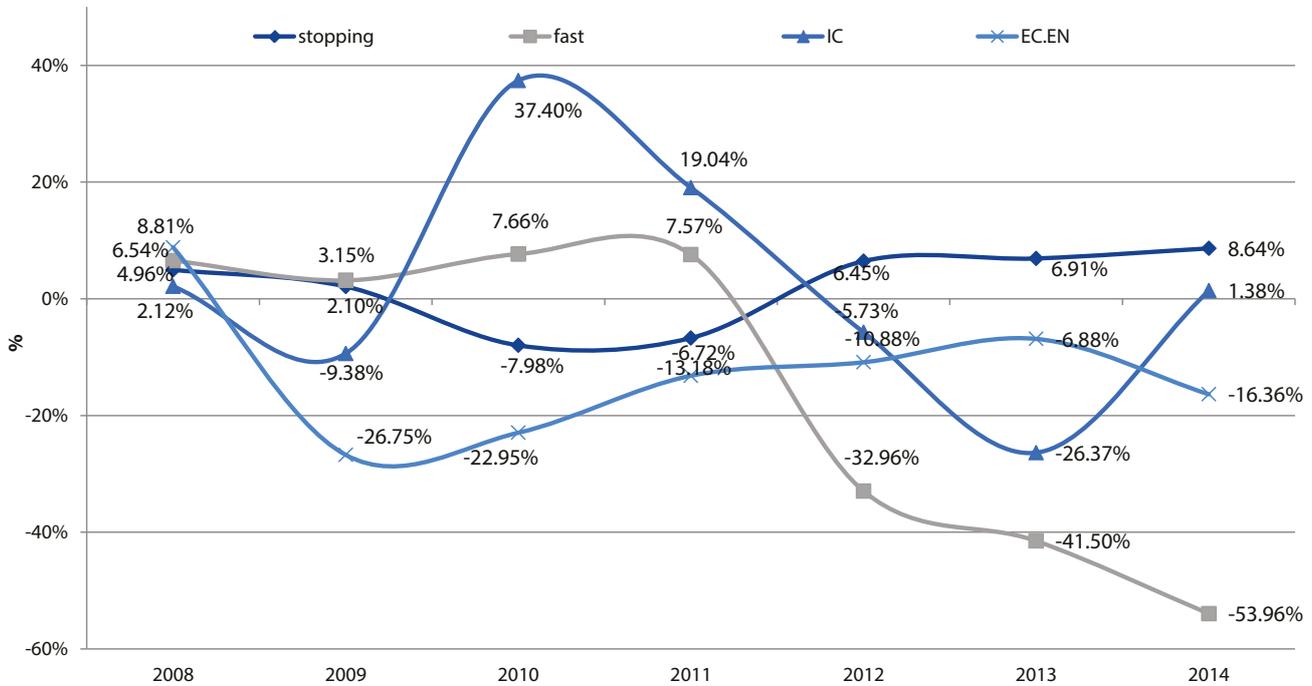
The stopping-train market recorded a 1.6% increase (with the number of passengers growing from 239.1 m to 243.0 m). This increase was driven by the performance of the companies operating in the individual regions of Poland.

The private undertaking, Arriva RP, recorded the largest increase, with 84% more passen-

gers carried (an increase from 2.5 m to 4.6 m). Koleje Śląskie recorded a substantial increase as well (of 48.8%, from 2.4 m to 3.6 m passengers), and so did Koleje Wielkopolskie (of 34%, from 5.4 m to 7.2 m passengers). The SKM Warszawa company recorded a 13% increase in the number of passengers. Some of the companies experienced growth ranging from 0.2% to

0.7% (Koleje Mazowieckie, PKP SKM w Trójmieście, WKD). Two companies recorded a decrease, including Przewozy Regionalne, which carried 5.6 m passengers less (a 6.5% decrease, from 84.9 m to 79.3 m passengers). This company is losing passengers to the local-government companies that operate in the individual regions of Poland.

**Fig. 15: The evolution of the number of transported passengers on particular types of trains - 2014/2008 [2007=0]**



Source: prepared by UTK

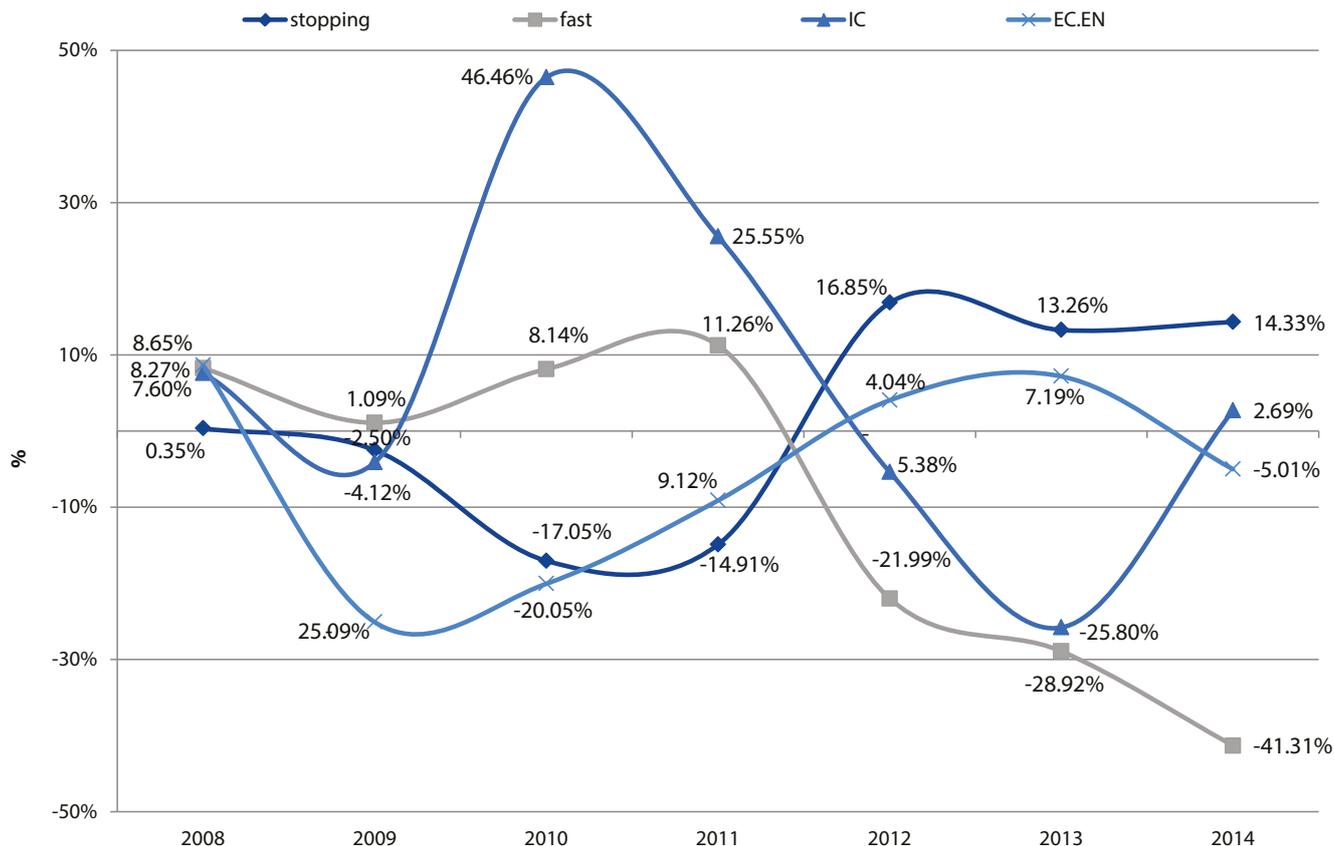
The evolution of the number of passengers in fast trains remained negative relative to 2007. This was also the case with the eurocity and euronight international trains.

Other categories, on the other hand, recorded increased numbers of passengers compared to the reference year. For the third consecutive year, the evolution of the number of stopping-train passengers is positive and growing consistently. For the years 2012, 2013 and 2014, the growth was at 6.5%, 6.9% and 8.6%,

respectively. It is also of note that, for the first time since 2011, the intercity trains reversed the downward trend in the number of passengers. Compared to the reference year of 2007, this category of trains was used by 1.4% more passengers.



**Fig. 16: The evolution of transport performance on particular types of trains - 2014/2008 [2007=0]**

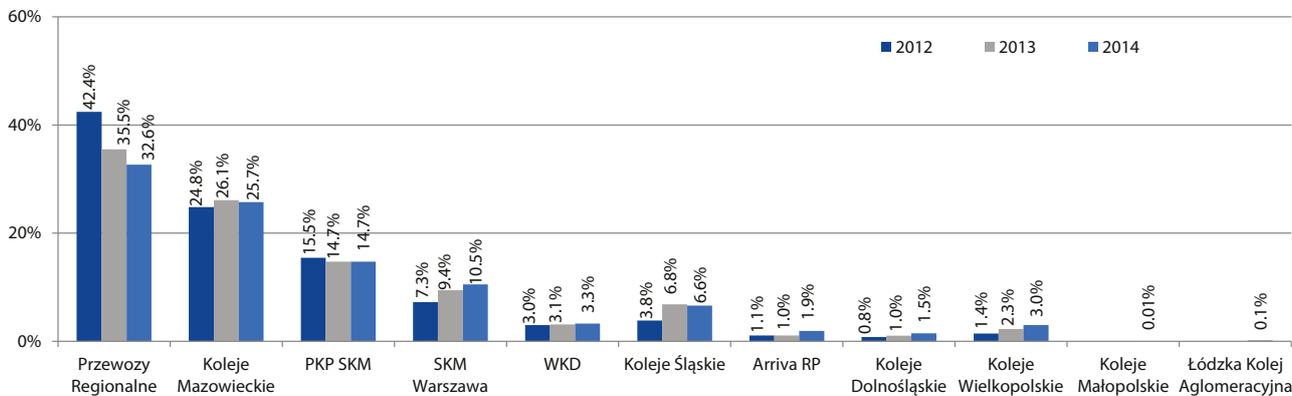


Source: prepared by UTK

The evolution of transport performance relative to 2007 was similar to the related evolution of the number of passengers. Fast trains continued to experience a downward trend in transport performance. Intercity trains rebounded in 2014, recording a positive performance compared to the reference year. Stopping trains continued to experience a consistent growth in transport performance.

The stopping train segment, which includes rail transport within agglomerations, was in 2014 operated by 13 licensed railway undertakings. Compared to 2013, there were two new companies: Łódzka Kolej Aglomeracyjna, which started business in June 2014 (a 0.12% market share at the end of 2014), and Koleje Małopolskie, which started business along with the introduction of the 2014/2015 timetable.

**Fig. 17: The share of railway undertakings of the passenger transport market by the number of passengers in the years 2012-2014**



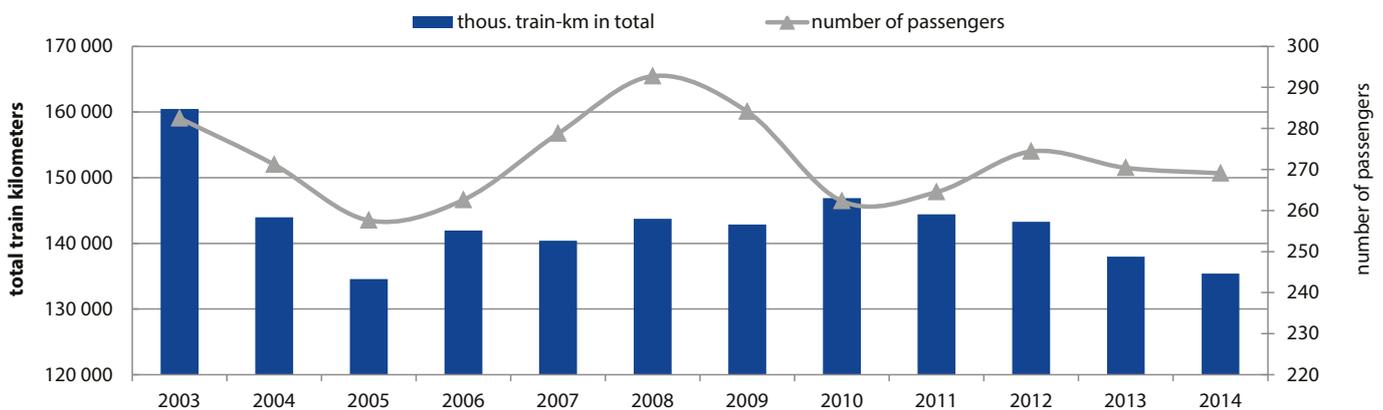
Source: prepared by UTK

In 2013 Przewozy Regionalne had a 35.5% share in the passenger transport market. In 2014 this figure fell to 32.7%

When analysing the passenger transport market, it is important to note that Przewozy Regionalne is losing its market share to local-government companies. In 2013 Przewozy Regionalne had a 35.5% share in the passenger transport market. In 2014

this figure fell to 32.7% (by 2.8 percentage points). On the other end of the spectrum, the companies that increased their market shares the most included SKM Warszawa (an increase of 1.1 percentage points to 10.5%), Arriva RP (an increase of 0.9 percentage points to 1.9%), Koleje Wielkopolskie (an increase of 0.7 percentage points to 3.0%). Koleje Małopolskie and Łódzka Kolej Aglomeracyjna, the two new companies, had negligible market shares of 0.01% and 0.1%, respectively. Koleje Śląskie experienced a slight decrease in the market share, which is notable, given that as recently as in 2013 it recorded a substantial growth compared to 2012.

**Fig. 18: The operational performance of all railway undertakings compared to the number of passengers in the years 2003-2014**



Source: prepared by UTK

In 2014 passenger railway undertakings covered a total of 135.4 m train-kilometres. Compared to 2013, this figure fell by 1.9%. Over that period of time, the total number of passengers dropped by 0.49% (from 270.4 m to 269.1 m passengers). This means that the downward trend observed in 2013, when both of these indicators were on the decline, continued in 2014. It is also worth noting that the total number of train kilometres has been consistently decreasing since 2010.

- Przewozy Regionalne – at-border and InterRegio trains;
- UBB-Świnoujście Centrum-state border – Ahlbeck (Germany) trains.

In 2014 international rail transport had 2.767 m passengers, which is 433 thousand less than in 2013 (a decrease of 13.5%). The provision of transport services expressed in passenger kilometres reached 634 m, which is 82 m less than in the preceding year. The average travel distance of a passenger increased to 229 km (5 km more than in 2013).

In 2014 international rail transport had 2.767 m passengers, which is 433 thousand less than in 2013

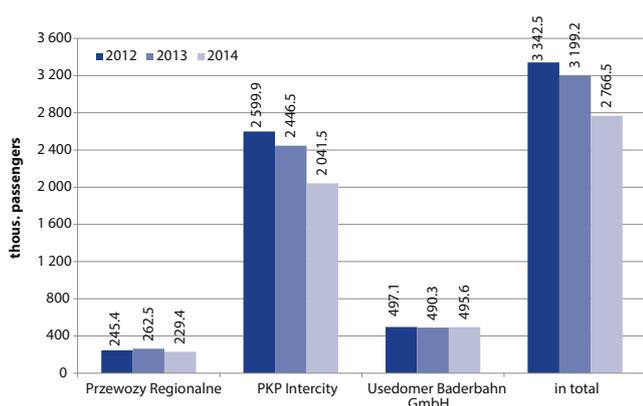
### 1.3.3. Passenger transport in international communication

Passenger transport in international communication in 2014 (including transport within the cross-border area) was provided by three railway undertakings:

- PKP Intercity – long-distance trains (including Eurocity, EuroNight);



**Fig. 19: The number of passengers in international communication in the years 2012-2014**

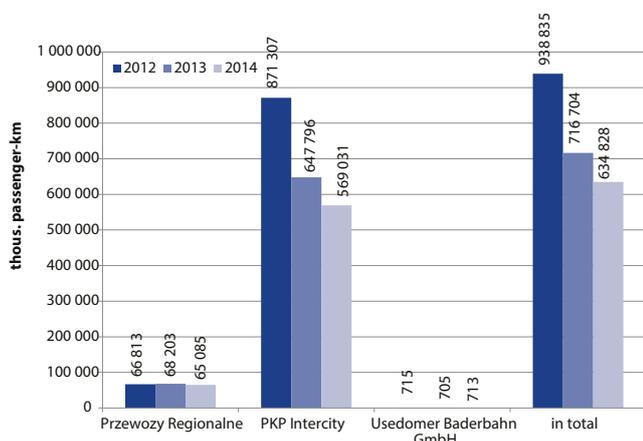


Source: prepared by UTK

In 2014 both PKP Intercity and Przewozy Regionalne recorded less passengers and lower transport performance as far as transport services in the cross-border areas are concerned. The number of passengers crossing borders in the Przewozy Regionalne trains dropped by 33 thousand, from 262.5 thousand in 2013 to 229.4 thousand in 2014 (a 12.6% decrease). In the same period, PKP Intercity recorded a decrease by nearly 16.6%, with as many as 405 thousand passengers less compared to the preceding year.

In 2014 the most passengers crossed the border using the UBB GmbH trains on the route from Świnoujście to Ahlbeck, Germany. However, this figure was by 12.7% lower compared to 2013. The second most popular cross-border route was the line between Terespol and Brest, Belarus. This line also had less passengers compared to the preceding year. Notably, there was a substantial increase in the number of passengers crossing the Zgorzelec-Göerlitz border between Poland and Germany.

**Fig. 20: Transport performance in international communication in the years 2012-2014**



Source: prepared by UTK

### 1.3.4. The structure of the rolling stock owned by passenger railway undertakings

There was an increase in the stock of electric multiple units, which increased at the end of the year to 1 319 units (55 units more than in 2013; a 4.4% increase). The number of wagons in electric multiple units increased from 3 985 units to 4 267 units (a 7.1% increase). The total number of wagons (including in electric multiple units) increased by 14 units to 6 965 units. The number of diesel vehicles owned by passenger railway undertakings increased by 10 units. In total, at the end of 2014, there were 273 units, including the stock of so-called railbuses (90 units, 7 units less than in 2013). The total number of locomotives also changed from 535 to 510, with 30 electric locomotives less (from 393 to 363) and 6 diesel engine locomotives more (from 141 to 147).

**Tab. 4: The number of traction and wagon rolling stock of passenger railway undertakings in the years 2004-2014 (2013 data for normal-gauge rail operators in brackets)<sup>2</sup>**

type of rolling stock	year										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
locomotives in total	70	75	75	124	618	691	706	674	670	627 (535)	510
of which electric locomotives	0	0	0	31	314	384	392	380	412	393	363
of which diesel locomotives	63	67	66	79	290	292	298	277	244	221 (141)	147
of which steam locomotives	7	8	9	14	14	15	16	17	14	13 (1)	0
electric multiple units	1 165	1 170	1 170	1 174	1 186	1 194	1 205	1 248	1 216	1 264	1 319
diesel engine vehicles	51	88	104	98	165	175	230	252	259	287 (263)	273
of which railbuses	45	80	93	72	116	154	184	205	206	191 (97)	101
passenger wagons	8 829	8 487	8 353	8 247	8 060	7 921	7 900	8 079	7 520	7 147 (6 951)	6 965
of which in electric multiple units	3 586	3 648	3 672	3 718	3 797	3 853	4 037	4 221	3 921	3 985	4 267

Source: prepared by UTK

<sup>2</sup> The 2004-2013 data include standard-gauge and narrow-gauge rail in total

In 2014 railway undertakings spent a total of PLN 1 550.5 m to purchase rolling stock, of which PKP Intercity and Łódzka Kolej Aglomeracyjna spent 81.6% and 15.8%, respectively. Koleje Śląskie and Przewozy Regionalne invested PLN 11.5 m and PLN 29.2 m, respectively, to purchase rolling stock.

In the same period, the undertakings spent PLN 353 m in modernisation expenditure, of which PKP Intercity spent PLN 179.5 m, PKP SKM w Trójmieście PLN 102.4 m and Koleje Mazowieckie PLN 71 m.

### 1.3.5. The volume, structure and efficiency indicators of the passenger transport market

The volume of the Polish market for passenger railway transport in 2014 can be characterised by the following parameters:

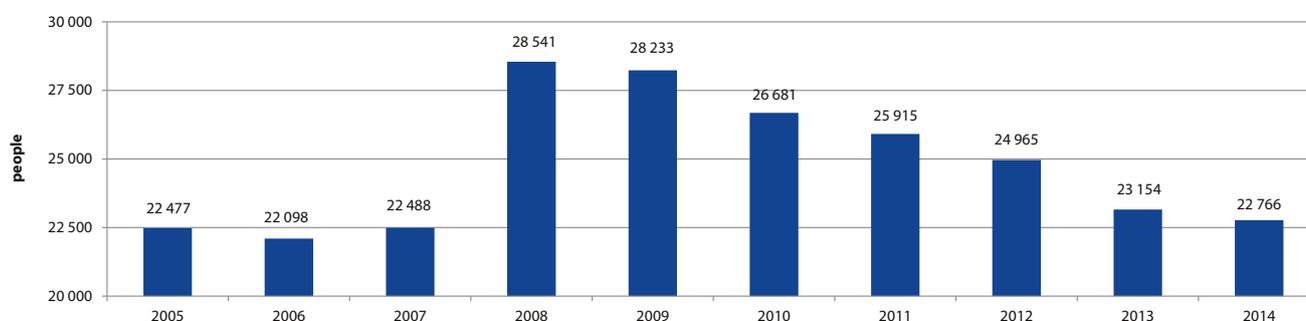
▪ the number of licensed companies	-	23
▪ the number of regular (timetable operating) railway undertakings	-	13
▪ annual market revenue	-	PLN 4.796 bn
▪ annual rail service provision costs	-	PLN 4.810 bn

### In 2014 railway undertakings spent a total of PLN 1 550.5 m to purchase rolling stock

▪ employment	-	22 766
▪ The number of transported passengers	-	269.1 m
▪ Transport performance passenger-kilometres	-	16.1 bn
▪ Total train-kilometres	-	135.4 m
▪ The number of standard-gauge locomotives	-	510
▪ The number of electrical multiple units (EMU)	-	1 319
▪ The total number of wagons	-	6 965

The year 2014 continued to see the downward employment trend in the passenger transport sector. The employment level has been on consistent decline since 2009. At the end of 2014, railway undertakings employed 22 766 people, which is 1.7% less than in 2013 (the 2014 employee calculations did not include narrow-gauge rail).

**Fig. 21: Employment in the passenger transport sector in the years 2005-2014**



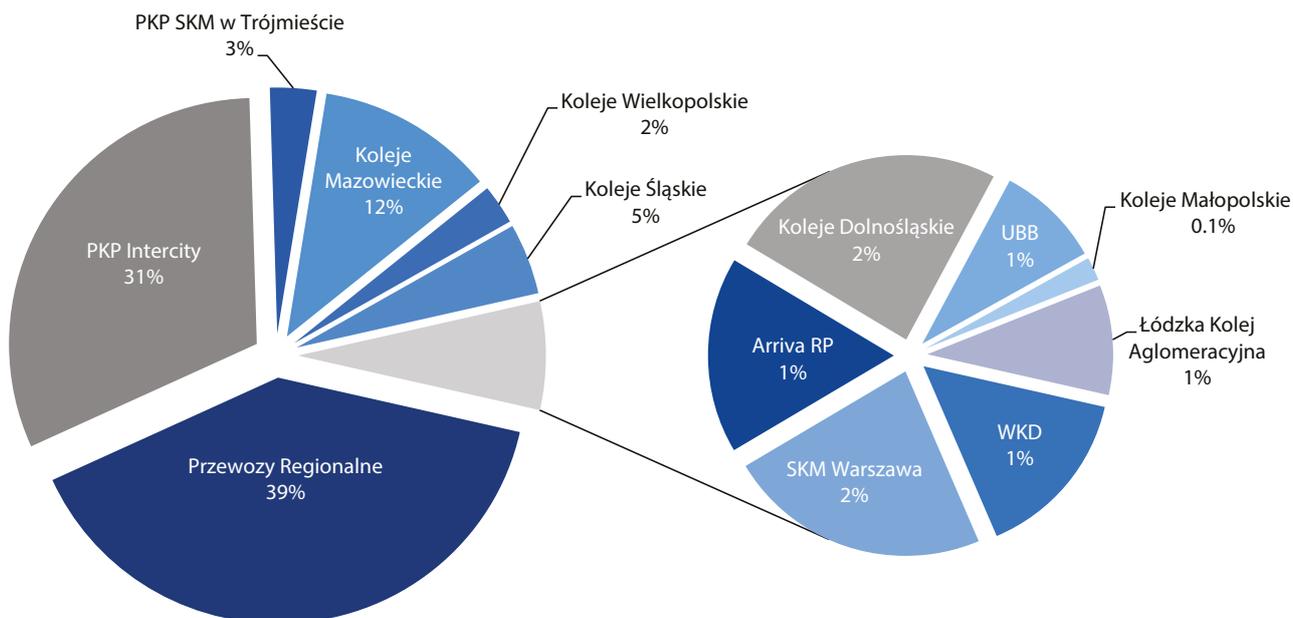
Source: prepared by UTK

Among the companies that reduced their employment in 2014, the most notable reduction was recorded by Przewozy Regionalne (from 9 671 to 9 017, a 7% reduction). PKP Intercity had a proportionally lower reduction (from 7 246 to 7 138, an approx. 1.5% reduction). In the same period, many up-and-coming local-government companies increased their employment. Koleje Dolnośląskie added 82 employees to its workforce (a 27% increase from 309 to 391 employees). The Warsaw SKM added 39 employees to its workforce (a 12% increase from

331 to 370 employees). Koleje Małopolskie and Łódzka Kolej Aglomeracyjna, which started business in 2014, had 33 and 156 employees, respectively. It is important to note that the increased number of passengers and transport performance of Arriva RP translated into increased workforce, which added 80 employees in 2013 and further 42 employees in 2014. At the end of 2014, the company employed 278 people.



**Fig. 22: The employment structure in 2014**



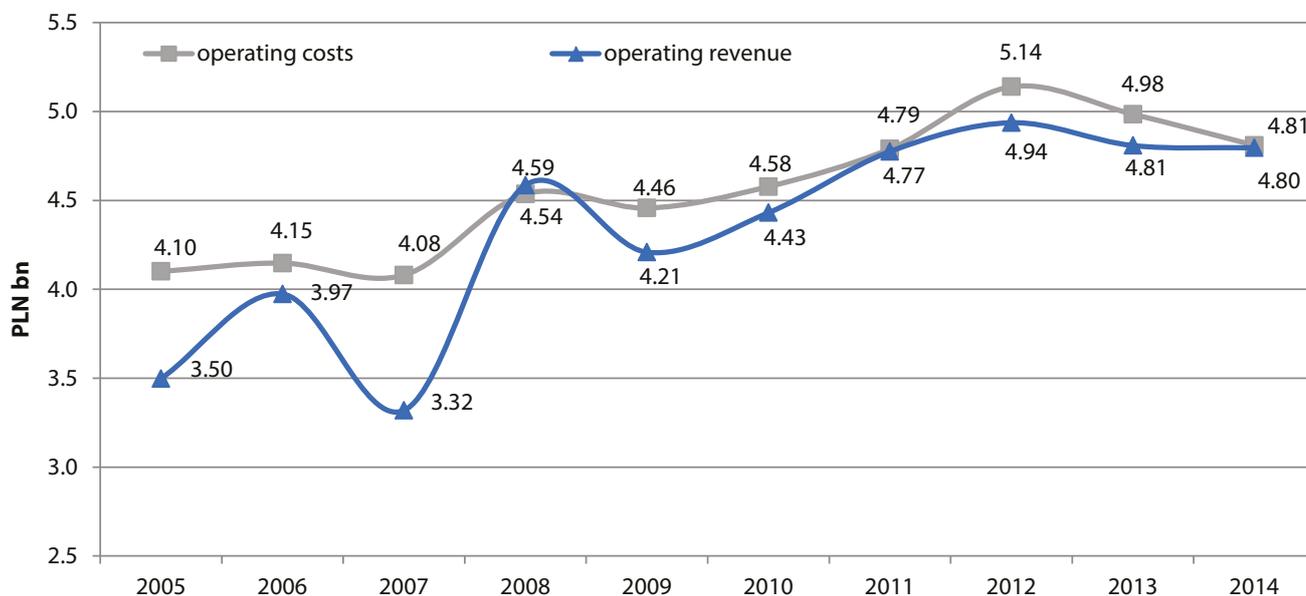
Source: prepared by UTK

Despite recording the most substantial employment reduction, Przewozy Regionalne continued to have the largest workforce (over 9 thousand, which is 39% of all employees in the sector of rail passenger transport). In comparison, this percentage was at approx. 42% in 2013. PKP Intercity is the second-largest

employer with a share of approx. 31%, followed by Koleje Mazowieckie (12%).

**The level of employment at Przewozy Regionalne decreased by 7%**

**Fig. 23: The operating performance of passenger railway undertakings (in PLN bn) in the years 2005-2014**



Source: prepared by UTK

It is clear from the comparison of operating revenues and operating costs that the latter are considerably higher. While in 2012 both costs and revenues reached their maximum levels, they have been on decline for two years now. It is worth noting, however, that there is less and less difference between the costs and the revenues. In 2014 all railway undertakings generated a total operating revenue of PLN 4.796 bn and spent PLN 4.810

**In 2014 all railway undertakings generated a total operating revenue of PLN 4.8 bn and spent PLN 4.81 bn in operating costs**

## Subsidies for the provision of public services and purposive subsidies to statutory reliefs accounted for nearly 48% in the total amount of revenues

bn in operating costs. With so little difference between operating costs and revenues, therefore, the total loss amounted to only PLN 14 m (the 2013 loss was PLN 177 m).

It should be noted that subsidies were also included in the revenues of passenger railway undertakings, including those obtained from the State budget and local governments, allocated for the provision of public services and to cover the deficit on account of statutory reliefs. Apart from the subsidies, the main element of the revenues of railway undertakings was the sale of tickets.

In 2014, subsidies for the provision of public services and purposive subsidies to statutory reliefs accounted for nearly 48% (44% in 2013). The railway undertakings received PLN 2.29 bn for this purpose, which is 6.4% more than in 2013 (an increase of PLN 137 m). Like in previous years, subsidies for the provision of public services had to be increased due to lower sales revenues. Revenues in 2014 (from sales and subsidies) decreased very slightly compared to revenues in 2013 (a 0.3% decrease).

### 1.3.6. The evaluation of the quality of rail transport services

Published in December 2013, Eurobarometer's report on "Europeans' satisfaction with rail services" provides a picture of the Polish rail, including passenger satisfaction. Poland is mentioned in this report in a number of aspects. According to the report

- Poland is one of two EU countries (in addition to Italy) which has more respondents dissatisfied with train punctuality and reliability (40% dissatisfied vs. 36% satisfied).
- In addition to the Czech Republic and France, Poland also has the largest percentage of respondents (57%) living within 10 to 30 minutes of a train station.
- Poland recorded one of the lowest levels of satisfaction and the highest level of dissatisfaction with the provision of information about train timetables (6% vs. 27%).
- The percentage of the respondents who are satisfied and those who are dissatisfied with the cleanliness and main-

## Also increased was satisfaction with cleanliness in carriages and toilets

tenance of train stations in Poland remains the same (39% for both cases).

- In addition to Estonian and Bulgarian respondents, Poles were among the least satisfied with the general state of train stations (33% satisfied respondents).
- Polish respondents are among those Europeans (in addition to Bulgarians and Estonians) who are the least satisfied with the frequency of the trains. The percentage of the "satisfied" is 39%, with the "dissatisfied" comprising 32% of the respondents. It is heartening to see, however, that the rate of the satisfied respondents grew by 9 percentage points when compared to the 2011 survey.
- Polish respondents are becoming increasingly satisfied with the quality of information provided during the journey (an increase of 10 percentage points to 41%).
- More respondents were satisfied with the availability of staff on trains (an increase of 14 percentage points to 70%).
- Also increased was satisfaction with cleanliness of carriages and toilets (an increase of 11 percentage points to 37%).
- However, there was a decrease of 3 percentage points (from 38%) in satisfaction with the accessibility of the stations and platforms for the disabled and persons with reduced mobility).

## Polish respondents are becoming increasingly satisfied with the quality of information provided during the journey

Surveys revealed the passenger perception of the rail situation, including which changes they appreciate and which changes they expect. With 64% of dissatisfied respondents, Poland ranked 4th from bottom in terms of the overall satisfaction with travel (the EU average being 55% satisfied respondents).

One of the primary drivers of rail transport quality was punctuality. To be considered punctual, trains needed to reach their final station on time or with a delay not exceeding 5 minutes. The ratio of punctuality on arrival is the quotient of the number of trains that reach the final station on time (including those delayed up to 5 min) and the number of all trains dispatched by railway undertakings. The punctuality of trains on final stations in 2014 was 91.1%, which is a 0.5 percentage points decrease compared to the previous year (from 91.6%). In 2014 licensed railway undertakings dispatched a total of 1 504 thousand trains, which is approx. 2,9 thousand less than in the previous year. In addition, the percentage of all trains that were late on arrival (including those delayed up to 5 min) amounted to 25.7% in the analysed period, which is a negligible decrease of 0.3 percentage points relative to 2013. In total, trains had a delay of 60 367 hours, or 2515 days (a 2.7% increase).

The average delay time, except for delays of up to 5 min., amounted to 21 min. 42 sec. (5 sec. less than in 2013). Including trains delayed up to 5 min., the average delay time was 9 min. and 23 seconds. Trains delayed by up to 5 minutes made up the largest percentage of 65.2% (67.7% in 2013). Trains delayed

by 5 to 60 minutes made up 32.9% (30.5% in 2013), trains delayed by 1 to 2 hours made up 1.4% (1.4% in 2013), and trains delayed by over 2 hours made up 0.44% (0.40% in 2013). The number of cancelled trains fell to 2219 in comparison to 2013 (2362 in 2013).

**Tab. 5: The punctuality of passenger railway undertakings in 2014 vs. 2013**

	Q1	Q2	Q3	Q4	2014	2013
total	92.71%	92.78%	89.97%	88.97%	91.08%	91.61%
PKP Intercity	83.50%	82.29%	71.18%	68.66%	76.35%	84.16%
Przewozy Regionalne	94.03%	93.39%	90.35%	90.11%	91.95%	92.27%
Koleje Mazowieckie	86.72%	89.75%	86.15%	86.34%	87.25%	87.09%
PKP SKM w Trójmieście	98.92%	98.93%	98.78%	98.47%	98.77%	98.75%
SKM w Warszawie	91.29%	93.76%	89.84%	88.49%	90.93%	92.88%
Warszawska Kolej Dojazdowa	99.33%	99.65%	99.74%	97.49%	99.06%	99.18%
Koleje Dolnośląskie	93.70%	93.53%	90.87%	87.80%	91.45%	94.46%
Koleje Śląskie	93.51%	88.22%	86.50%	80.83%	87.24%	86.25%
Koleje Wielkopolskie	94.06%	95.56%	95.03%	93.14%	94.44%	94.67%
Arriva RP	93.70%	93.39%	93.49%	90.98%	92.89%	96.25%
Łódzka Kolej Aglomeracyjna	-	-	96.01%	97.04%	96.75%	-
Koleje Małopolskie	-	-	-	99.81%	99.81%	-

Source: prepared by UTK

Compared to 2013, punctuality fell by nearly 2 percentage points for SKM Warszawa, by 3 percentage points for Koleje Dolnośląskie, and by 3.4 percentage points for Arriva RP. The largest decline in punctuality was recorded by PKP Intercity (7.8 percentage points).

### 1.3.7. The protection of passengers' rights

A major development for increased passenger protection in 2014 was the entry into force (as of 3 December 2014) of the Regulation of the Minister of Infrastructure and Development of 20 November 2014 on the exemption from the application of some provisions of Regulation (EC) No 1371/2007 of the European Parliament and of the Council on rail passengers' rights and obligations (Dz. U. (Journal of Laws), item 1680).

The above-mentioned Regulation of the Minister of Infrastructure and Development governs the extent to which the provisions of Regulation (EC) No 1371/2007, which is the principal legislative act that underlies the protection of passengers' rights, and which is used by the President of UTK on a regular basis, are applied. Passengers of the Polish rail gained new rights under the provisions of Regulation No 1371/2007. These provisions were not applicable until 3 December 2014, as Poland was temporarily exempted from the obligation to implement them.

As far as domestic and international lines to non-EU countries are concerned, only three provisions are temporarily (until 3 December 2019) exempted from application. These include

Article 8 (3) (providing passengers with information in the most suitable form), Article 10 (establishing a Computerised Information and Reservation System for Rail Transport (CIRSRT)), and Article 21 (1) (ensuring the availability of rolling stock and infrastructure as required by TSI – the Technical Specification for Interoperability). Following these changes, passengers will enjoy extended rights.

The President of UTK took the following passenger protection measures in 2014:

- strengthened control and supervisory activities (over 150 inspections), increased number of closed administrative proceedings (from 16 in 2013 to 21 in 2014) and increased number of handled passenger complaints (from 1 127 complaints in 2013 to 1 608 complaints in 2014, which is a 42.68% increase). Also, more improvement notices were issued to railway entities (a total of 338 notices in 2014, which is 25.19% more than in 2013).
- a range of activities and initiatives were taken and planned to provide as many facilities as possible for the disabled and persons with reduced mobility. The President of UTK also maintains a focus on such issues as the availability of train-station facilities, stations and stops, the availability of rolling stock, and also improvements to facilitate the booking and purchasing of tickets. Also addressed is the need for support from railway undertakings and infrastructure managers, appropriate assistance (the right to assistance), discount entitlements (including for those who take care of the disabled and persons with reduced

mobility), and also facilitated communication with railway undertakings, infrastructure managers and UTK.

- interventions at PKP Intercity S.A. regarding the unfair discrimination against passengers with other disabilities in relation to those on wheelchairs. In line with the internal regulation of PKP Intercity S.A., only the disabled on wheelchairs may purchase tickets on the EIP-category trains without extra charges, whereas the provisions of Regulation No 1371/2007 make no such distinction between the disabled and persons with reduced mobility. In practice, therefore, people with other disabilities cannot buy tickets on EIP-category trains, which puts them at risk of having to pay PLN 650 in extra charges. PKP Intercity S.A. continues to make this distinction, despite being requested by the President UTK to discontinue the practice in question. Consequently, the President of UTK instituted an administrative proceeding against the company regarding its non-compliance with Regulation No 1371/2007. Such need was also indicated by social organisations that represent the disabled and persons with reduced mobility. The proceeding is still pending.
- established teams led by the President of UTK (a task force and a group of experts advising on the disabled and persons with reduced mobility), whose task is to come up with recommendations on improving the observance of the rights of the above-mentioned group of passengers travelling by rail and to facilitate such travels for these passengers.

UTK received a total of 1 608 complaints in 2014. Compared to 2013, the number of complaints increased by as much as 42.7%, or, more specifically, from 1 127 to 1 608 (in comparison – in 2010, 2011, and 2012, UTK received 15, 66, and 661 complaints, respectively).

The increased number of complaints filed to UTK means that the passenger awareness campaigns and efforts of UTK have been effective. The growing number of complaints is a clear sign that passengers are increasingly associating UTK as the go-to place when having difficulties to pursue their claims.

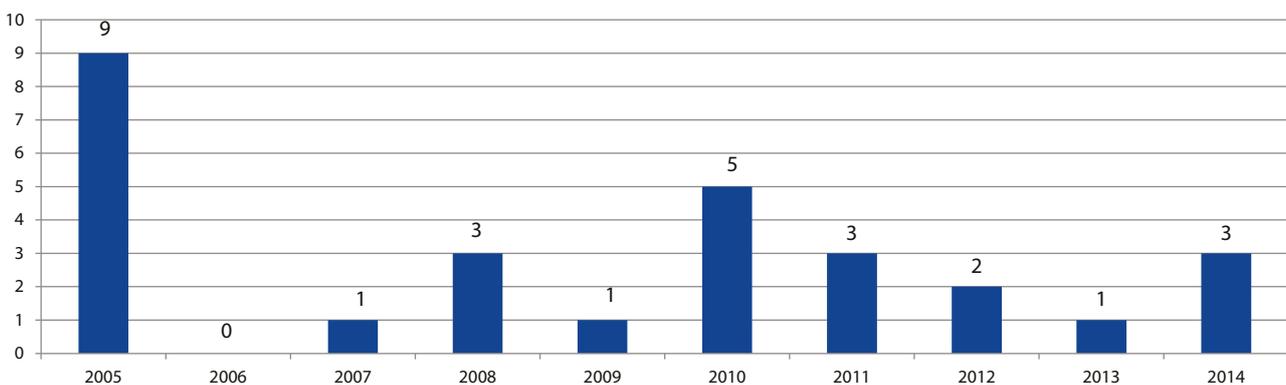
Passengers complained mainly about delayed trains, the lack of information on train times and routes, the lack of appropriate announcements or information in station buildings, at stations, stops, and on trains, as well as travel conditions (temperature, cleanliness, toilet availability, overcrowded trains).

**The number of complaints filed to UTK grew by as much as 42.7%**

### 1.3.8. Licensing passenger railway transport

In line with Article 10 par. 1 (2) of the Railway Transport Act, the President of UTK issued three licences for the provision of passenger railway services in 2014. In recent years this number has ranged consistently from one to several licences a year.

**Fig. 24: The number of licences for the provision of passenger railway services issued in the years 2005-2014**



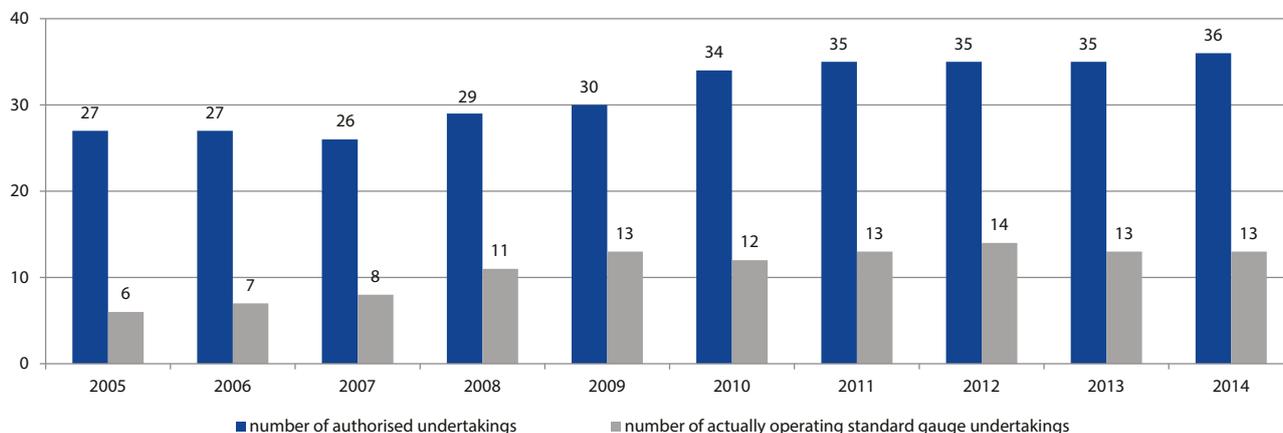
Source: prepared by UTK

As at the end of 2014, there were 36 railway undertakings that had active business licences (including suspended licences), of which 13 were held by operators of narrow-gauge rail. Since the inception of UTK, the President of UTK has issued 46 licences for the provision of passenger railway services.

**A total of 46 licences for the provision of passenger railway services have already been issued. There are 13 railway undertakings that actually operate on the market**

**91.1% trains reached their final station on time in 2014 – this is a 0.5 percentage-point decrease compared to 2013.**

**Fig. 25: The number of licensed railway undertakings authorised to provide transport services and actually operating on the railway market in the years 2005-2014**



Source: prepared by UTK

As a result of the administrative proceedings conducted ex officio in the period from 1 January to 31 December 2014, the President of UTK issued decisions concerning the licensing of passenger railway transport, including:

- 3 licences for the provision of passenger rail transport were granted,
- data in 2 licences for the provision of passenger rail transport were changed,
- one decision was issued to extend the time limit for commencing the licensed provision of passenger rail transport,
- one decision was issued to revoke a licence for the provision of passenger rail transport,
- one decision was issued to reverse the decision of the President of UTK on the provision of passenger rail transport,
- 4 decisions were issued to discontinue proceedings on suspending licences for the provision of passenger rail transport,
- one decision was issued on the expiry of a licence for the provision of passenger rail transport,
- one request for a licence for the provision of passenger rail transport was not examined.





## 2. The freight rail transport market

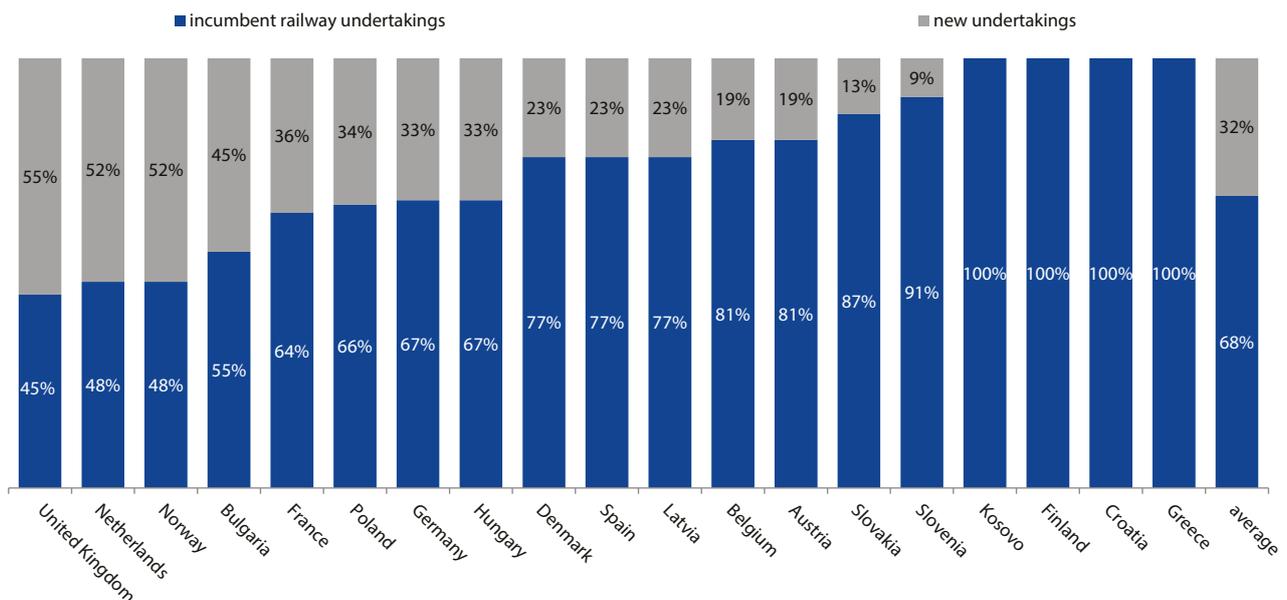
### 2.1. Changes in the European freight transport markets

The two following sub-chapters provide a brief analysis of the rail freight transport in European countries. They discuss market structures and the evolution of transport over recent years. The analyses are based on IRG-Rail, CER and UIRR data. The data from the latest IRG-Rail's report are for 2013.

#### 2.1.1. The openness of the markets of IRG-Rail-reporting countries

One of the indicators of the openness of individual rail markets for new undertakings is the share of new undertakings and incumbent railway undertakings.

**Fig. 26: The share of incumbent railway undertakings and new railway undertakings in transport performance in 2013 in the IRG-Rail-reporting countries**



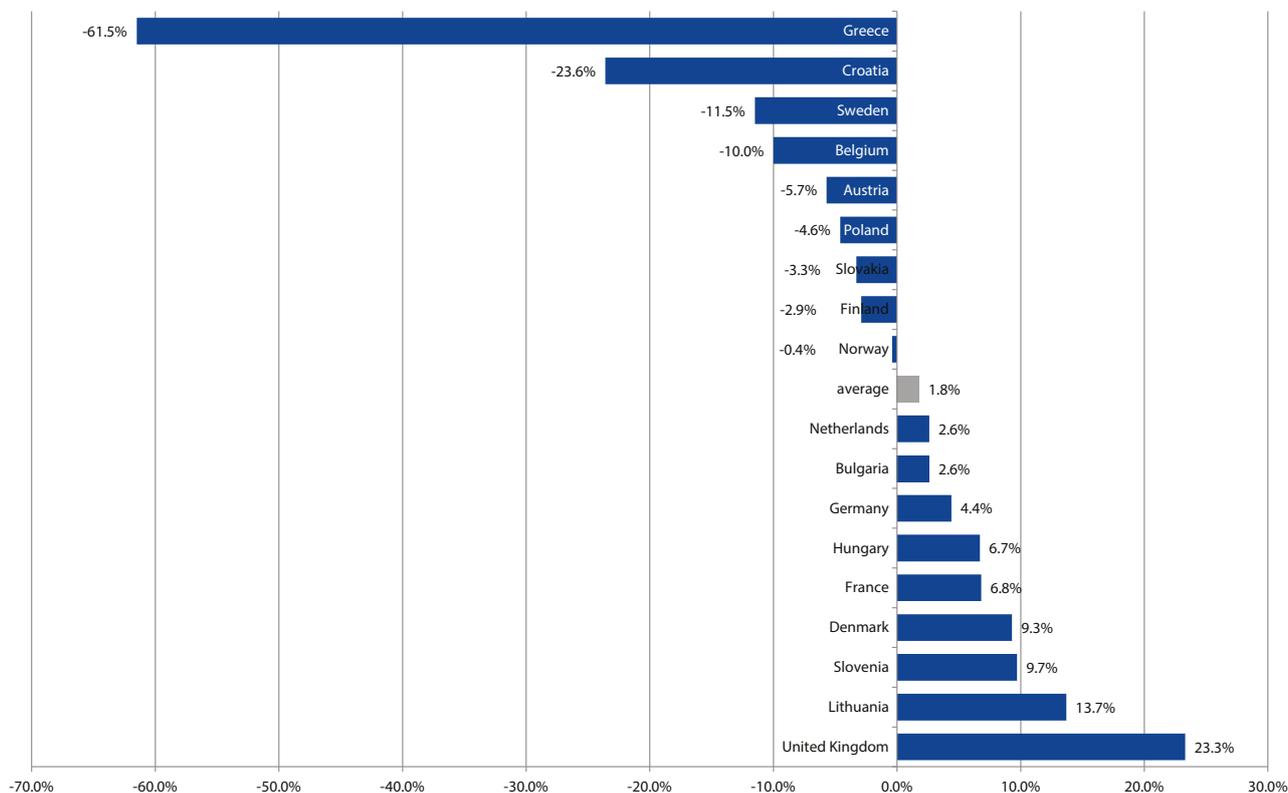
Source: prepared by UTK based on IRG-Rail data

The largest market share (55%) in the transport performance of “new” undertakings was reported by the UK. Market shares of over 50% were also reported by railway undertakings in the Netherlands and Norway. The Polish market is relatively open as well, with a 34% share of new undertakings. This is marginally less than in France and marginally more than in Germany.

Kosovo, Finland, Croatia and Greece reported that incumbent railway undertakings had 100% shares in their markets.

## 2.1.2. The evolution of freight rail transport in Europe

**Fig. 27: The evolution of freight transport performance (freight train kilometres) of the IRG-Rail-reporting countries (2013 vs. 2010)**



Source: prepared by UTK based on IRG-Rail data

Between 2010 and 2013, the largest increase in transport performance was recorded by the United Kingdom, which is the only country where the number of tonne-km increased for three consecutive years. Slovenia’s substantial increase in freight transport performance (9%) is attributable to a substantial growth of transshipment in Koper, Slovenia’s only sea port.

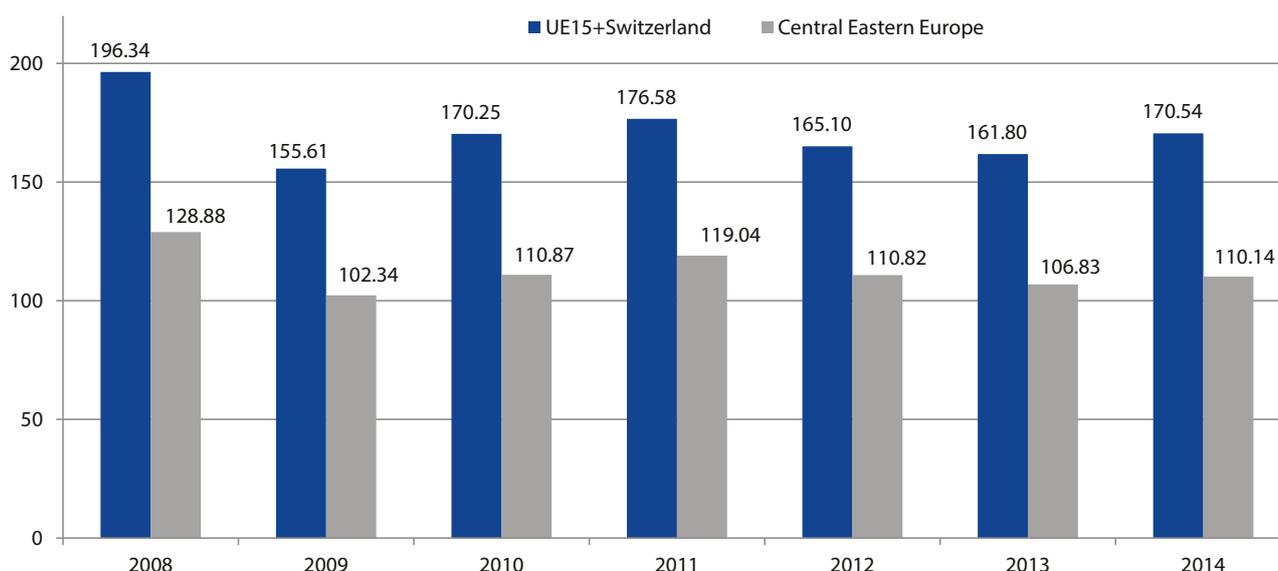
In the 2010-2013 period, Greece experienced the largest decrease in freight transport performance (over 60%). In Austria, the reduced share of transit rail traffic has not recovered since the economic crisis. The crisis also affected freight transport in Sweden (an 11.5% decrease) due to the lower demand or Swedish raw materials from Asian countries. In total, the transport performance of the discussed countries shrank by 1.8% in the years 2010-2013. In the same period, Poland experienced a 4.6% decrease in this respect.

The 2014 data are available for CER-affiliated railway undertakings. CER members represent 80% of the freight railway transport market of the entire Europe. According to CER, its members recorded increased transport performance for the first time since 2011. Western European countries grew relatively

more (5.4%), although Central and transport performances in Eastern Europe (including the Balkan Peninsula, Turkey and Georgia) grew as well (3.1%). The total growth in transport performance was 4.6%. Importantly, the industrial production index grew by only 1.1% throughout this period, so the growth in transport performance was clearly more significant. It is also important to note, however, that the pre-2008-crisis transport performance was approx. 14% higher than in 2014. CER data suggest that the increases in 2014 were driven primarily in the first half of the year.



**Fig. 28: Transport performance in the EU-15 countries + Switzerland, and Central and Eastern Europe in the years 2008-2014 (in bn tonne-km)**



Source: prepared by UTK based on CER data

### UIRR-affiliated railway undertakings experienced a 1.1% decrease in intermodal transport

According to the data accumulated by the UIRR – The International Union for Road-Rail Combined Transport – intermodal transport decreased by 1.1% in 2014. The trailer segment experienced a decrease of 3.4% (especially evident in domestic transport), and the container segment, which makes up 80% of the intermodal market, shrank by 1.5%. A growth was recorded in the truck-

-transport segment (12.9%). At the same time, however, the transport performance in intermodal transport grew by as much as 12%, which means that the freight was heavier. The distances also increased on average from 722 to 780 km, which is an 8% increase. In 2012 the average distance was 702 km.

## 2.2. Intermodal competition on the Polish freight transport market

According to GUS Data, a total of 1.83 bn tonnes of freight were transported in Poland in 2014 in all modes of transport. Compared to 2013, this figure fell slightly by 0.4%.

**Tab. 6: The weight of the goods transported in Poland in the years 2001-2014**

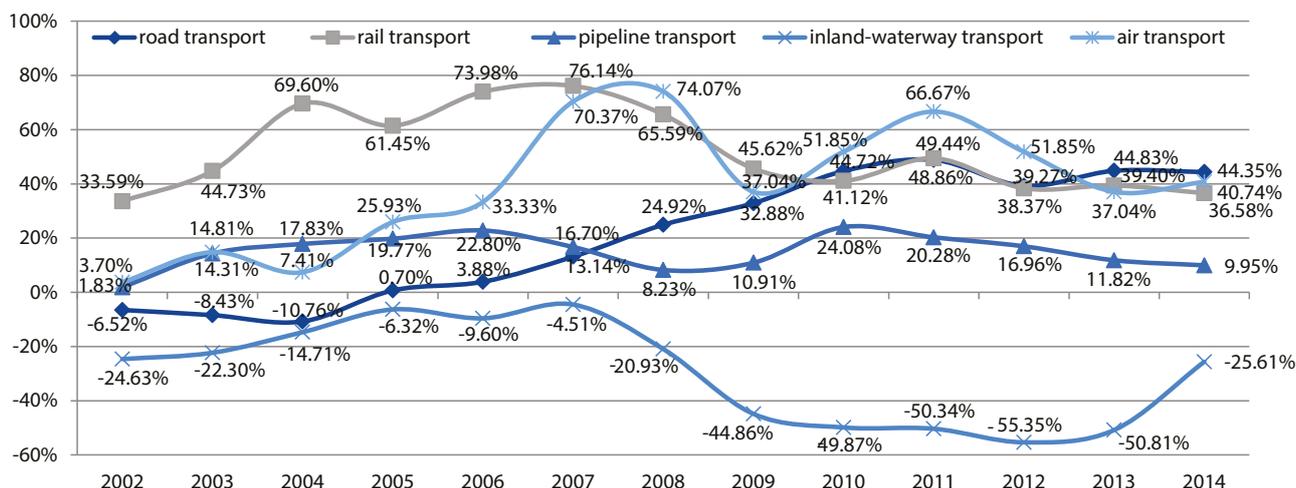
freight transport market in Poland in the years 2001-2014														
transport mode	year													
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
in m tonnes														
in total	1 294.75	1 279.16	1 283.24	1 302.09	1 413.06	1 469.12	1 569.85	1 672.96	1 723.79	1 848.70	1 905.18	1 781.87	1 841.38	1 833.25
road transport	1 072.30	1 002.37	981.96	956.94	1 079.76	1 113.88	1 213.25	1 339.47	1 424.88	1 551.84	1 596.21	1 493.39	1 553.05	1 547.88
rail transport	166.86	222.90	241.50	283.00	269.40	290.30	293.90	276.30	242.98	235.47	249.35	230.88	232.60	227.89
pipeline transport	45.30	46.13	51.78	53.38	54.26	55.63	52.87	49.03	50.24	56.21	54.49	52.99	50.66	49.81
inland-waterway transport	10.26	7.73	7.97	8.75	9.61	9.27	9.79	8.11	5.66	5.14	5.09	4.58	5.04	7.63
air transport	0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.04	0.04	0.05	0.04	0.04	0.04

Source: prepared by UTK based on GUS data

Accounting for almost 1.55 bn tonnes of freight, road transport is the market leader. Despite the negligible decrease in the weight of transported freight, road transport increased its market share to 84.4% (by 0.1 percentage point). Rail transport shrank the most both in terms of weight transported (an approx. 2% decrease) and its market share (by 0.2 percentage point). This means that the market share of rail in freight transport reached an all-time low of 12.4%. Pipeline transport also recorded a de-

crease in the weight transported compared to 2013 (by 1.7%), although it basically maintained its market share (2.7%). With an over 50% increase in weight transported compared to 2013, water transport was the most successful mode of transport in 2014. While its market share continues to be insignificant, it grew to 0.4%. The market share of air transport in the freight weight transported was marginal.

**Fig. 29: The evolution of freight weight in particular modes of transport in 2014/2002 (2001=0%)**



Source: prepared by UTK based on GUS data

Starting from 2005, an upward trend can be observed for road transport, whereas rail transport has shown a downward trend since 2008. These trends can be traced back to the structural economic changes as well as to the rapid transformations within the road transport sector. Low barriers to entry and relatively low costs encourage entrepreneurs to establish transport companies. Increased competition prompted road transport companies to continue improving their services without substantially increasing their prices.

Since Poland joined the European Union, its road infrastructure has been improving consistently. Due to high barriers to entry and market operation, including high costs of access to infrastructure, rail transport recorded a rapid market-share decrease of over 9% since 2004.

In terms of transport performance, 2014 saw a slight increase (by 1.3%) in freight transport for all modes of transport. In absolute terms, this meant an increase by 4378 m tonne-km.

**Tab. 7: Freight transport performance in the years 2001-2014**

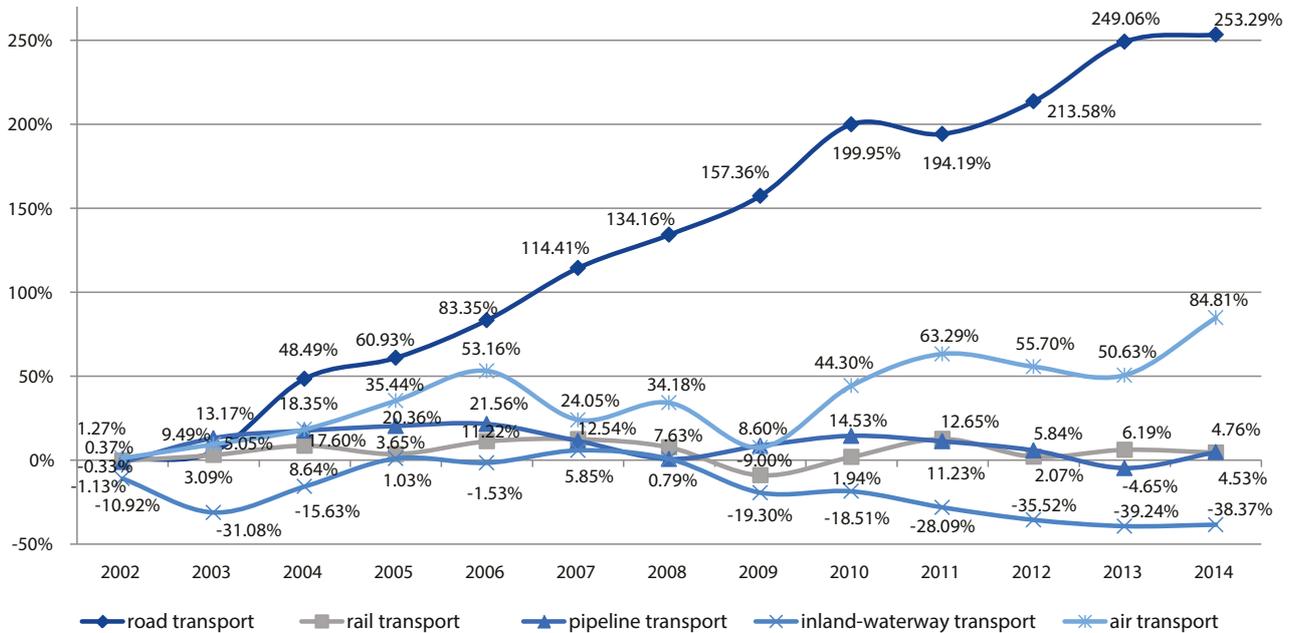
freight transport market in Poland in the years 2001-2014														
transport mode	year													
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
in m tonne-km														
in total	144 752	144 495	152 381	188 500	196 176	216 713	238 399	248 420	259 098	297 313	297 361	305 476	331 588	335 966
road transport	74 403	74 679	78 160	110 481	119 740	136 416	159 527	174 223	191 484	223 170	218 888	233 310	259 708	262 860
rail transport	47 913	47 756	49 392	52 053	49 664	53 291	53 923	51 570	43 601	48 842	53 974	48 903	50 881	50 083
pipeline transport	21 093	20 854	23 871	24 806	25 388	25 640	23 513	21 247	22 908	24 157	23 461	22 325	20 112	22 098
inland-waterway transport	1 264	1 126	871	1 066	1 277	1 245	1 338	1 274	1 020	1 030	909	815	768	779
air transport	79	80	87	94	107	121	98	106	85	114	129	123	119	146

Source: prepared by UTK based on GUS data

After a 10% decrease in 2013, pipeline transport recorded a symmetrical increase. It contributed 6.6% to the total transport performance, which is much less than in the early 21st century (ca. 15%). Air transport had the highest increase in transport performance in 2014 (by 23%), which was its best performance since 2001. Despite the growth of air cargo transport, this mode continues to contribute very little to transport performance (0.04%). Inland-waterway transport recorded a slight increase

in transport performance, with its market share remaining low as well (0.23%). Road transport's performance grew for the third consecutive year, although in 2014 this growth was negligible, with the market share of this branch staying at approx. 78%. Rail was the only mode of transport to have decreased its transport performance, with its market share falling below 15% for the first time (from 15.3% to 14.9%).

**Fig. 30: The evolution of transport performance in particular modes of transport in 2014/2002 (2001=0%)**



Source: prepared by UTK based on GUS data

The extensive economic changes have caused a shift in the market roles of the individual modes of transport. Like other EU countries, Poland observed a decreasing importance of rail freight transport in the years 2001-2014. Rail freight transport has been losing its share to road transport, as the latter continues to provide advantageous prices, delivery times, and door-to-door capabilities (which is one of the key factors in the client's choice of the mode of transport). However, this mode of transport has a drawback of the limited capabilities in terms of carrying large-weight freight. Compared to some EU countries, river transport plays a minor role in Poland. Air transport grew substantially in 2014, and it is yet to be seen how the air cargo sector will develop.

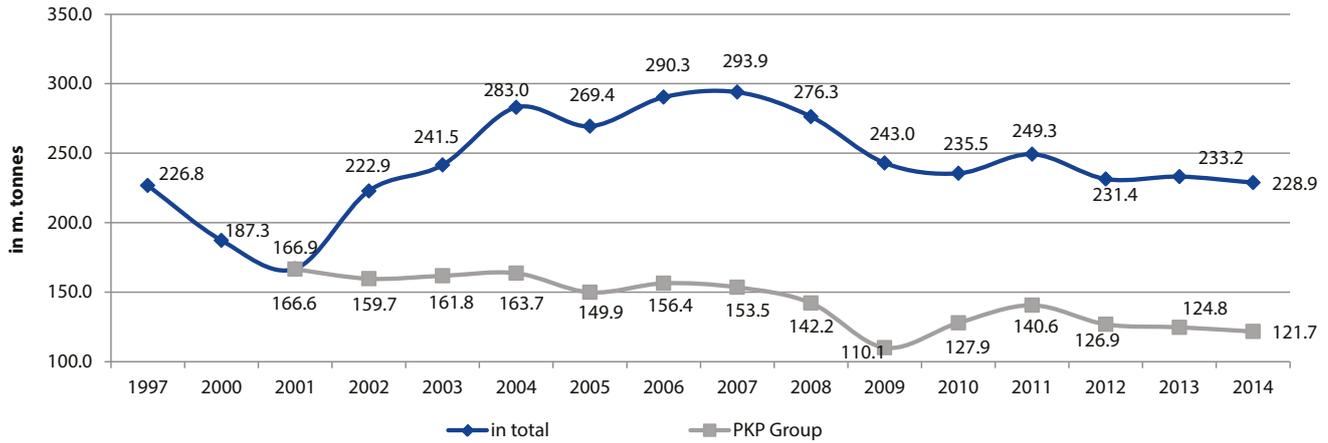
## 2.3. The Polish rail freight transport market

### 2.3.1. Polish railway undertaking structure

In 2014 there were 68 undertakings that provided services under a freight-carrier licence, including 66 undertakings on standard-gauge lines and 1 undertaking on wide-gauge lines. This means that 6 undertakings grew in comparison to 2013.



**Fig. 31: Rail freight transport in Poland in the years 1997-2014 (by weight)<sup>3</sup>**



Source: prepared by UTK

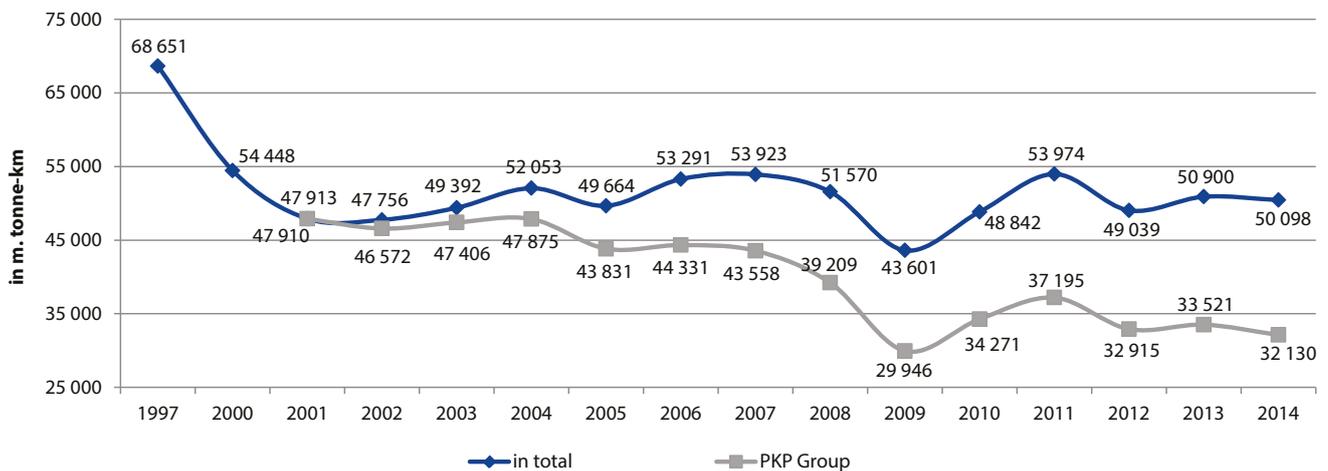
In 2014, railway undertakings transported 228.9 m tonnes of freight. Compared to 2013, this figure fell slightly by 1.8%. Notably, the overall performance is lower compared to late 2012, when the market experienced an over 7% decrease compared to the previous year.

A decrease (by 1.6%) can also be observed in the transport performance of freight undertakings. In 2014 this performance was 50.1 bn tonne-km. This decrease is slightly lower than the decrease in the weight transported, which can be explained in the slightly higher average distance that freight trains covered in 2014. This distance amounted to 218.3 km, which is 0.6 km

more compared to 2013. In the case of the PKP Group companies, transport performance decreased more than the overall market. Given the large volumes involved, this means that the PKP Group conceded some of its market share to other rail undertakings. Its transport performance decreased from 33.5 to 32.1 bn tonne-km (4.2%).

**The transport performance of rail freight transport shrank by 1.6% to 50.1 bn tonne-km**

**Fig. 32: The transport performance of rail freight transport in Poland in the years 1997-2014<sup>4</sup>**



Source: prepared by UTK

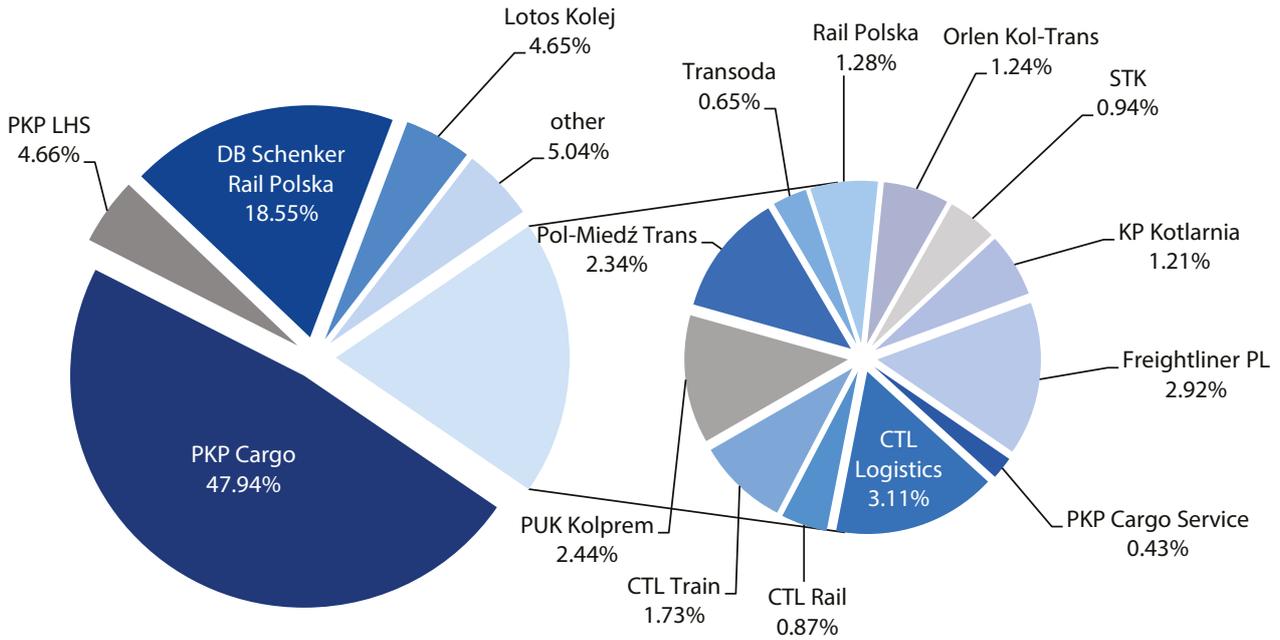
Despite being the market leader, in 2014 the PKP Group lost its share by 0.3 percentage points in terms of weight transported and by 1.7 percentage points in terms of transport performance. The last time PKP Cargo had an over 50% share in weight transported and a 60% share in transport performance was in 2012. In 2014 these figures fell to 47.9% and 56.7%, respectively. Consequently, PKP Cargo lost 0.7 and 2.1 percentage points of its market share to competitors.



<sup>3</sup> Until 2013, the overall transport volume included narrow-gauge railway undertakings.

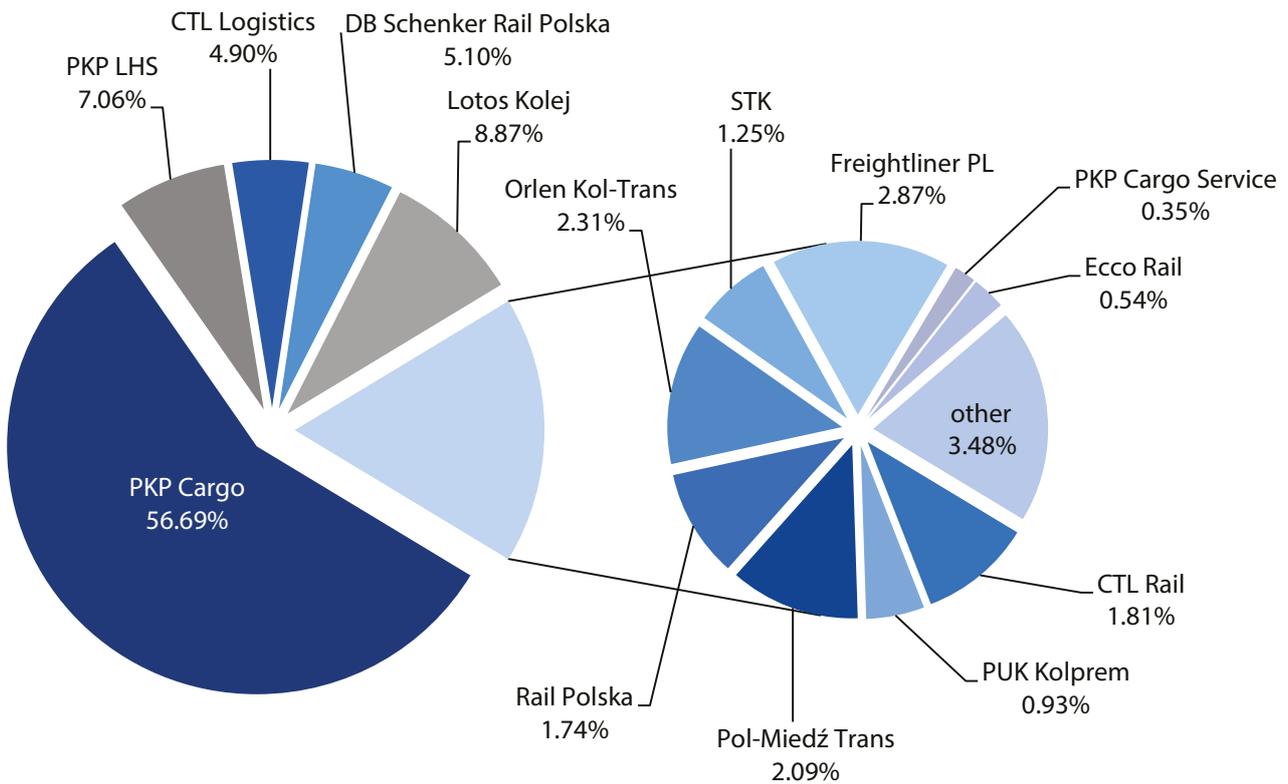
<sup>4</sup> Ibidem.

**Fig. 33: The market shares of leading railway undertakings in 2014 by transported weight**



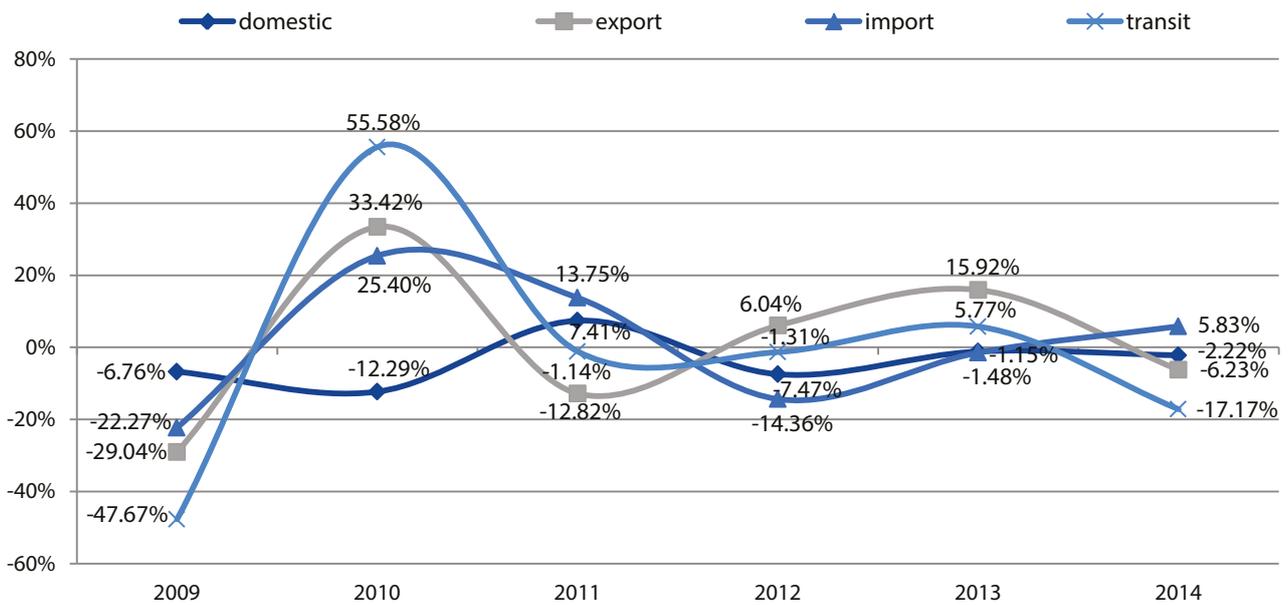
Source: prepared by UTK

**Fig. 34: The market shares of leading railway undertakings in 2014 by transport performance**



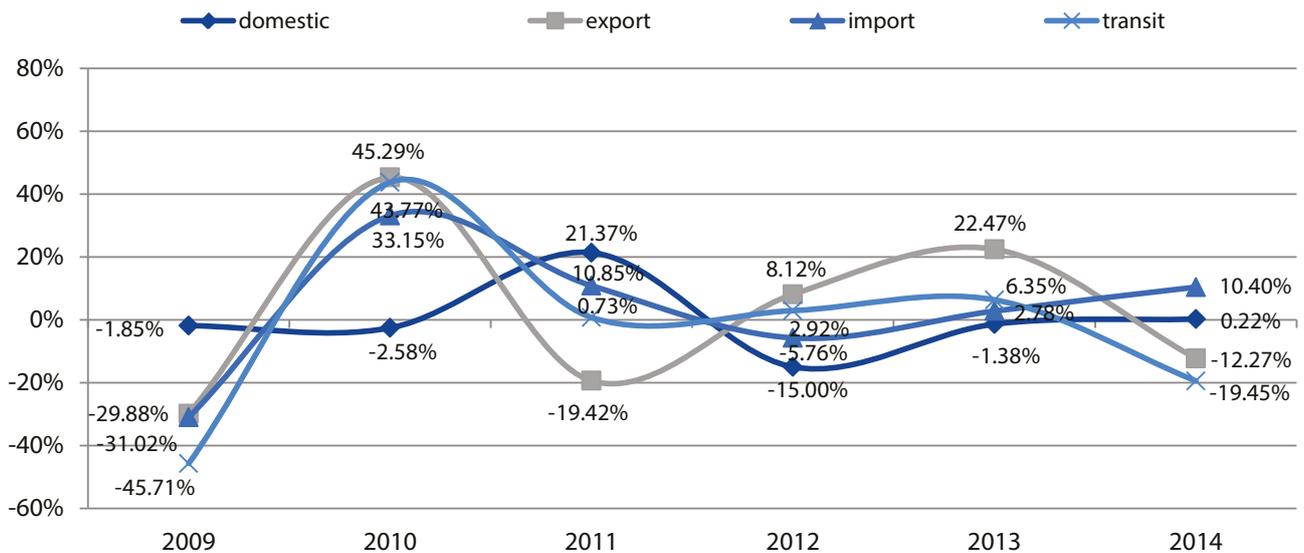
Source: prepared by UTK

**Fig. 35: The evolution of transport in individual types of transport by freight weight [year-to-year] in the years 2009-2014**



Source: prepared by UTK

**Fig. 36: The evolution of transport in individual types of transport by transport performance [year-to-year]**



Source: prepared by UTK

When analysing the transport situation in the years 2009-2014, it is evident that export, import and transit show the biggest deviations over time, contrasting with the more stable trend changes of the rest of the market.

Some significant changes in 2014 were also related to export, which reversed its trend direction from the upside to the downside. In contrast to 2012 and 2013, which were times of rapid growth, export decreased by 6.2% in terms of weight transported and 12.3% in terms of transport performance. A reverse

**In contrast to 2012 and 2013, which were times of rapid growth, export decreased by 6.2% in terms of weight transported and 12.3% in terms of transport performance**

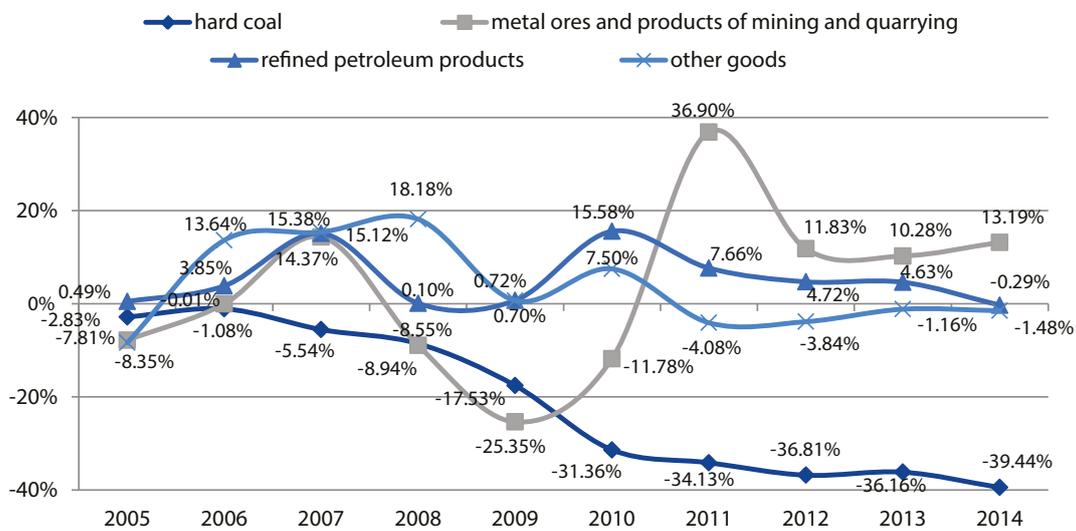
trend can also be observed for transit (a 17.2% decrease in terms of weight transported and a 19.5% decrease in terms of transport performance, despite varying increases in the years 2011-2013). Import, on the other hand, grew for the second consecutive year. Domestic transport showed relatively small changes (a 2.2% decrease in terms of weight transported and a 0.2% increase in terms of transport performance).

The transport of hard coal, metal ores and products of mining and quarrying accounted for 67% of the overall volume of weight transported in 2014. With a 40% share in the overall weight transported, hard coal leads in freight transport. However, the weight of hard coal transported by rail is on the decline.

### 2.3.2. Polish railway market structure

Rail transport in Poland deals primarily with the transport of mass freight. The transport of hard coal, metal ores and products of mining and quarrying accounted for 67.3% of the overall volume of weight transported and 56.4% of the overall transport performance in 2014. At 40.5%, hard-coal transport had the largest market share in weight transported (92.6 m tonnes). It is important to note the volume of hard-coal transport has been on the decline for several years now. In the years 2006-2014, the volume of this transport decreased by 38.8% (58.7 m tonnes). Hard-coal transport in 2014 decreased by 5% in terms of weight transported and 12% in terms of transport performance.

Fig. 37: The evolution of raw material transport by weight transported in 2014/2005 [2004=100%]



Source: prepared by UTK

The year 2014 saw an increase in the transport of metal ores and products of mining and quarrying to 61.3 m tonnes (a 2.7% increase compared to 2013). This was caused by such factors as an increased infrastructural investment and a substantial demand for aggregate, sand and gravel, among other things. When measured in terms of weight transported, an upward trend relative to 2013 was also recorded for the transport of wood and products of wood and cork (5.6%), non-metallic mineral products (8.8%), metals and fabricated metal products (11.3%), food products (29.2%) and mixed goods, excluding food products (40.3%).

As far as the indicator of transport performance in the railway infrastructure network is concerned, most tonne-km were covered to transport hard coal, lignite, petroleum and natural gas (14.9 bn tonne-km, a 29.7% share), and also metal ores and products of mining and quarrying (13.5 bn tonne-km, a 27.0% share). An upward trend in transport performance was observed for the transport of non-metallic mineral products (8.1%), metals and fabricated metal products (13.0%), unidentifiable goods (19.6%), mixed goods, excluding food products (27.1%), and food products (50.2%).



**Tab. 8: The volume of transported weight of freight by groups (in thous. tonnes) and market shares in 2014**

weight of goods		
groups of goods	in total (in thousand tonnes)	market share [%]
<b>TOTAL</b>	<b>228 866.019</b>	<b>100.00%</b>
products of agriculture, hunting, and forestry; fish and other fishing products	4 312.741	1.88%
of which		
cereals	282.522	0.12%
hard coal, lignite, crude oil and natural gas	93 485.418	40.85%
of which		
hard coal	92 646.333	40.48%
metal ores and other mining and quarrying products	61 334.839	26.80%
of which		
iron ores	13 064.237	5.71%
aggregates, sand, gravel, clay	43 333.508	18.93%
food products, beverages and tobacco products	2 211.442	0.97%
textiles and textile products, leather and leather products	21.117	0.01%
wood and articles of wood, cork, articles of straw, paper and paper products, printed matter and recorded media	1 917.777	0.84%
coke, briquettes, refined petroleum products, manufactured gas	24 645.833	10.77%
of which		
refined petroleum products	14 062.304	6.14%
chemicals, chemical products, and man-made fibres, rubber and plastic products, nuclear fuel	9 840.204	4.30%
other non-metallic mineral products	3 246.887	1.42%
of which		
cement, lime, gypsum	2 212.881	0.97%
other building materials	917.276	0.40%
basic metals, fabricated metal products, except machinery and equipment	8 948.452	3.91%
machines, appliances, electrical and electronic equipment	237.028	0.10%
transport equipment	895.602	0.39%
furniture, other manufactured goods n.e.c.	351.821	0.15%
secondary raw materials, municipal wastes	3 348.066	1.46%
letters, packages and courier's parcels and shipments	0.000	0.00%
empty packaging	762.045	0.33%
goods moved in the course of household and office removals, other non-market goods n.e.c.	1.786	0.001%
mixed goods, excluding food products	1 213.925	0.53%
unidentifiable goods	6 230.324	2.72%
other goods n.e.c.	5 860.711	2.56%

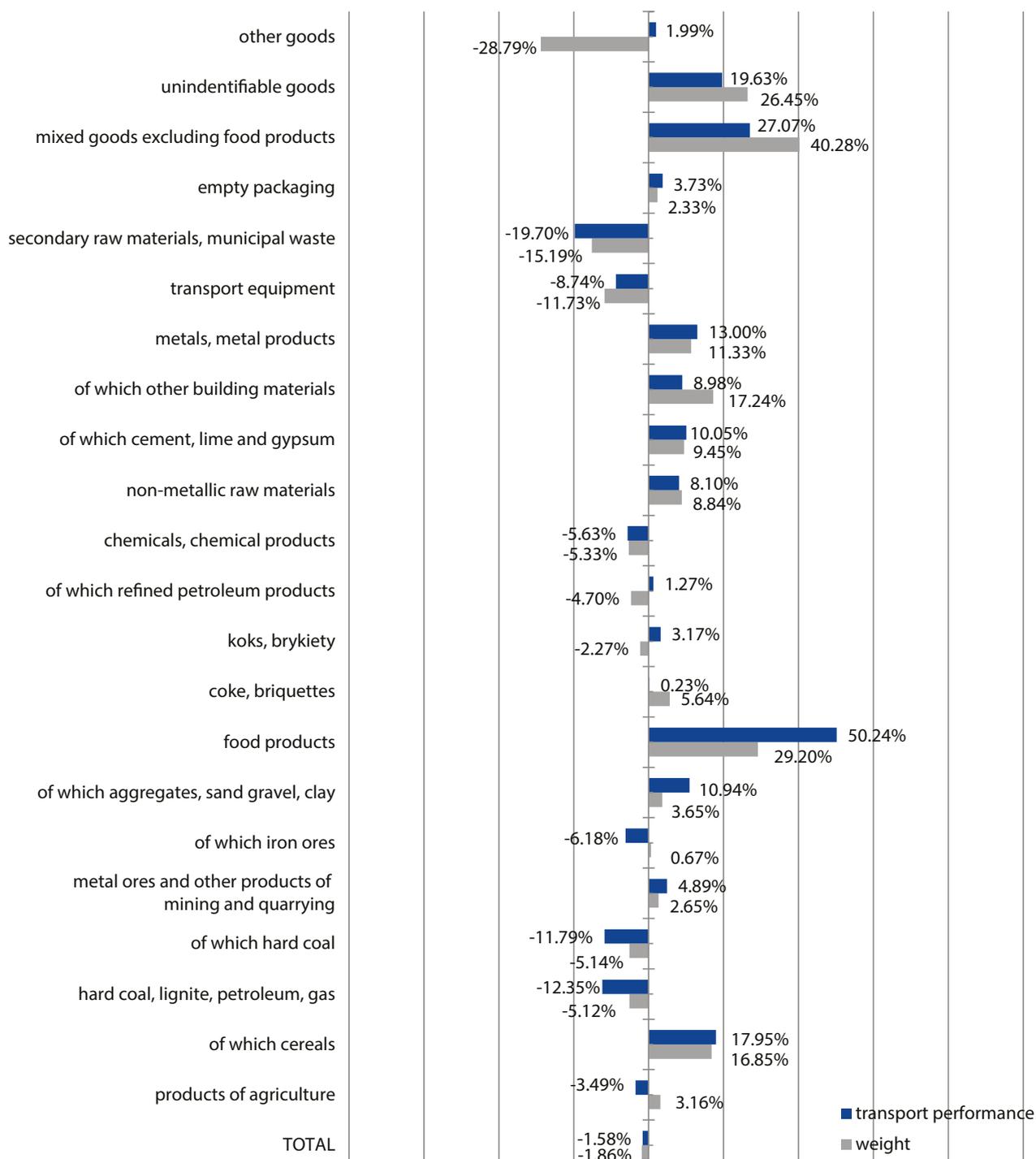
Source: prepared by UTK

**Tab. 9: Transport performance by groups (in thous. tonnes) and market shares in 2014**

transport performance		
groups of goods	in total (thousand tonne-km)	market share [%]
<b>total</b>	<b>50 097 631.271</b>	<b>100.00%</b>
products of agriculture, hunting, and forestry; fish and other fishing products	1 585 347.790	3.16%
of which		
cereals	72 900.636	0.15%
hard coal, lignite, crude oil and natural gas	14 879 184.840	29.70%
of which		
hard coal	14 689 727.298	29.32%
metal ores and other mining and quarrying products	13 540 964.968	27.03%
of which		
iron ores	4 068 725.822	8.12%
aggregates, sand, gravel, clay	7 956 104.037	15.88%
food products, beverages and tobacco products	630 295.241	1.26%
textiles and textile products, leather and leather products	5 326.991	0.01%
wood, wooded and cork goods, articles of straw, paper and paper products, printed matter and recorded media	562 512.347	1.12%
coke, briquettes, refined petroleum products, manufactured gas	7 967 401.000	15.90%
of which		
refined petroleum products	5 151 689.782	10.28%
chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel	3 070 911.999	6.13%
other non-metallic mineral products	988 761.706	1.97%
of which		
cement, lime, gypsum	731 152.584	1.46%
other building materials	237 887.713	0.47%
basic metals, fabricated metal products, except machinery and equipment	2 187 257.735	4.37%
machines, appliances, electric and electronic equipment	69 764.092	0.14%
transport equipment	274 283.925	0.55%
furniture, other manufactured goods n.e.c.	162 912.610	0.33%
secondary raw materials, municipal wastes	805 334.842	1.61%
letters, packages and courier's parcels and shipments	0.000	0.00%
empty packaging	270 889.841	0.54%
goods moved in the course of household and office removals, other non-market goods n.e.c.	416.594	0.001%
mixed goods, excluding food products	179 981.655	0.36%
unidentifiable goods	2 198 760.569	4.39%
other goods n.e.c.	717 322.525	1.43%

Source: prepared by UTK

**Fig. 38: Transport volume changes involving particular groups of freight in 2014**



Source: prepared by UTK

The transport of mass freight, including energy resources, continues to account for the majority of the volume of rail freight transport in Poland. It is important to note that 2014 saw increased transport of biomass, 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 industrial processing of these products, and part of the remaining biodegradable waste. The increased demand for such transport is primarily driven by the increasingly strict environmental protection standards and also by the implementation of the EU climate policy, whose

main objective is to reduce CO<sup>2</sup> emissions and which involves numerous energy production projects based on biomass combustion and coal co-combustion. In 2014 railway undertakings transported over 2.8 m tonnes of biomass, i.e. 0.9 m tonnes more than in 2013 (a 45.7% increase). When measured in terms of transport performance, the biomass transport market exhibits an analogous trend. Railway undertakings contributed 846.6 m tonne-km, i.e. 279.8 m more than in 2013 (a 49.4% increase).

In 2014 railway undertakings transported over 2.8 m tonnes of biomass, i.e. 0.9 m more than in 2013.

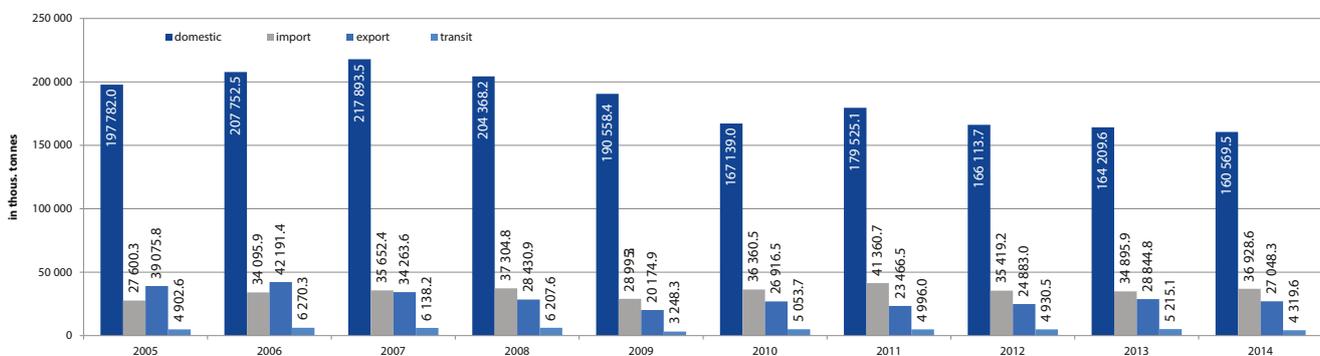
At the end of 2014, biomass accounted for 1.2% and 1.6% of the overall transport volume in terms of weight transported and transport performance, respectively. The transport of wood including sawdust and other timber waste (37.4% of the total volume of the transported biomass), vegetable products (33.7%) including oilseed cake and other fat and vegetable oil extraction products (25.1%) prevailed in 2014. Other not mentioned products accounted for 3.8% of weight transported. Biomass transport mainly involved domestic transport and imports from Eastern European countries.

### 2.3.3. International freight transport

In this chapter, parcels sent for transport abroad or received from abroad by land or through sea ports (including those transhipped in ports) for further transport to the final terminal situated within the country and transited through the territory of the country, were included in the volume of rail transport in international transportation. The transport performance was calculated as the sum of the products of particular parcels' weight transported in wagons and the distance of the transport on the territory of the country.

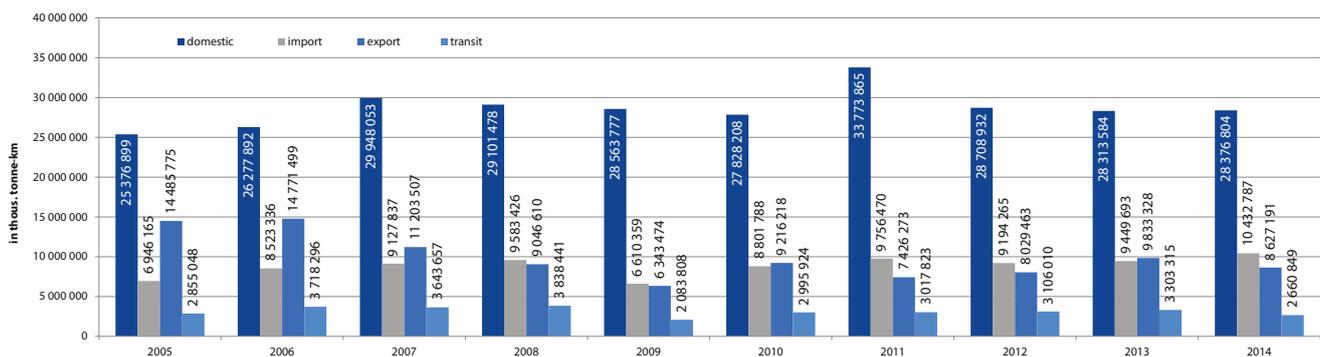
There were 25 licensed railway undertakings that dealt with international freight transport in 2014.

**Fig. 39: The weight of transported goods in domestic and international transport in the years 2005-2014**



Source: prepared by UTK

**Fig. 40: The freight transport performance of domestic and international transport in the years 2005-2014**



Source: prepared by UTK

In 2014 in international transport railway undertakings transported nearly 68.3 m tonnes of goods, and their transport performance amounted to 21.7 bn tonne-km. It should be emphasised that the volume of weight transported decreased by 1.0% compared to 2013, and so did transport performance (a 3.8% decrease).

Weight transported and transport performance in 2014 increased only for import transport (by 5.8% and 10.4%, respectively). Export transport recorded a decrease in the volume of transported weight and transport performance (a 6.2% and 12.3%

decrease, respectively). Notably, transit transport decreased in terms of both weight transported and transport performance by 17.2% and 19.4%, respectively. For domestic transport, the volume of transported weight decreased compared to 2013 by over 3.6 m tonnes of freight (a 2.2% decrease). The transport performance recorded for the analysed period increased by nearly 0.1 bn tonne-km (a 0.2% increase). The contribution of international transport to weight transported continues to be relatively low. Its contributions in 2010, 2011, 2012, 2013 and 2014 were 29%, 28%, 28.2%, 29.6% and 29.8%, respectively.



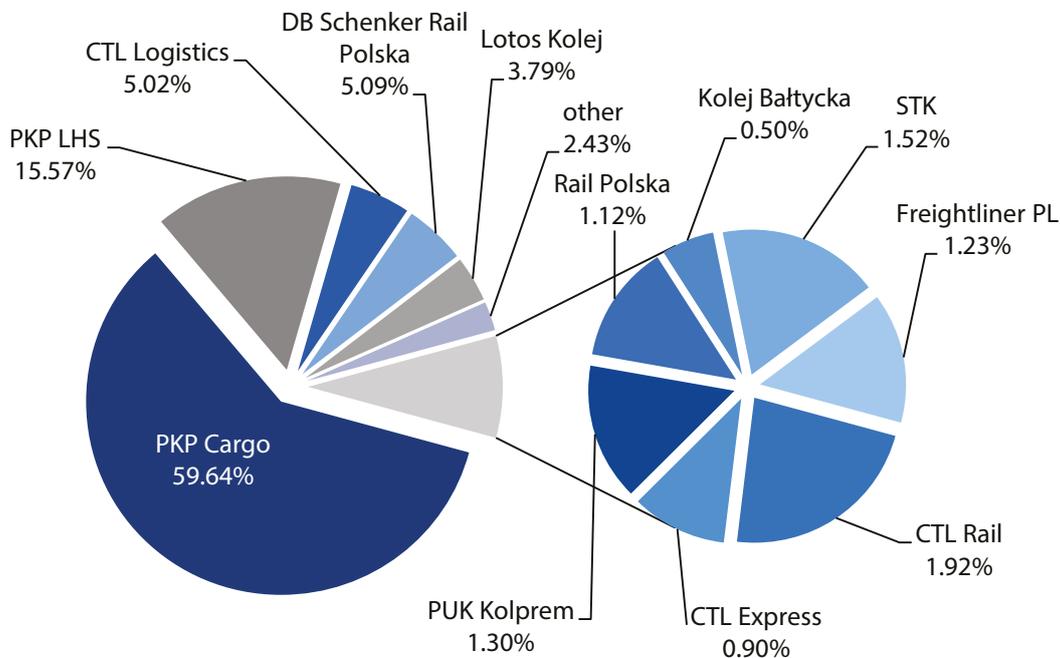
Due to the distances to cover in this type of transport (318 km on average in 2014), its market share in transport performance is accordingly bigger. Until 2006 this figure had oscillated around 50%. Later, it started to decline gradually. As at the end of 2014, the market share of international transport in transport performance was 43.4%.

In 2014 most import transport accounted for most weight transported (36.9 m tonnes). With 4.3 m tonnes of weight transported, transit transport had by far the poorest performance. The largest transport performance, as expressed in tonne-km, can be attributed to import transport (a total of 10.4 bn tonne-km).

Despite their decline, the companies of PKP Group still held the largest share in international transport. As at the end of 2014, their total market share by weight transported and transport

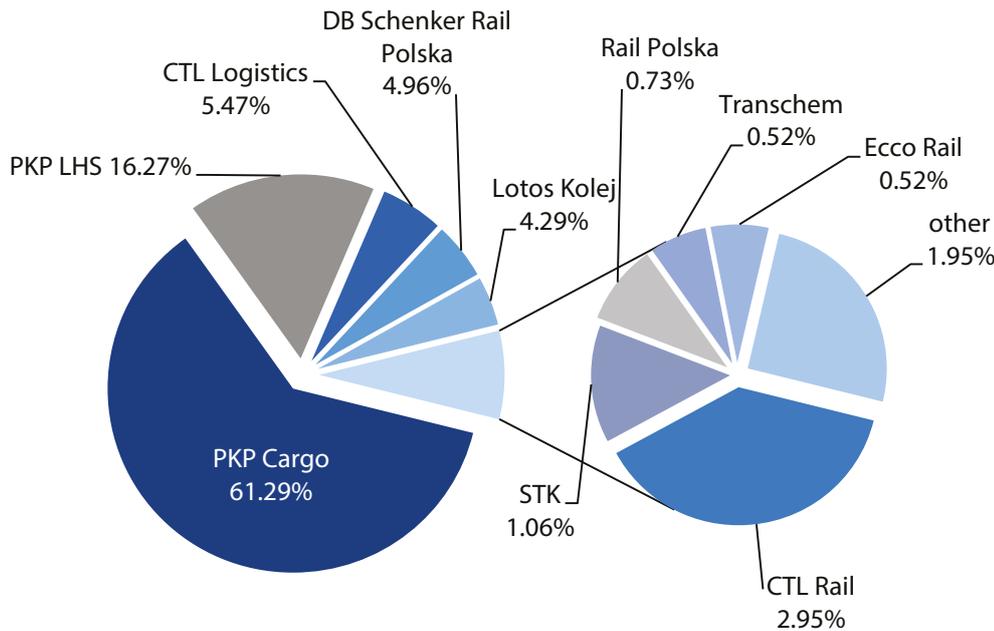
performance was 75.2% and 77.6%, respectively. When analysing the performance of other railway undertakings, it is evident that the companies of the CTL and DB Schenker Groups had the largest market shares (7.9% and 5.2% by weight transported and 8.6% and 5.0% by transport performance, respectively). These two were followed by Lotos Kolej (by weight transported and transport performance, respectively): 3.8% and 4.3%, STK: 1.5% and 1.1%, Rail Polska: 1.1% and 0.7%, PUK Kolprem: 1.3% and 0.4%, and Freightliner: 1.2% and 0.5%. Other companies contributed less than 1% to the freight weight transported. Through the acquisition of certificates enabling independent transport in the countries of Central and Eastern Europe, Polish companies such as PKP Cargo S.A. can independently provide transport services in the Czech Republic, Germany, Austria, Slovakia, Belgium, the Netherlands and Hungary.

**Fig. 41: Railway undertakings' share in international transport in 2014 by weight transported (over 0.5%)**



Source: prepared by UTK

**Fig. 42: Railway undertakings' share in international transport in 2013 by transport performance (over 0.5%)**



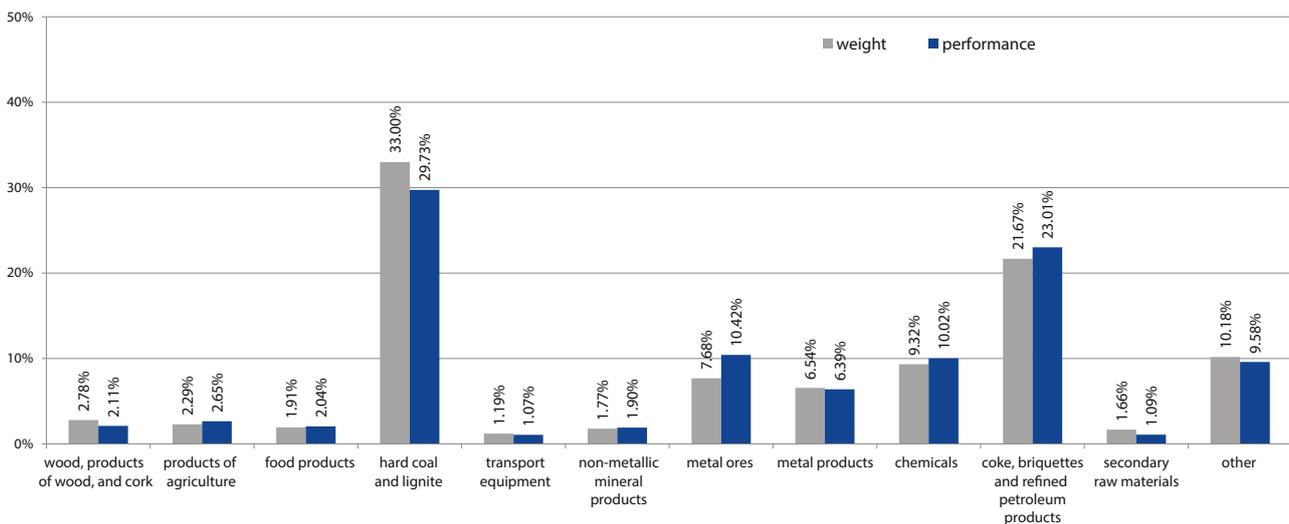
Poland's largest trading partners include Germany, Russia, Ukraine and the Czech Republic – 62% of freight weight in international transport from and to Poland involves these countries.

Source: prepared by UTK

The coal transported in 2014 weighted a total of 18.7 m tonnes, of which 48% was imported (almost 9.0 m tonnes) and the rest was exported (47.6%). Poland's main trade partners include Russia, Ukraine, Belarus and Germany (in terms of import), and Germany, the Czech Republic, Ukraine, the UK and Italy (in terms of export). Coal, coke, briquettes and refined petroleum products continue to account for the most part of the freight weight transported. With shares of 33.0% and 29.7% by weight

transported and transport performance, coal (hard coal and lignite) led in this respect, followed by coke, briquettes and refined petroleum products, which accounted for 21.7% and 23%, respectively. With shares of 9.3% and 10.0%, chemicals had played an important role as well. It is important to note that the share of highly processed and general cargo goods continues to be insignificant, i.e. slightly over a dozen percent.

**Fig. 43: The structure of goods transported internationally in 2014**



Source: prepared by UTK

Like in 2013, Germany, Russia, Ukraine and the Czech Republic continue to be the largest trading partners of Poland. Consequently, the most of freight weight (over 62%) went to these countries. The transport performance related to trading with these countries increased to 55% in 2014.

As regards the place of dispatch and destination of goods (according to waybills), transportation between Poland and Germany accounted for the most of the total volume of goods (19.8%). A total of almost 12.7 m tonnes of freight was transported between these countries in 2014, with a transport performance of 4.2 bn tonne-km. Other important trading partners of Poland include

Russia and Ukraine. In 2014 transport between Poland and Russia accounted for 17.6% and 12.5% by weight transported and transport performance, respectively. For transport from and to Ukraine, these figures were 13.8% and 14.1%, respectively.

### 2.3.4. Intermodal transport

There were 12 licensed railway undertakings that operated intermodal transport in 2014 in Poland.

**Tab. 10: The names and number of undertakings operating intermodal rail transport in the years 2004-2014**

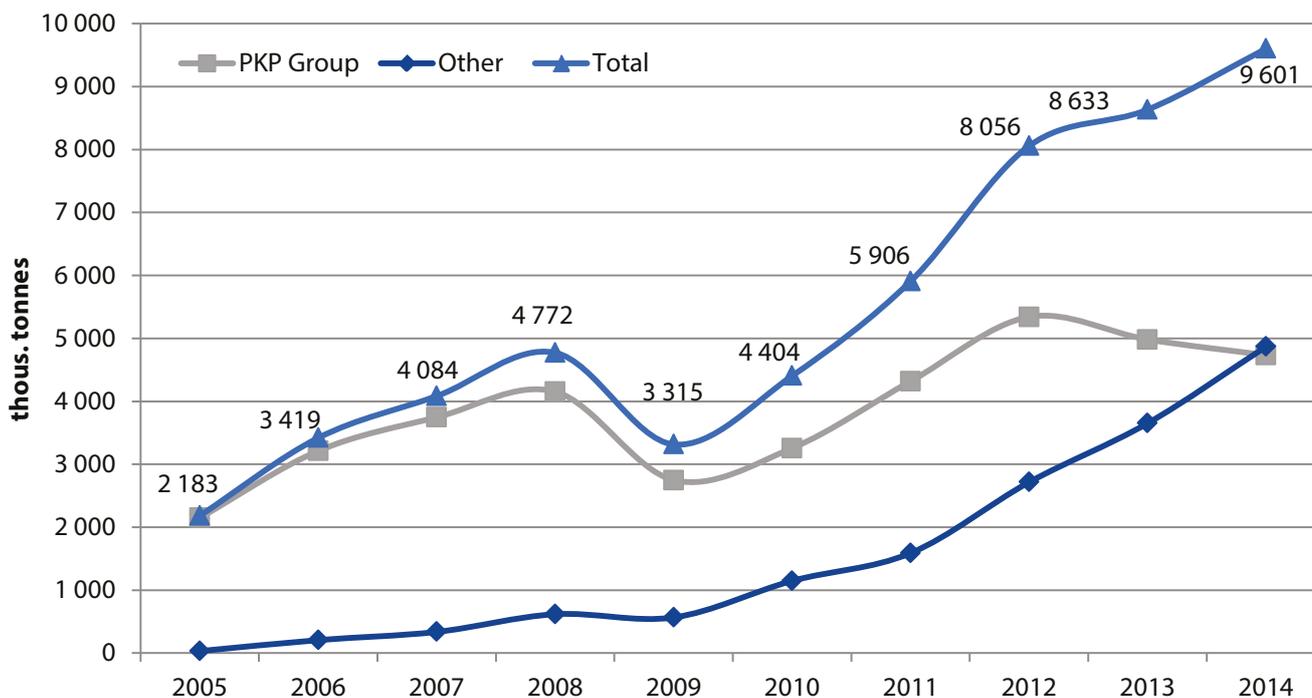
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo	PKP Cargo
PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS	PKP LHS
	DB Schenker	DB Schenker	DB Schenker	DB Schenker	DB Schenker	DB Schenker	DB Schenker	DB Schenker	DB Schenker	DB Schenker
		DB Kolchem	DB Kolchem	DB Kolchem	DB Kolchem					
			CTL Rail	CTL Rail					CTL Rail	CTL Rail
			CTL Logistics		CTL Logistics		CTL Logistics	CTL Logistics	CTL Logistics	CTL Logistics
				CTL Express	CTL Express	CTL Express	CTL Express	CTL Express		
					Lotos Kolej	Lotos Kolej	Lotos Kolej	Lotos Kolej	Lotos Kolej	Lotos Kolej
							STK Wrocław	STK Wrocław	STK Wrocław	
								Majkoltrans		
									Ecco Rail	Ecco Rail
									ITL Polska	
								Rail Polska	Rail Polska	Rail Polska
										Freightliner
										Karpiel
										Eurotrans
										Polzug
2	3	4	6	6	7	5	7	9	10	12

Source: prepared by UTK

In 2014 railway undertakings transported another record-breaking number of loading units (a total of 699.6 thous. including almost 683 thous. containers, i.e. over 1.080 m TEU). Compared to 2013, this grew by 1.5%. The total weight of transported load exceeded 9.6 m tonnes, and the transport performance involved

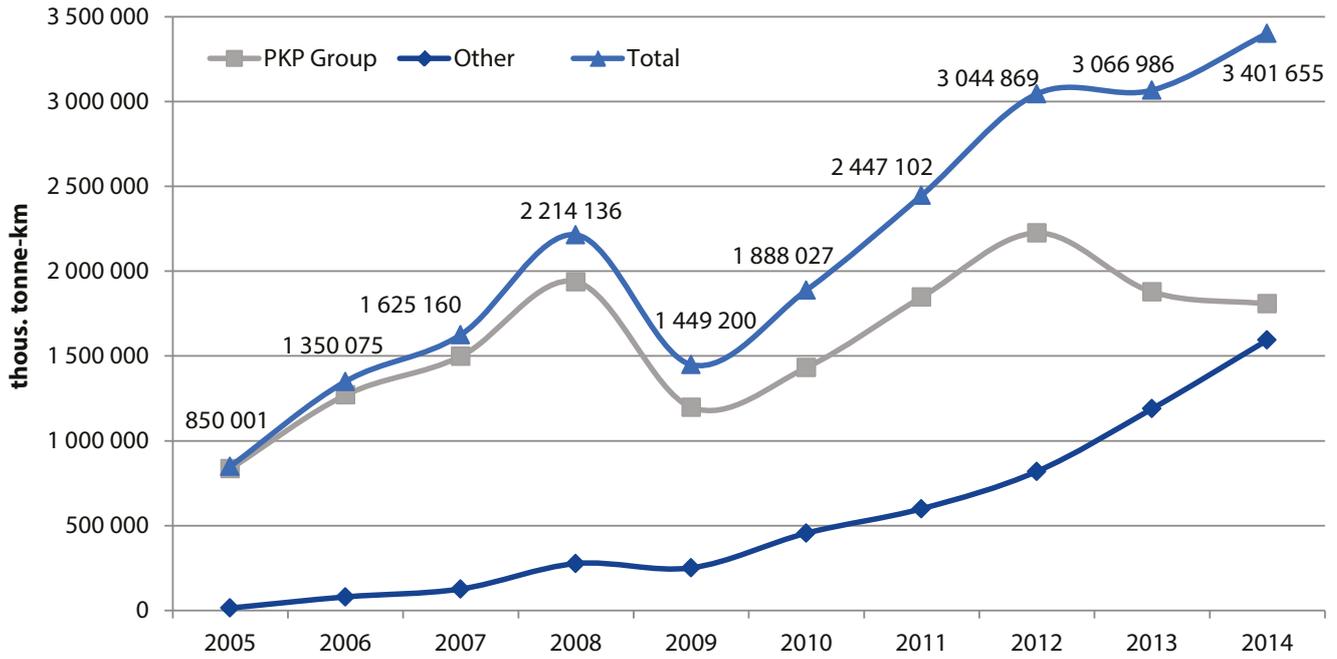
exceeded 3.4 bn tonne-km. Compared to 2013, this represents an increase of 11.2% and 10.9%, respectively. Notably, this was the best performance ever recorded in the Polish history of intermodal rail transport.

**Fig. 44: Intermodal rail transport in Poland by weight transported**



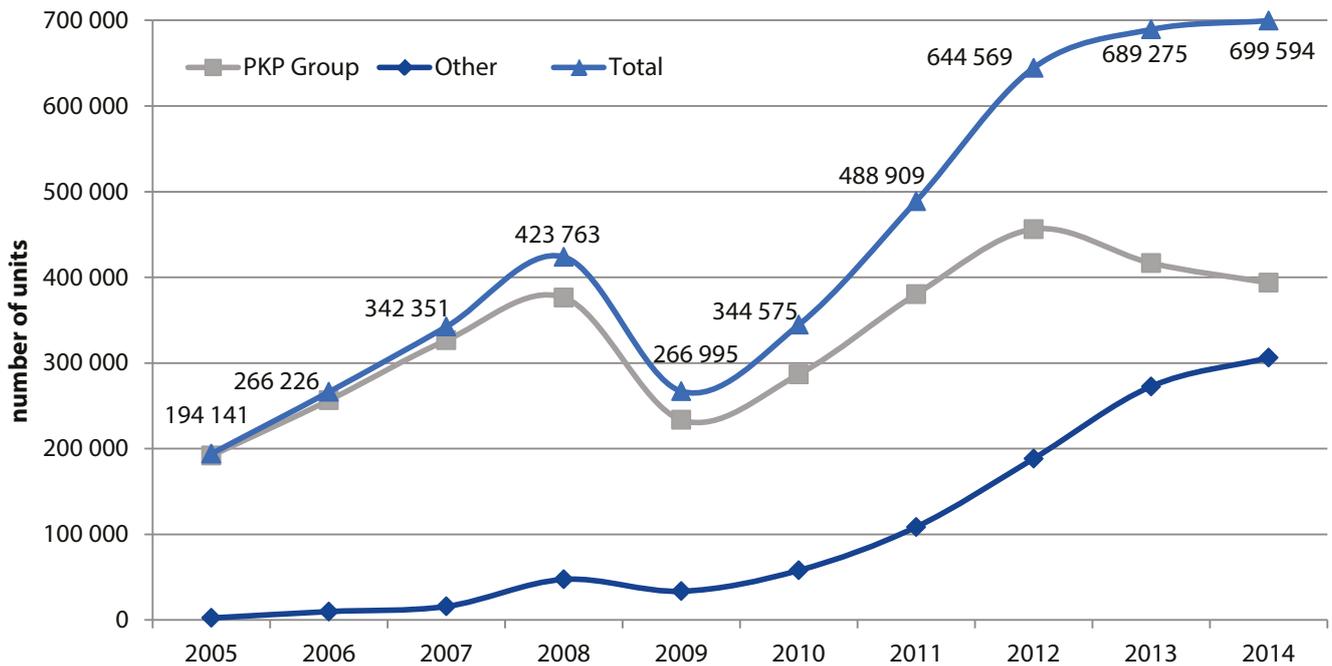
Source: prepared by UTK

**Fig. 45: Intermodal rail transport in Poland by transport performance**



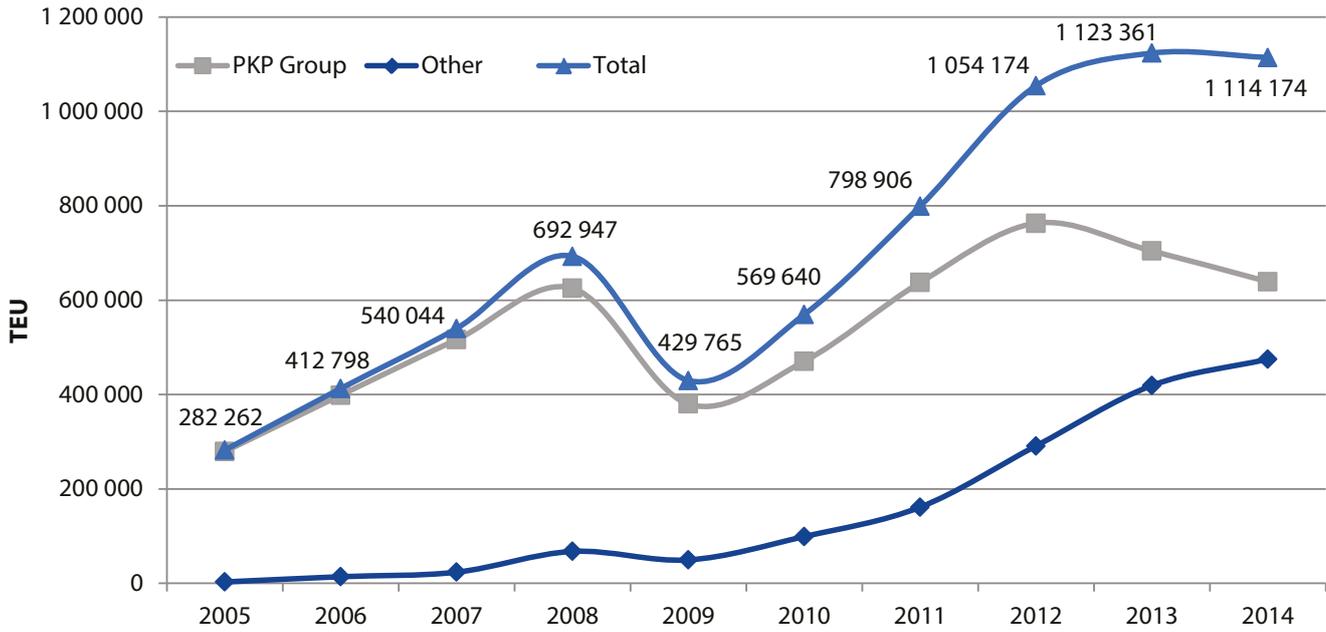
Source: prepared by UTK

**Fig. 46: Intermodal rail transport in Poland by the number of loading units**



Source: prepared by UTK

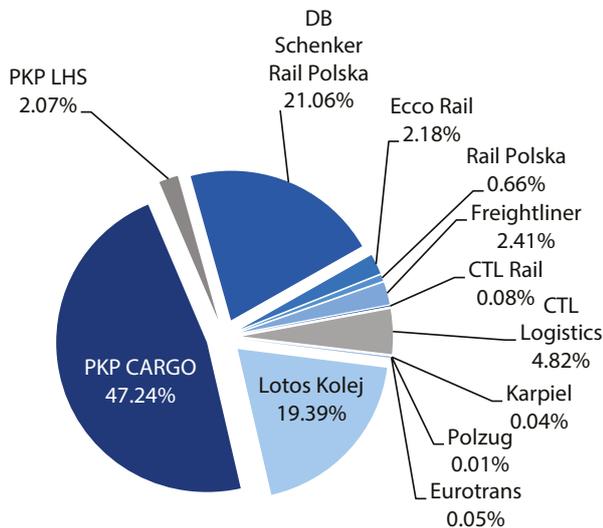
**Fig. 47: Intermodal rail transport in Poland by TEU**



Source: prepared by UTK

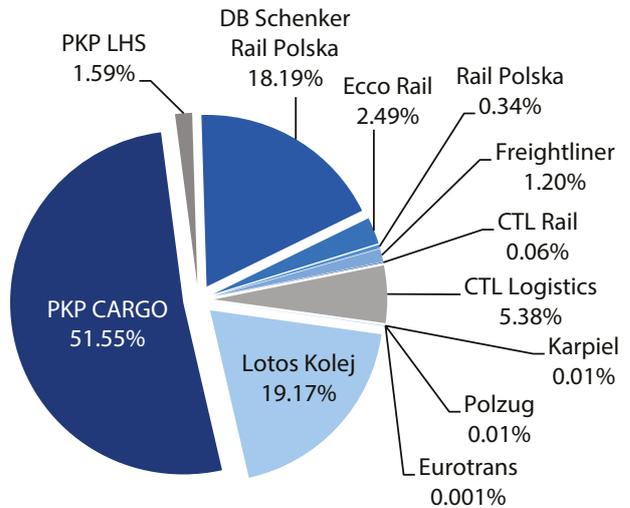
Like in 2013, this market segment was largely the domain of PKP Group. Its end-of-2014 market shares were 49.3% and 53.1% in weight transported and transport performance, respectively, with PKP Cargo being a clear leader.

**Fig. 48: The market shares of railway undertakings in 2014 by weight transported**



Source: prepared by UTK

**Fig. 49: The market shares of leading railway undertakings in 2014 by transport performance**



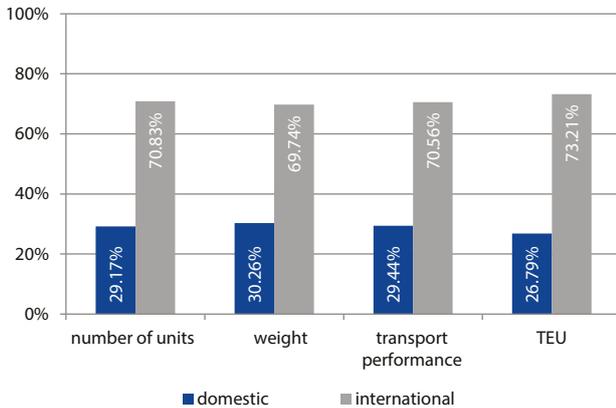
Source: prepared by UTK

Other major players in 2014 on the intermodal transport market included DB Schenker Rail Polska and Lotos Kolej. Their market shares in weight transported were 21.1% and 19.4%, respectively, which is an increase by 3.2 and 4.3 percentage points, compared to 2013. In terms of transport performance, these companies contributed 18.2% and 19.2%, respectively, which represents an increase of 4.2 and 4.4 percentage points.

As in the previous years, domestic transport did not account for much of the total intermodal transport. Despite the increase of over 1.1 percentage point compared to 2013, domestic intermodal transport had a share of only 29.4% in terms of transport performance. Due to the high costs of rail transport,

which are disproportionate to the costs of road transport, and also the low quality of the railway track parameters (including the average commercial speed), the transport of containers on short distances is unprofitable. International transport continues to have a substantial market share, oscillating around 70.6% in terms of transport performance.

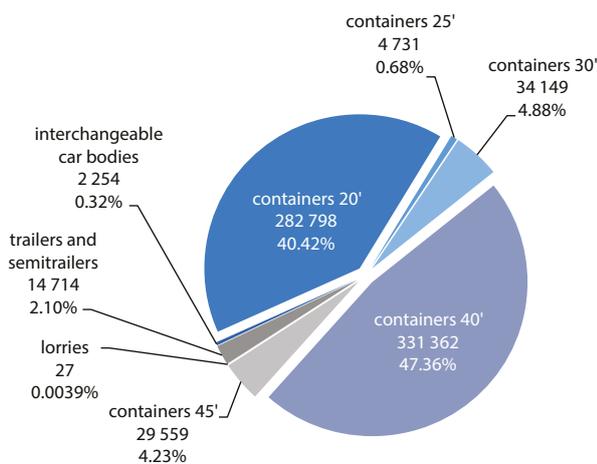
**Fig. 50: The share of international transport in intermodal transport in 2014**



Source: prepared by UTK

In terms of international transport, the individual types of transport had the following shares in the number of transported loading units: 28.6% for import, 27.5% for export, and 14.7% for transit. Polish intermodal transport is mainly based on land transport, which accounted for almost 74.1% of transport performance. The share of transport through seaports continues to be low – in 2014 it amounted to ca. 25.9%.

**Fig. 51: The share of specific types of transport units in 2014**



Source: prepared by UTK

Intermodal transport involves primarily containers, which made up 97.57% of all transport units as at the end of 2014. 20- and 40-foot containers prevailed, accounting for 40.42% and 47.36%.

The share of other containers amounted to 0.7% for 25-foot and 4.9% for 30-foot containers, and 4.2% for 45-foot containers.

**In terms of the freight weight transported, intermodal transport had a share of 4.2% in the rail transport market, which is 0.5% more than in 2013.**

In terms of the freight weight transported, intermodal transport had a share of 4.2% in the rail transport market. This was 0.5% more than in 2013. In terms of transport performance, intermodal transport had a share of 6.8%, which is an increase of 0.8 percentage point compared to 2013.

### 2.3.5. The transport of dangerous goods

In 2014 there were 26 licensed railway undertakings engaged in the transport of dangerous goods.

These undertakings transported a total of 21 m tonnes of dangerous goods, with a transport performance of over 6.75 bn tonne-km.

The transport of dangerous goods had 9.2% and almost 13.5% shares in the rail market in terms of weight transported and transport performance, respectively. Compared to 2013, the average distance covered in the transport of dangerous goods increased from 277 km to 322 km.

Dangerous goods are transported mainly domestically, with domestic transport accounting for almost 65.5% and 74.1% of the transport of dangerous goods in terms of weight transported and transport performance, respectively. International transport plays a minor role in the transport of dangerous goods. For example, the market share of export oscillated around 7.4% in terms of transport performance, and reached 2.1% for transit.

In 2014 the most important group of hazardous goods in transport continued to comprise flammable liquid materials (crude petroleum and petroleum products, e.g. fuels, diesel oil).

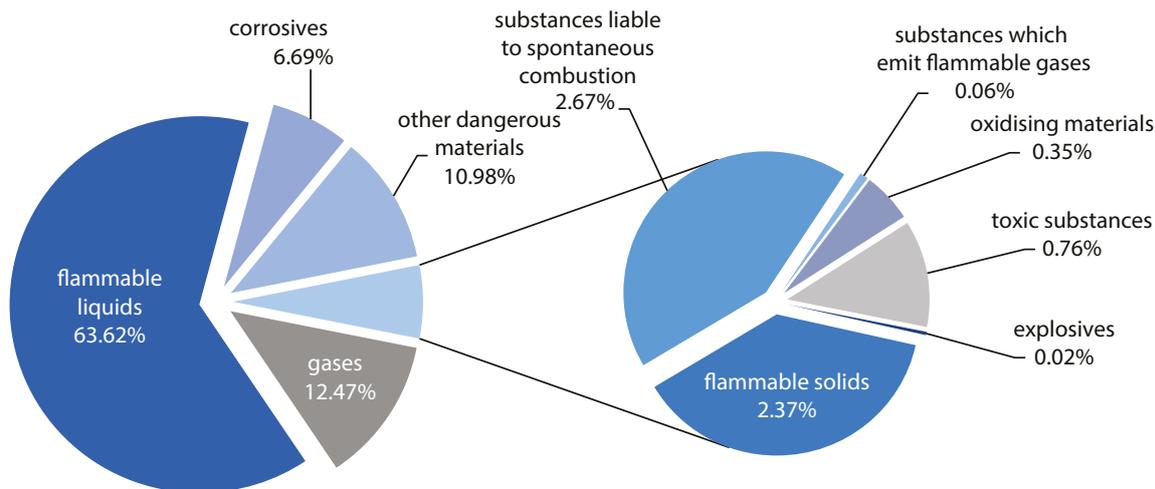


**The most important group of hazardous goods in transport in 2014 comprised flammable liquid materials, their share being at almost 63.6%.**

centage 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 goods in class 2 - gases (12.5% by weight transported and 10.2% by transport performance), class 8 - corrosives (6.7% and 5.4%, respectively) and class 4.1 - flammable solids (2.4% and 2.6%), and also class 4.2 - spontaneously combustible materials (2.7% and 0.9%).

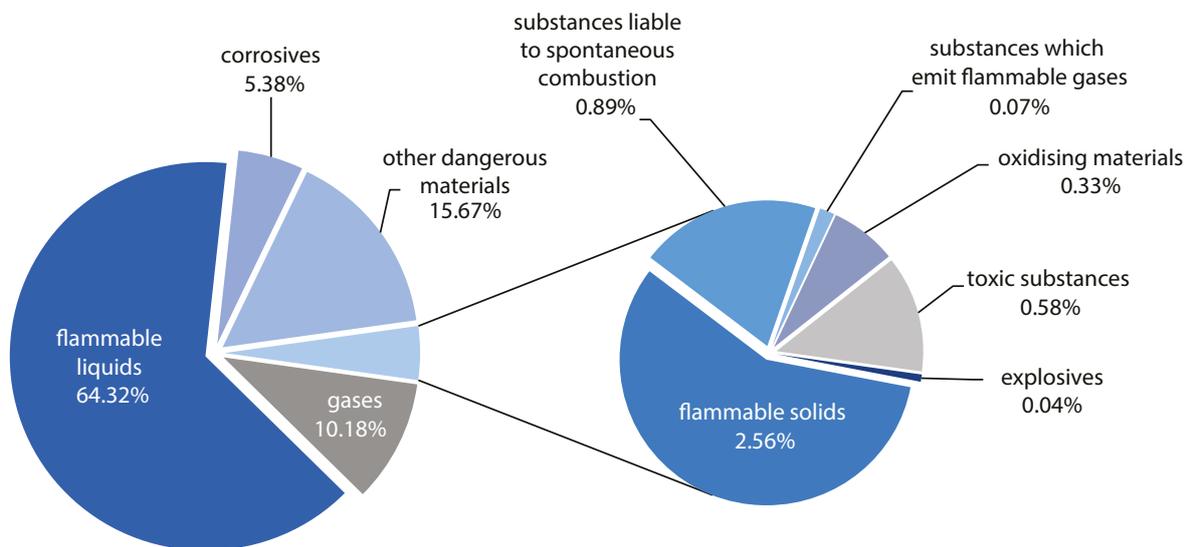
The market share of these materials was almost at 63.6%. Compared to last year, however, this figure is lower by 1.4 per-

**Fig. 52: The share of transport of individual groups of dangerous goods in 2014 (by weight)**



Source: prepared by UTK

**Fig. 53: The share of transport of individual groups of dangerous goods in 2014 (by transport performance)**



Source: prepared by UTK

### 2.3.6. The structure of the rolling stock operated by freight railway undertakings

The total number of locomotives used by railway undertakings grew by 17 to 3724. In the corresponding period, the number of wagons also increased by 537 (a total of 98 643). Diesel locomotives accounted for 60% of all locomotives (2224, i.e. 39 more than in 2013). Compared to the last year, the number of

electric locomotives fell from 1501 to 1479 a 1.5% decrease). Open freight wagons were the most popular, accounting for

approx. 59% of all such wagons (57 827). Compared to 2013, their number grew by 82.

**Tab. 11: The number of traction and wagon rolling stock managed by freight railway undertakings in the years 2004-2014**

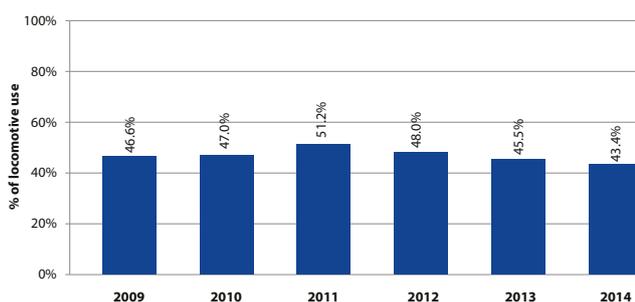
type of rolling stock	year										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
locomotives total	4 467	4 432	4 398	4 462	3 988	3 944	3 699	3 710	3 677	3 707	3 724
electric locomotives	1 857	1 855	1 884	1 831	1 506	1 512	1 488	1 457	1 445	1 501	1 479
diesel locomotives	2 590	2 557	2 494	2 610	2 461	2 410	2 189	2 233	2 212	2 185	2 224
steam locomotives	20	20	20	21	21	22	22	20	20	21	21
wagons total	114 839	111 897	109 487	112 842	112 699	107 795	101 074	101 511	99 879	98 106	98 643
covered wagons	11 125	10 469	9 754	9 807	8 961	7 609	5 814	4 898	4 563	4 397	4 141
open freight wagons	68 261	67 169	66 714	67 493	66 281	63 166	58 724	59 978	58 500	57 745	57 827
flat wagons	13 238	12 945	12 770	12 962	13 312	12 871	12 165	11 958	11 225	11 202	11 712
tank wagons	15 556	14 702	13 472	13 801	14 877	14 873	15 041	14 665	15 746	15 357	16 018
refrigerated wagons	95	17	4	0	0	0	0	0	0	0	0
wagons with opening roofs	763	984	1019	954	1015	1 015	1 201	1 197	1 238	1 220	1 220
special wagons	5 801	5 611	5 754	7 825	8 253	8 261	8 129	8 815	8 128	7 747	7 304
freight wagons - others	0	0	0	0	0	0	0	0	479	438	421

Source: prepared by UTK

The average age of locomotives at the end of 2014 was 34.1 years (0.3 year more than in 2013), and the average age of wagons was 28 years (no change compared to 2013).

The above indicates that despite the investments in new rolling stock, the average age of locomotives has been growing consistently, whereas the average age of wagons continues to be substantial. In 2014 the proportion of the rolling stock used by freight railway undertakings dropped to 43.4% at the end of the year (in 2013 it oscillated around 45.5%).

**Fig. 54: Locomotive use in the years 2009-2014 by daily stock**



Source: prepared by UTK

Compared to the year before, 2014 saw increased use of freight wagons. Freight rolling stock usage in 2014 was at 76.7% (73.7% as at the end of 2013).

In line with the information provided by freight railway undertakings, a number of investments are scheduled for 2015 to procure and modernise their rolling stock. In 2015 railway undertakings are planning to invest PLN 337.1 m in freight rolling stock (65%

**In 2015 railway undertakings are planning to invest almost PLN 340 m in freight rolling stock, of which 65% will be spent on new rolling stock**

of which for new rolling stock, and the remaining PLN 117 m for rolling stock upgrades).

### 2.3.7. The volume, structure and efficiency indicators of the freight transport market

The volume of the Polish railway freight transport in 2014 can be characterised by the following parameters:

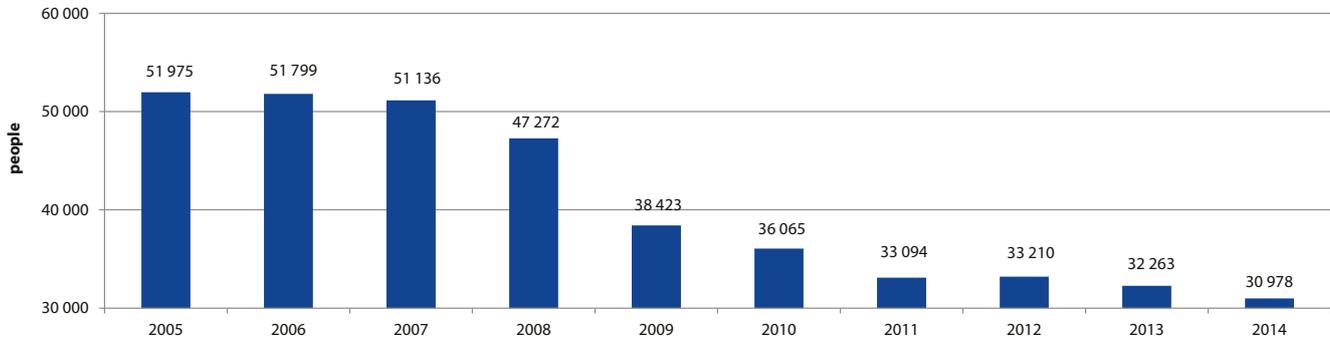
- the number of licensed companies - 79,
- the number of licensed undertakings - operating rail transport - 68,
- annual market revenue - PLN 8.035 bn,
- annual rail service provision costs - PLN 7.832 bn,
- employment in the rail sector - 30 978 people,
- weight of freight transported - 228.9 m tonnes,
- transport performance - 50.1 bn tonne-km,
- total train kilometres - 74.9 m train-km,

- number of locomotives - 3724,
- number of freight wagons - 98 643.

of employment in freight transport in the past years shows that over the last 10 years, companies have gradually reduced their workforces. This trend is attributable to the streamlining efforts of the companies.

In 2014 freight railway undertakings reduced their workforces from 32 263 to 30 978 employees (a 4% decrease). An overview

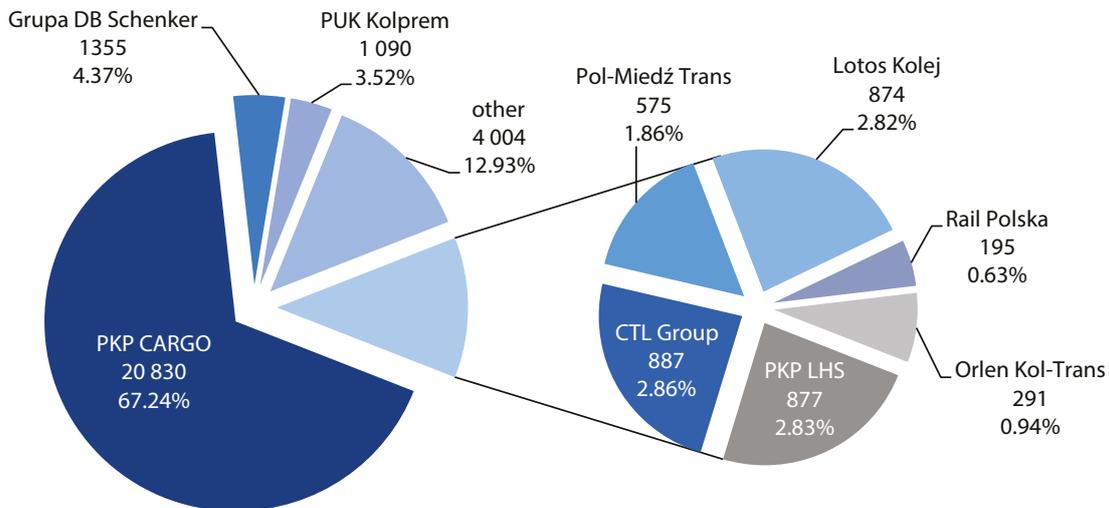
**Fig. 55: Employment in the freight transport sector in the years 2005-2014**



Source: prepared by UTK

Two in three employees of freight railway undertakings work at PKP Cargo

**Fig. 56: The employment structure in 2014 (workforce, market share in terms of jobs)**

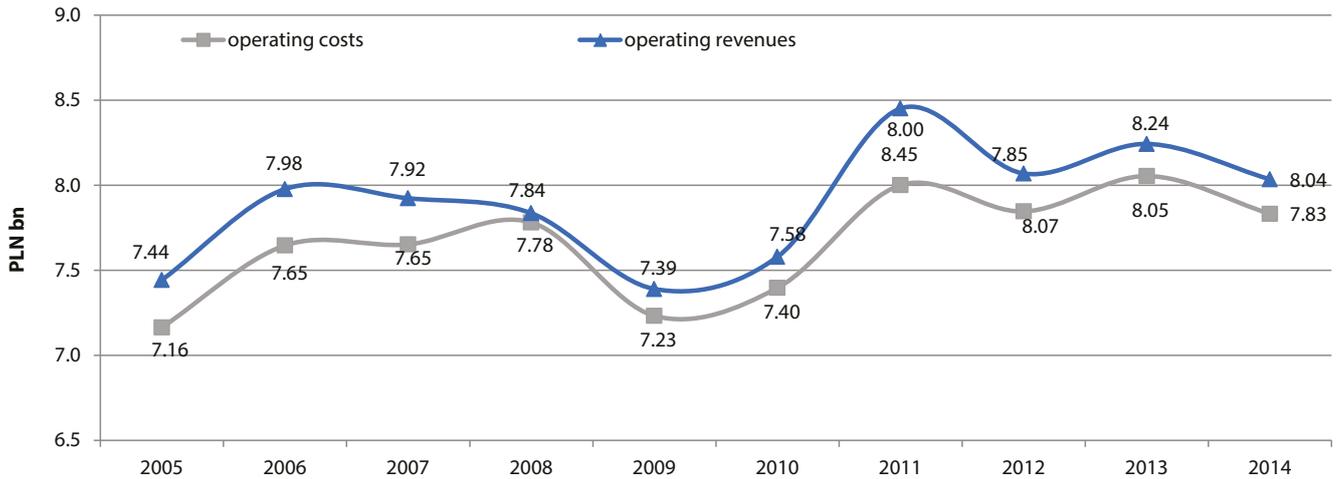


Source: prepared by UTK

Despite a substantial reduction in workforce, PKP Cargo continues to be the largest employer on the market – two in three employees of freight railway undertakings work at this company. With a share of over 4%, DB Schenker is the second largest employer. Due to increased employment and further development, PUK Kolprem reached a 3.52% market share in terms of employment (3.2% in 2013). None of the remaining companies and groups on the market has a workforce of over 1,000 employees. Other leaders in employment include CTL Group (2.9%), PKP LHS (2.8%), Lotos Kolej (2.8%), Pol-Miedź Trans (1.9%), Orlen Kol-Trans (0.9%).

In 2014, freight railway undertakings reduced their employment by 4%

**Fig. 57: The business performance of freight railway undertakings (in PLN bn) in the years 2005-2014**



Source: prepared by UTK

Both operating costs and operating revenues dropped in 2014. It is important to note, however, that the costs dropped more substantially than the revenues, so the total operating profit increased in 2014 by PLN 14 m (an increase from PLN 189 m to PLN 203 m).

**The total operating profit of freight railway undertakings increased by PLN 14 m in 2014**

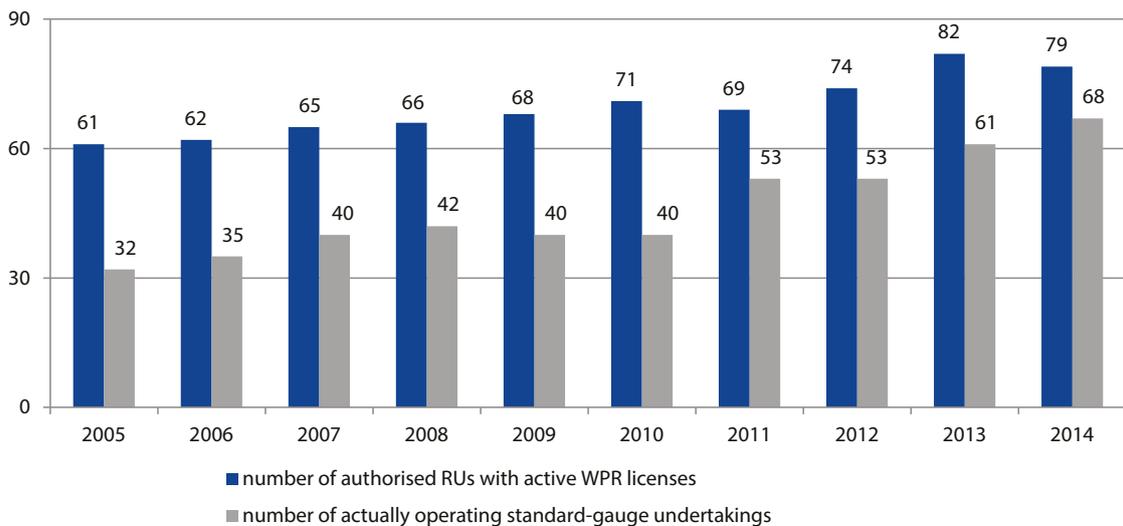
### 2.3.8. Freight transport licensing

In line with Article 10 par. 1 (2) of the Railway Transport Act, the President of UTK issued 7 licences for freight railway transport services in 2014. At the end of the previous year, valid licences (suspended excluded) were held by 79 railway undertakings,

including 5 held by narrow-gauge railway undertakings, similarly to 2013.

In 2014, 68 (86%) of licensed companies actually provided railway transport services (the corresponding figure for 2013 was 61).

**Fig. 58: The number of licensed railway undertakings authorised to provide transport services and actually operating on the railway market in the years 2005-2014**



Source: prepared by UTK

This is a substantial growth compared to past years (74% in 2013, 72% in 2012).

As a result of the administrative proceedings conducted ex officio in the period from 1 January to 31 December 2014, the President of UTK issued decisions concerning the licensing of freight railway transport, including:

## The freight rail transport market

### The Polish rail freight transport market

- 7 licences were issued, including licences to transport freight,
- 2 licences to transport freight were suspended,
- data in 12 licences for freight railway transport were changed,
- 2 decisions were issued to extend the time limit for commencing licensed freight railway transport,
- 2 decisions were issued to revoke a licence for freight railway transport,
- 9 decisions were issued to discontinue proceedings on suspending licences to provide freight railway transport,
- 1 decision was issued to revoke a decision on suspending the licence to provide freight railway transport,
- 3 decisions were issued on the expiry of a licence to provide freight railway transport,
- 3 requests for a licence to provide freight railway transport were not examined.

Of 79 companies holding active licenses, 68 actually engaged in transport activities in 2014





## 3. The railway infrastructure

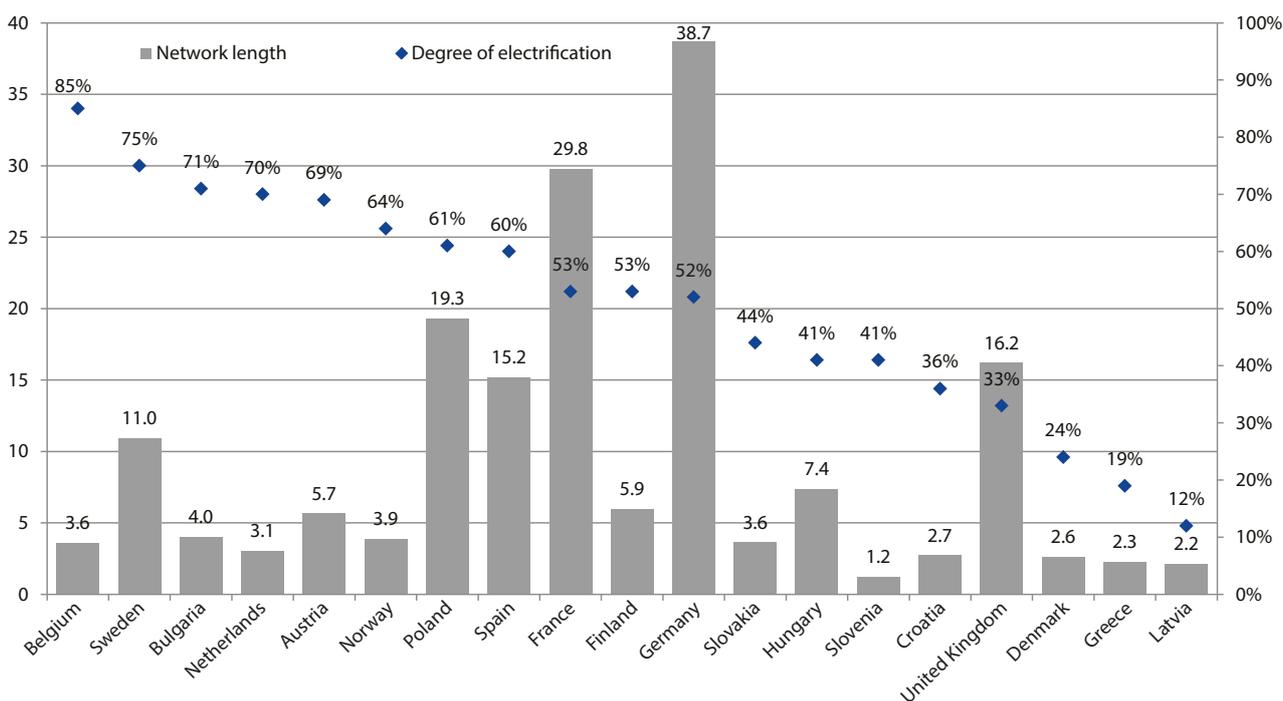
### 3.1. Changes across the markets of EU Member States

#### 3.1.1. The European railway infrastructure

The basic parameter characterising the railway infrastructure network is the length of railway lines. Another important factor

in the assessment of this infrastructure is the degree of electrification of railway lines, as it to a certain degree shows the environmental impact of railway transport. The diagram below present data on the length of railway lines in countries where market regulators are affiliated with IRG-Rail (the "Independent Regulators' Group - Rail") and have provided information on their infrastructures. This information was additionally compared with data on the degree of electrification of railway networks. The data shown below (for 2013) come from the latest IRG-Rail report released in 2015.

**Fig. 59: The length and degree of electrification of railway lines in IRG-Rail reporting countries in 2013**



Source: prepared by UTK on the basis of IRG-Rail data

The country with the longest railway network was Germany – 38 735 km, of which slightly more than half was electrified. A similar degree of electrification could be found in France, its railway network ranking second in terms of length (29 784 km, which is shorter than in Germany by nearly 9 thousand km). Poland took the third place in length, with a relatively high degree of electrification at 61%. The UK followed right after in terms of length, but its degree of electrification was rather low (33%). In Spain, the percentage of electrified lines was similar as in Poland, but across a network shorter by over 4 thousand km. Sweden was characterised by a very high electrification level (75%) across a network of 11 thousand km, which distinguishes it from other countries with high electrification levels (often being small, these countries have shorter railway networks, e.g. Belgium with

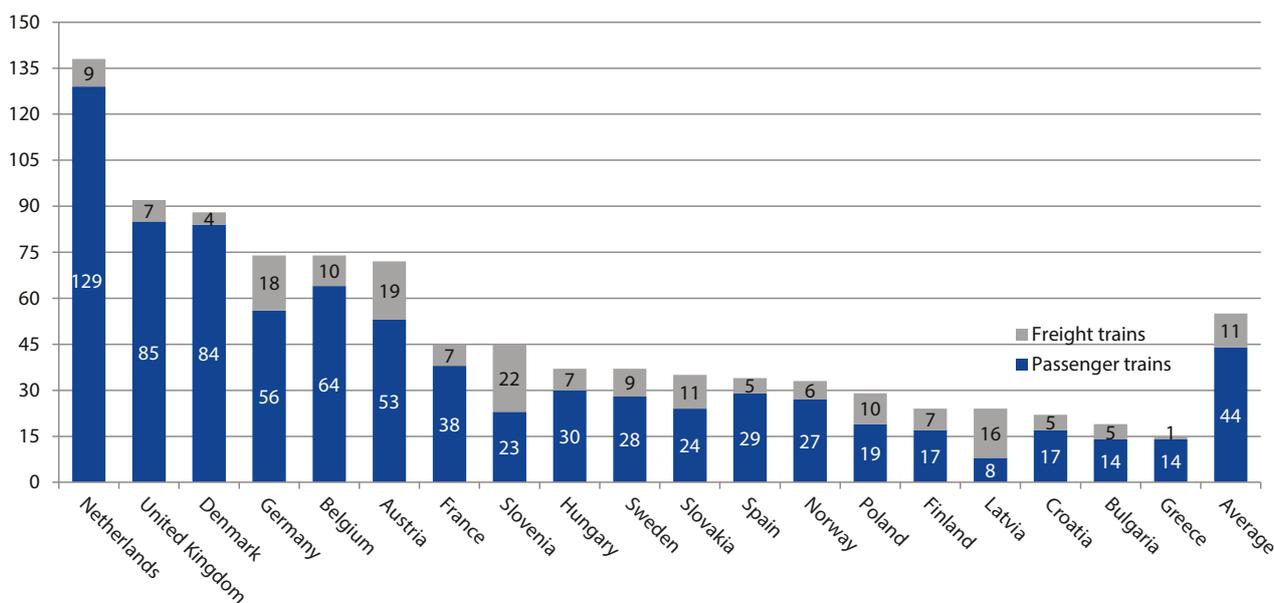
**The Polish railway network ranks third in Europe in terms of length, and maintains a high level of electrification.**

the highest percentage of lines with electric traction lines: 85%).

Among the analysed countries, Slovenia's railway network is the shortest and its electrification level is 41%. The lowest share of electrified lines can be found in Denmark, Greece and Latvia, with the last of these having only 12% lines connected to an electric traction network.

The diagram below shows the degree of use of railway infrastructure in various European countries (the average number of trains per 1 km of railway line on one day). This ratio is calculated by dividing total train kilometres by the length of the network and the number of calendar days. The intensity of network use is presented both for the passenger and the freight segments.

**Fig. 60: The degree of use of railway lines in IRG-Rail reporting countries in 2013 (by daily number of trains per 1 km of railway line)**



Source: prepared by UTK on the basis of IRG-Rail data

The country to make the most intense use of its railway network is the Netherlands, with as many as 138 trains per one km of the railway line. It is important to note that these are mainly passenger trains, as the Netherlands is one of the leaders in terms of the percentage of total train kilometres travelled by passenger trains (93%). Such a substantial use of railway lines may be attributed to the Netherlands' density of population and high demand for rail services, which is satisfied thanks to the high network throughput. This high throughput is, in turn, the result of a high proportion of double-track and (around the largest cities) four-track rail lines. Other countries with an intensive use of their networks are the United Kingdom and Denmark, where passenger trains are prevailing as well. Among the analysed countries, the highest percentage of total train kilometres

**The country to make the most intense use of its railway network is the Netherlands, with as many as 138 trains per one km of the railway line. In Poland it's 29 trains.**

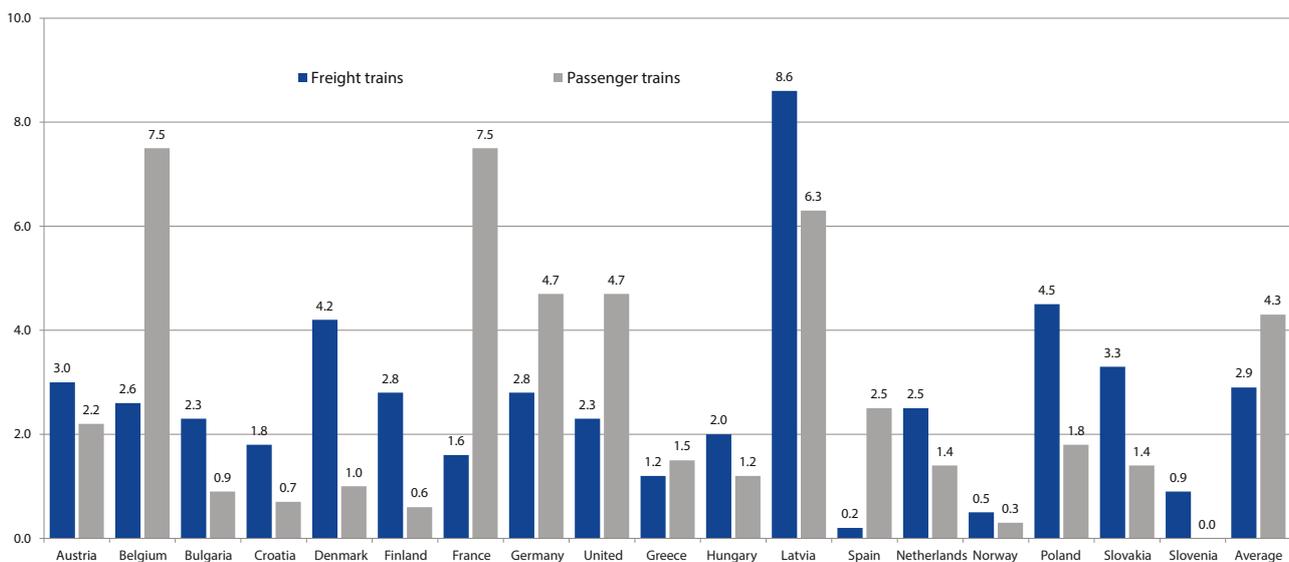
travelled by passenger trains was recorded in Denmark (96%) and the United Kingdom (93%). Slovenia ranks in the middle, both in terms of the network use intensity, and the distribution of total train kilometres between passenger and freight trains.

Only in Latvia are freight trains dominating over passenger trains (67% vs. 33%). In Poland, freight trains are responsible for 36% of total train kilometres, which is the third highest result. At the same time, as regards the degree of network utilisation, Poland, with its 29 trains per one kilometre of the network, occupies a low position, clearly below the average. Railway networks are least used in the Balkan Peninsula (in Greece, the daily load per 1 km is only 15 trains). On average, networks in the analysed countries are shared by the passenger and freight transport in proportions of 80:20, respectively.

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

Below, you will find data on the average revenue from charges for minimum access package to the railway infrastructure in various IRG-Rail countries. The average revenue was divided into the freight and passenger segments, and calculated in the following manner: revenues from charges for access were divided by the number of train-kilometres covered in each segment in 2013.

**Fig. 61: The average revenue from the minimum access package to the railway infrastructure for freight and passenger trains in 2013 (in EUR per train-km)**



Source: prepared by UTK on the basis of IRG-Rail data

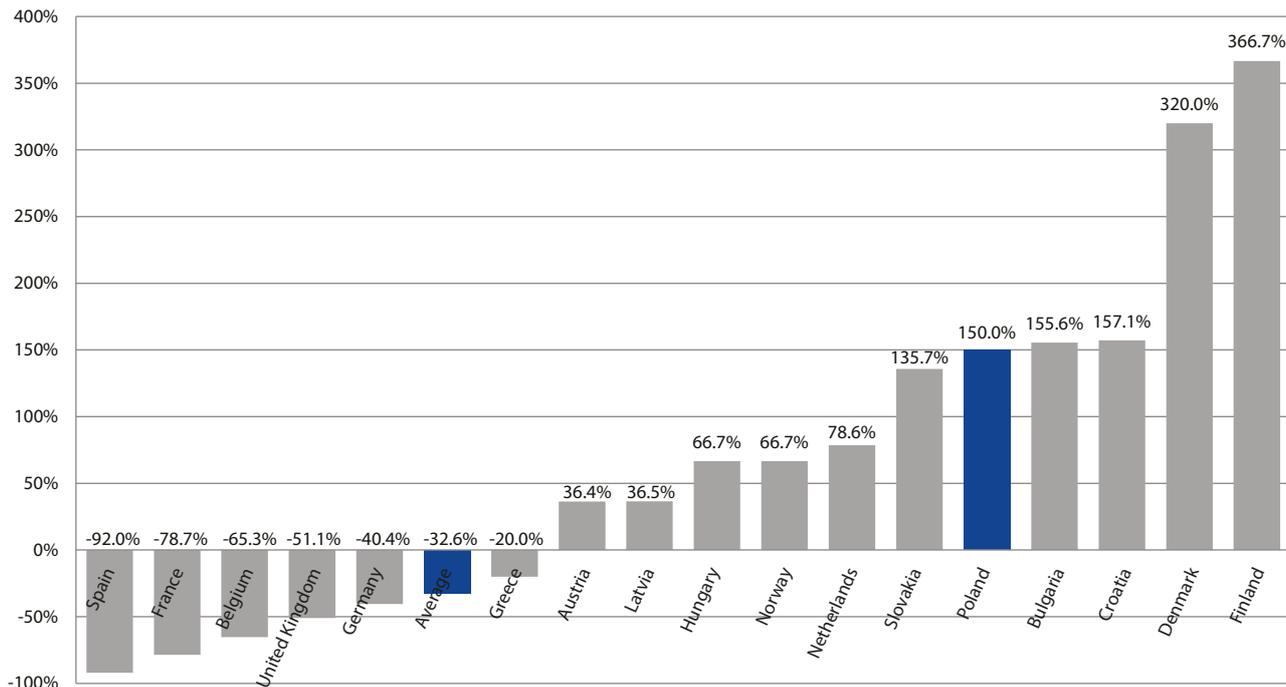
In most countries, the level of charges for freight transport is higher than for passenger transport. The average revenue from access charges in 2013 was EUR 2.9 per one train-km, which means an increase by 7.5% from last year's EUR 2.7. With an average increase by 7% - from EUR 4.2 to 4.5 per one train-km - Poland ranks second only to Latvia. The lowest level of average revenue for access for freight trains was observed in Spain and (slightly higher) in Norway, where there are practically no charges for access to the railway infrastructure. The highest relative growth in revenues from charges for freight trains occurred in the Netherlands (by 56%) and the United Kingdom (by 44%).

In Belgium, France, Germany, the United Kingdom, Greece and Spain the charges for passenger trains are on average higher than for freight trains. Very high charges for passenger trains in Belgium (where platform fees are also charged), France and

Latvia make the average go up to EUR 4.30 per train-km (a minimum increase from last year's EUR 4.29). In the case of passenger transport, in Poland, the average revenue from charges for access to the infrastructure in 2013 amounted to EUR 1.8/train-km and was 12.5% higher than in 2012 (i.e. the highest growth among the analysed countries, caused inter alia by a marked drop in total train kilometres in Poland).

The average level of revenues for access to passenger trains in Poland constituted 42% of the average for the analysed countries. The lower level of charges is a characteristic feature of CEE countries. In Slovenia, trains which provide transport as part of public services are not charged for access to the infrastructure.



**Fig. 62: The ratio of unit rates for access to railway infrastructure for freight and passenger trains in 2013**

Source: prepared by UTK on the basis of IRG-Rail data

As can be seen in the diagram above, the largest difference between revenues from charges for access for freight and passenger trains can be observed in Spain, where the average revenues for freight transport make up only 8% of average revenues for passenger transport (the well-developed HSR network). The average for the analysed countries, i.e. -32.6%, means that the revenues from charges for freight trains on average corresponded to 67% of that level for passenger trains. In Denmark and Finland, the average revenue level for freight transport is more than four times higher than for passenger transport. In Poland, this is 2.5 times more, which means a slight drop in comparison with 2012. Interestingly, Greece and the Netherlands saw two opposite situations: in Greece, the average level of revenues from freight transport dropped below that level for passenger transport, whereas in the Netherlands, which experienced a substantial increase in revenues from charges for freight trains and a decrease in the case of passenger trains, the situation was exactly the opposite.

## 3.2. Polish railway infrastructure

### 3.2.1. Polish rail market entities

This chapter discusses the standard-gauge and broad-gauge infrastructure, with the exclusion of the narrow-gauge infrastructure. Data for 2013, as being referenced to in the chapter, also cover only the former two types of infrastructure.

As at the end of 2014, operations involving the management of line railway infrastructure were performed by the following entities:

Based on a safety authorisation:

- PKP Polskie Linie Kolejowe S.A.,
- CTL Maczki-Bór S.A.,
- Infra SILESIA S.A.,
- Jastrzębska Spółka Kolejowa Sp. z o.o.,
- Kopalnia Piasku Kotłarnia – Linie Kolejowe Sp. z o.o.,
- PMT Linie Kolejowe Sp. z o.o.,
- PKP SKM w Trójmieście Sp. z o.o.,
- PKP LHS sp. z o.o.,
- Euroterminal Sławków Sp. z o.o.

Based on a safety certificate:

- UBB Polska Sp. z o.o.,
- Warszawska Kolej Dojazdowa Sp. z o.o.

A new entity on the market of infrastructure managers is Euroterminal Sławków which is also a reloading centre. The company, which earlier functioned as a siding, received a safety authorisation on 14 July 2014.

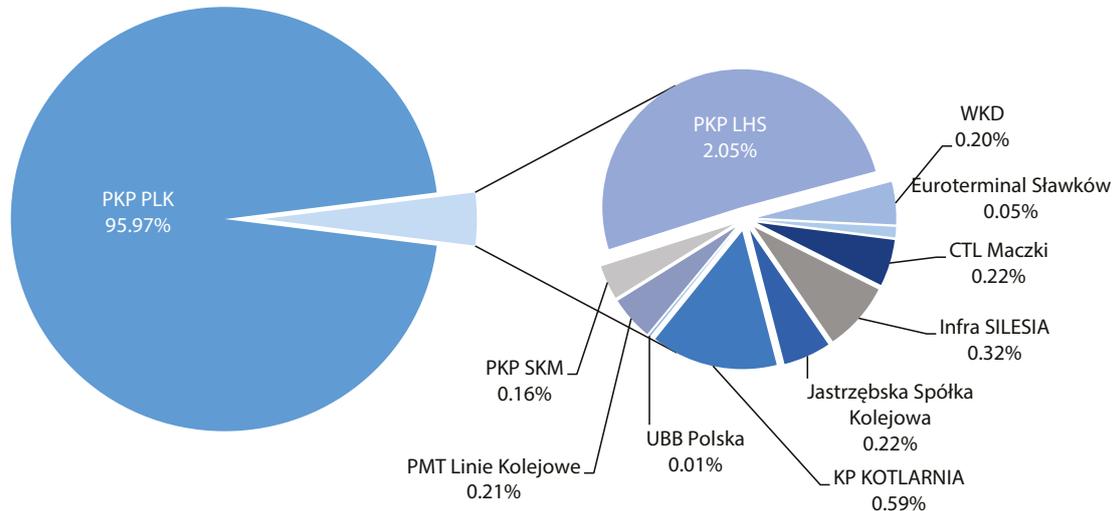
The market also welcomed CARGOTOR Sp. z o.o., an entity separated from PKP Cargo S.A. under the decision of the President of UTK. In 2014, however, the process of granting authorisation to

CARGOTOR was not completed, so this entity is not included in the statistical data presented in this chapter. Also worth noting is the fact that in 2014 the infrastructure of the Pomorska Kolej Metropolitalna (Pomeranian Metropolitan Rail) was being developed with plans to be open for transport in September 2015.

Three entities (PKP LHS, WKD and PKP SKM w Trójmieście) concurrently performed two functions – that of railway undertakings

and infrastructure managers. Two of these – PKP LHS (which only has a broad-gauge line 1520 mm wide) and WKD – did not share their infrastructure with other railway undertakings. PKP Szybka Kolej Miejska w Trójmieście Sp. z o.o. was the only company to serve both as a railway undertaking and a manager of the generally accessible railway infrastructure.

**Fig. 63: Railway lines by user as at 31 December 2014**



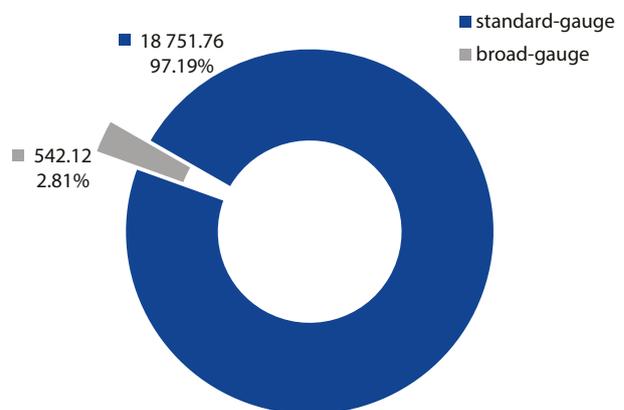
Source: prepared by UTK

In terms of the length of used railway lines, the largest share as at the end of 2014 was held by PKP PLK with 95.97%, which means a slight drop from 96.01% a year earlier. As regards other managers, the entity with the highest share (as compared with 2.04% in 2013), i.e. 2.05%, was PKP LHS, and the share of other managers did not exceed 1%. The lowest share was held by Euroterminal Sławków (0.05%). Infra Silesia, as an infrastructure manager, reported a decrease in its share from 0.34% to 0.32%, whereas the shares of other managers did not change.

### 3.2.2. Polish rail market entities

In 2014, the length of railway lines used by all infrastructure managers, including standard- and broad-gauge rail, was 19 293.9 km. Compared to the previous year, the total length of the rail network dropped by 9.3 km. This results from a 13.5 km decrease in the length of standard-gauge lines, which was accompanied by the increased length of broad-gauge lines (by 4.1 km) being part of the Euroterminal Sławków's infrastructure. In comparison to 2013, when PKP PLK shut down 658.6 km (3.4%) lines, the drop in the length of used standard-gauge lines is small. In 2014 the largest manager shut down 16.5 km lines. In 2013, Infra Silesia shut down nearly 40% of its lines; in 2014 this was only 0.04%. The remaining companies did not significantly change the length of their lines.

**Fig. 64: The types of railway lines used in Poland as at 31 December 2014**



Source: prepared by UTK

As a consequence of the above-mentioned developments, a slight increase was observed in the share of lines with a 1520 mm clearance, which accounted for 2.79% of all lines in 2013. These include lines of three infrastructure managers: PKP LHS (394.7 km), PKP PLK (143.3 km) and Euroterminal Sławków (4.1 km).

In 2014, PKP PLK managed 21 432.9 km lines (263.4 km less than in 2013), of which 2 916.7 km (13.6%) were lines that had been shut down. This company, as the only one in Poland, managed the infrastructure of State importance, which at the end of 2014 comprised 66.6% of lines used by PKP PLK and 63.88% of

all used lines. The length of lines of State importance slightly dropped to reach 12 325.3 km at the end of 2014, as compared to 12 332.1 km in 2013.

The length of electrified railway lines, used by all infrastructure managers in Poland, amounted to 11 832.4 km (11 869.4 km in 2013), which accounted for 61.3% of the total length, as compared to 61.5% in 2013. 99.6% of electrified lines were owned by the companies from the PKP Group (PKP PLK and PKP SKM w Trójmieście).

As at the end of 2014, the total length of single-track lines reached 10 676.6 km, i.e. 55.3% of all used lines. This represented an increase in relation to the previous year, when the same share equalled 54.9%. As at the end of 2014, 37.8% single-track lines were electrified, as compared to 37.5% a year earlier. Among double-track lines, the electrification level reached 90.5% by the end of 2014, whereas in 2013 this was 90.6%.

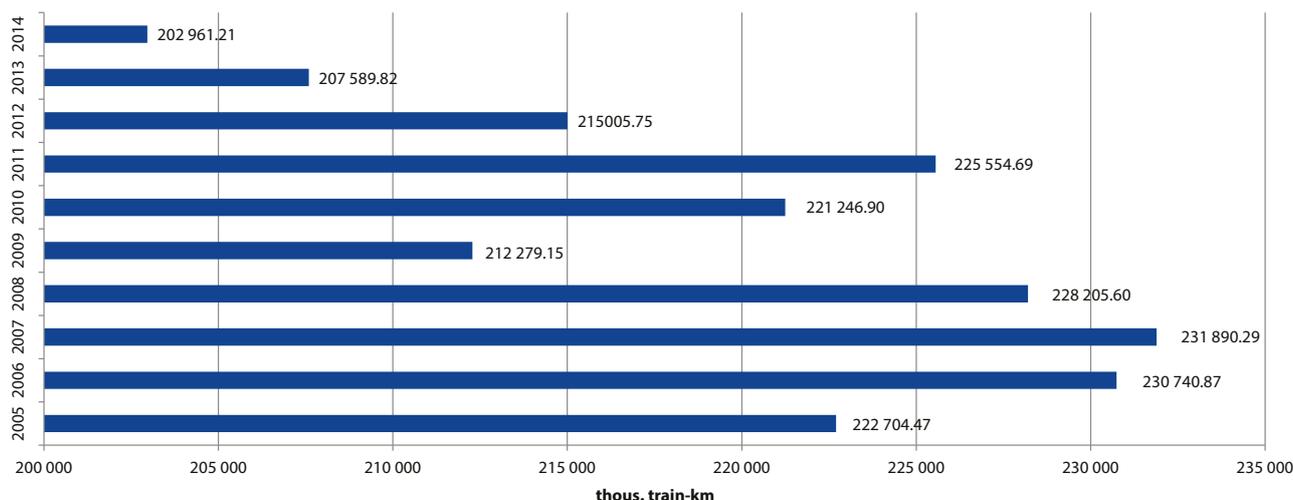
The average domestic density of railway lines was 6.2 km / 100 km<sup>2</sup>, so no changes occurred in this area in relation to the previous year. The density of the railway network in respective provinces, measured as km of line/100 km<sup>2</sup>, did not change significantly in 2014. The largest increase was recorded in the

Podkarpackie Province - from 5.2 to 5.5 km of lines/100 km<sup>2</sup>, and the largest decrease (in percentage terms) in the Podlaskie Province (by 5.4% to 3.3 km of lines/100 km<sup>2</sup>) and (in absolute terms) in the Opolskie Province - from 8.5 to 8.1 km of lines/100 km<sup>2</sup>. The highest density of lines was again recorded in Śląskie Province (16.1 km/100 km<sup>2</sup>), and the lowest - in the Podlaskie Province. These two provinces also have respectively the largest (Śląskie, 10.3%) and the lowest (Podlaskie, 3.4%) share in the railway network.

### 3.2.3. Providing railway undertakings with access to infrastructure

In 2014, services involving the provision of RUs with railway infrastructure were rendered by nine infrastructure managers. The main and the largest player on the market of railway infrastructure provision is still PKP PLK. In 2014, all infrastructure managers sold in total 2.6 m paths, with a total length of 206.2 m km. Their total length dropped by 4.6 m km (by 2.2%), as compared to 2013. As the largest manager it sold 2.3 m paths with the total length of nearly 203 m km (2.4 m paths and 207.6 m km in 2013).

**Fig. 65: The length of paths sold by PKP PLK, as the infrastructure manager, in the years 2005–2014**



Source: prepared by UTK

The majority of paths provided by PKP PLK had been included in its annual timetable (1.545 m compared to 1.671 m in 2013), which accounted for 66.4% of all launched services (70.5% in 2013). This shows that the share of paths purchased under individual timetables is on the increase. Only two paths were provided on an ad-hoc basis, i.e. without being included in the annual or individual timetables (in 2013, there were four such paths). For the minimum access to the provided infrastructure the manager collected PLN 1.778 bn in fees from RUs, i.e. ca. PLN 590 m less than a year before. The total amount included PLN 21.1 m in booking charges for paths unused by RUs. In addition, the manager received PLN 113.1 m in fees for the basic access to the systems connected with train management (PLN 78.8 m in 2013) and PLN 30.8 m in additional charges (21.4 m in 2013).

At the end of 2014 the share of PKP PLK in the infrastructure provision and path-selling market, as measured by total train kilometres within its network, was around 98.5%, as in previous years.

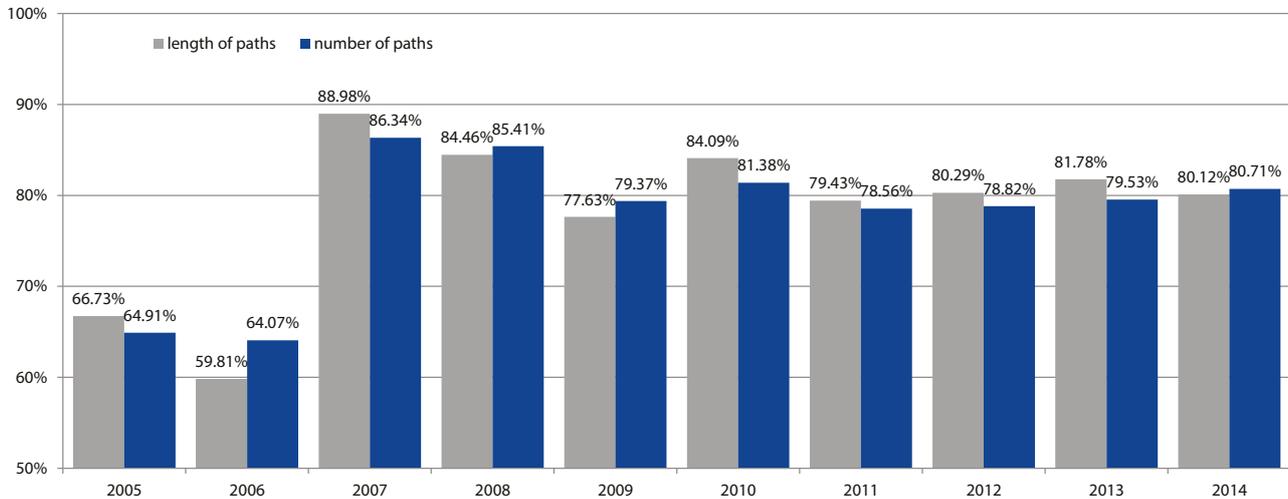
In 2014, for their annual and individual timetables, railway undertakings commissioned from PKP PLK a total of 2.9 m paths (3.4% less than a year before) with a total length of 253.34 m km (a marginal drop - by 0.2%). In relation to the total number and

**In 2014, all infrastructure managers sold in total 2.6 m paths, with a total length of 206.2 m km.**

length of purchased paths, their utilisation ratio was 80.7% and 80.1%, respectively. As compared to the previous year, the ratio of path utilisation slightly grew with regard to the number of paths and slightly dropped when it comes to their length. The

marked increase in performance, as recorded in 2007, was caused mainly by the introduction of booking fees by infrastructure managers for paths that had been booked but not used by railway undertakings.

**Fig. 66: The proportion of paths sold in the total number of paths commissioned by railway undertakings from PKP PLK in the years 2005-2014**

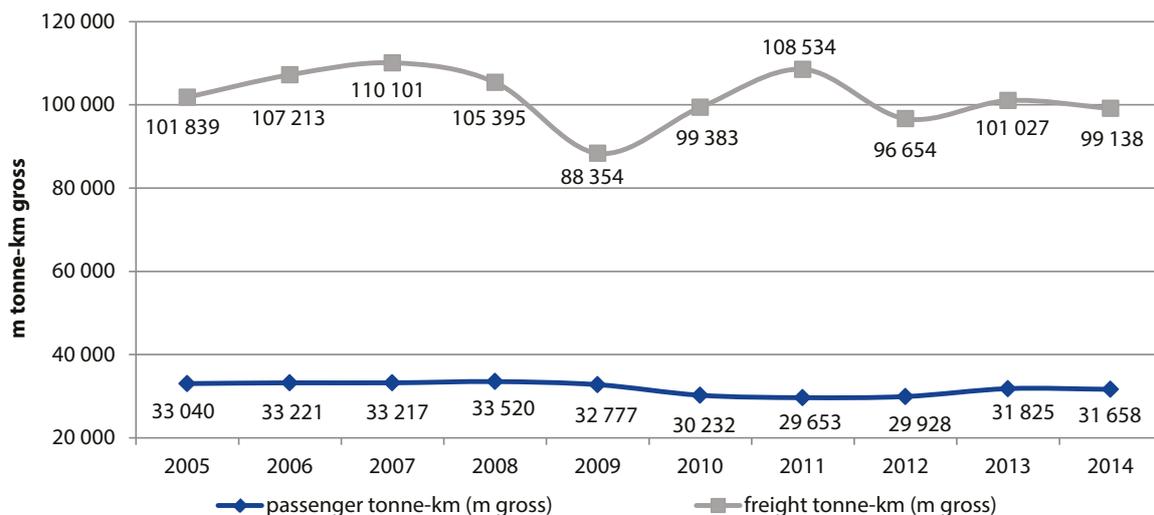


Source: prepared by UTK

In 2014, the PKP PLK network showed a gross transport performance of 130.796 bn tonne-kilometres, which, compared to the year before, constituted a drop by 2.056 bn tonne-kilometres (1.6%). The transport of freight accounted for 75.8% (76.0% in 2013) and the transport of passengers 24.2% (in 2013 this was less than 24%), so the largest decrease was recorded in freight transport.

The gross transport performance on the PKP PLK network amounted to 130.796 bn tonne-km gross, which meant a drop by 2.056 tonne-km (1.6%), as compared to the previous year. The gross performance in freight transport equalled 75.8% (76.0% in 2013), and in passenger transport 24.2% (nearly 24% in 2013), so a larger decrease occurred in the case of freight transport.

**Fig. 67: PKP PLK infrastructure load – the volume of transport performance (in millions of tonne-kilometres gross) in the years 2005-2014**

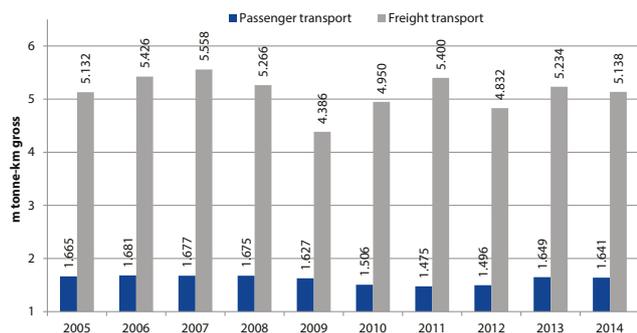


Source: prepared by UTK

The average load per one kilometre of line in 2014 was ca. 6.8 m tonnes gross, i.e. 0.1 m less than in 2013. This drop affected both freight and (to a smaller extent) passenger railway undertakings. As per one km of railway line, the transport performance of fre-

ight RUs was 96 thousand tonnes lower. In 2014, the average load for this type of transport reached 5.138 m tonnes gross per one line kilometre. In passenger transport this was 1.641 m tonnes per kilometre.

**Fig. 68: The load of railway lines with transport performance per km (million tonne-kilometres gross per 1 km of line) in the years 2005-2014**



Source: prepared by UTK

### 3.2.4. Fees for access to the railway infrastructure

The fees for access to railway infrastructure, as paid by RUs to infrastructure managers in return for using their infrastructure, are calculated in line with the Act as the product of the number of services provided and the unit rate. The proposed unit rates for fees (basic and additional) are submitted by managers to the President of UTK for approval 9 months before their timetables become applicable.

In mid-2014, the Regulation of the Minister of Infrastructure and Development of 5 June 2014 on the conditions of access and use of railway infrastructure (Journal of Laws of 2014, item 788, hereinafter the "Regulation"), which lays down, among other things, detailed rules of charging for the use of railway infrastructure. This regulation, within its statutory limits, transposes Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (OL J UE 343 of 14.12.2012, p. 32), hereinafter "Directive 2012/34/EU".

The rates for minimum access to the railway infrastructure are calculated on the basis of direct costs incurred in the previous year for the provision of access to the railway infrastructure and the total train kilometres planned under the timetable. As regards access to devices, account is taken of costs that are directly incurred as a result of transport provided with trains and the planned volumes of services. Additional fees, similarly to previous timetables, are calculated on the basis of the costs of additional and auxiliary services and the volumes of planned services.

At the end of 2014, as part of the 2014/2015 train timetable, only two managers of railway infrastructure had their rates approved - PKP Polskie Linie Kolejowe S.A. and PKP Szybka Kolej Miejska w Trójmieście sp. z o.o. Rates were not approved in the case of six managers as a consequence of their failure to comply with the provisions of the judgment issued by the EU Court of Justice on 30 May 2013.

Having taken into account the provisions of the new regulation, in its calculations of the unit rates for the basic fee for the 2014/2015 train timetable, PKP Polskie Linie Kolejowe S.A., as the national infrastructure manager, used the costs of the maintenance, and rail traffic management and depreciation, as defined in § 7 (1) the Regulation - only to the extent to which these are directly connected with the provision of train services. In its calculation of unit rates for its fees, the manager did not include overheads and financial costs, since these had no direct connection with operating the train service.

Pursuant to Art. 8 (4) of Directive 2012/34/EU, Member States shall ensure that, under normal business conditions and over a reasonable period which shall not exceed a period of five years, the profit and loss account of an infrastructure manager shall at least balance income from infrastructure charges, surpluses from other commercial activities, non-refundable incomes from private sources and State funding, on the one hand, including advance payments from the State, where appropriate, and infrastructure expenditure, on the other hand. Without prejudice to the possible long-term aim of user cover of infrastructure costs for all modes of transport on the basis of fair, non-discriminatory competition between the various modes, where rail transport is able to compete with other modes of transport, within the charging framework of Articles 31 and 32 of Directive 2012/34/EU, a Member State may require the infrastructure manager to balance its accounts without State funding.

Pursuant to Article 30 (1) of Directive 2012/34/EU, infrastructure managers shall, with due regard to safety and to maintaining and improving the quality of the infrastructure service, be given incentives to reduce the costs of providing infrastructure and the level of access charges. In line with Article 30 (2), without prejudice to their competence regarding railway infrastruc-

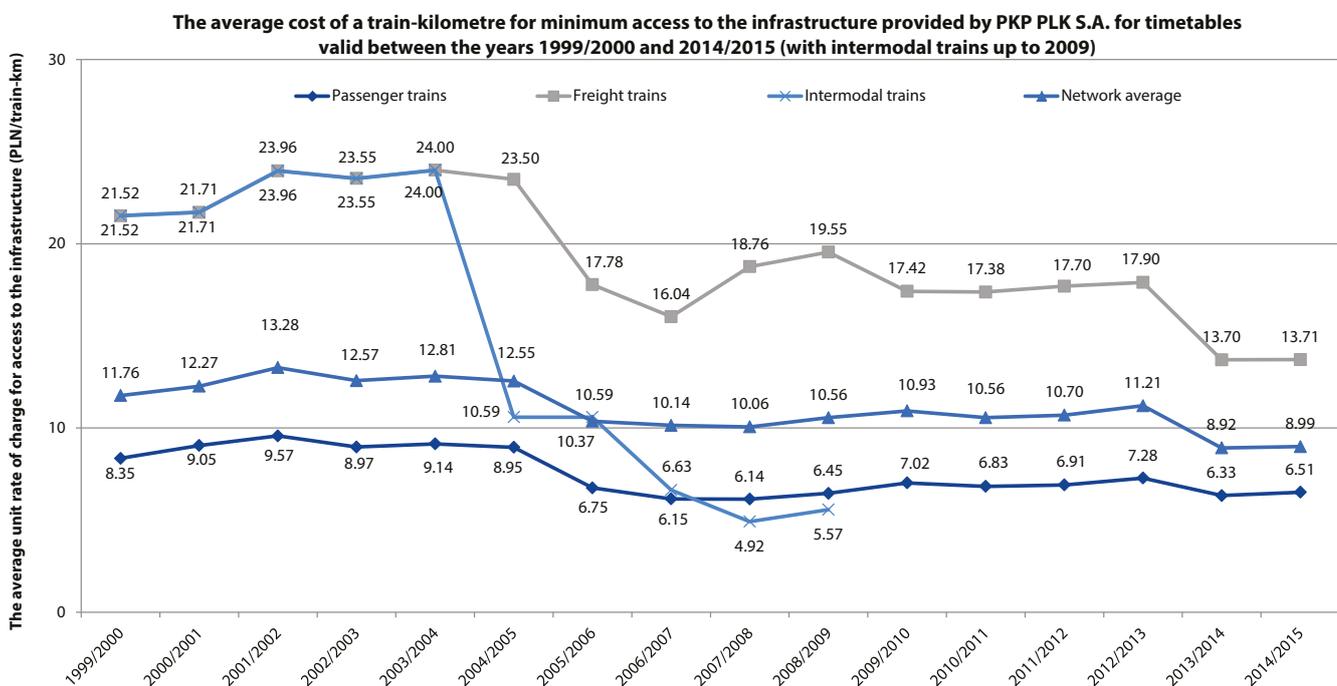


re planning and financing, and to the budgetary principle of annuality, where applicable, Member States shall ensure that a contractual agreement, fulfilling the basic principles and parameters set out in Annex V, is concluded between the competent authority and the infrastructure manager covering a period of not less than five years. As set forth in Article 30 (3), Member States shall implement the incentives referred to in paragraph 1 through the contractual agreement referred to in paragraph 2 or through regulatory measures or through a combination of incentives to reduce costs in the contractual agreement and the level of charges through regulatory measures.

The 2014/2015 timetable was not provided with any funding from the State or the Rail Fund, which would reduce unit rates for the basic fee.

However, starting from the price list for the 2013/2014 timetable, PKP Polskie Linie Kolejowe S.A. has taken into account only those costs which may be deemed to have been incurred directly as a result of train transport services. The consequence of fees for the use of the railway infrastructure being established on the basis of the regulation in force resulted in a financial gap in respect of, inter alia, management and protection costs that could not be covered with revenues from RUs. With a view to balancing its business activities, PKP Polskie Linie Kolejowe S.A. signed an agreement with the Ministry of Infrastructure and Development for the State funding of the costs of management and protection of the railway infrastructure

**Fig. 69: The average cost of a train-kilometre for minimum access to the infrastructure provided by PKP PLK S.A. for timetables valid between the years 1999/2000 and 2014/2015 (with intermodal trains up to 2009)**



Source: prepared by UTK

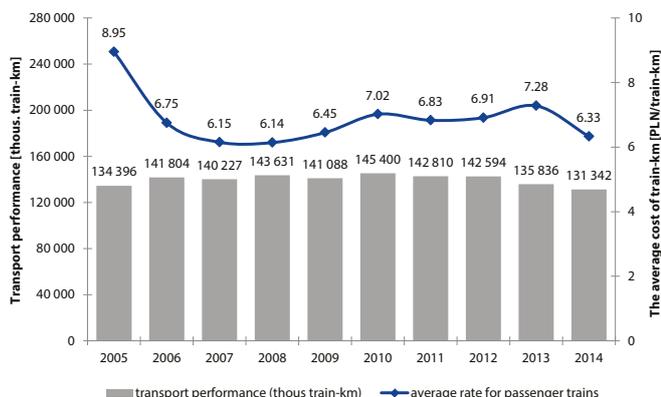
The average cost for minimum access to the infrastructure of the manager, PKP Polskie Linie Kolejowe S.A. was PLN 11.21/train-km, which meant a 4.8% increase from the previous timetable. In the case of passenger trains, the average rate for access to the infrastructure grew by 5.4% (from PLN 6.91/train-km to PLN 7.28/train-km); for freight trains this was a growth by 1.1% (from PLN 17.70/train-km to PLN 17.90/train-km).

As far as the 2013/2014 train timetable is concerned, as only the costs of maintenance, traffic management and depreciation were taken by the manager as the basis for calculating unit rates for the basic fee for the 2013/2014 train timetable, to the extent that these were directly connected with operating the train service, as stipulated in the judgment by the EU Court of Justice, the average value of the average network rate for minimum access to the infrastructure of PKP Polskie Linie Kolejowe S.A., for all trains, was reduced by 20.4%, to PLN 8.92/train-km. For freight

trains, the average cost equalled PLN 13.70/train-km (a drop by 23.5%) and for passenger trains this was PLN 6.33/train-km (a drop by 13.1%). The manager's operating costs, not otherwise covered by RUs with fees for the use of the railway infrastructure, will be covered with public funds earmarked for this purpose.

In the 2014/2015 timetable, the average network rate slightly grew, to PLN 8.99/train-km, which means a 0.8% increase in the unit basic fee for minimum access to the railway infrastructure. In the case of passenger trains, the average rate was PLN 6.51/train-km - an increase by 2.8%; for freight trains this was PLN 13.71/train-km - an increase by 0.1%.

**Fig. 70: The rates for access to the PKP PLK S.A. infrastructure for passenger trains in view of the volume of passenger transport in the years 2005-2014**



Source: prepared by UTK

### 3.2.5. The volume, structure and performance of the infrastructure provision market

The size of the Polish freight rail transport market in 2014 can be characterised by the following statistics:

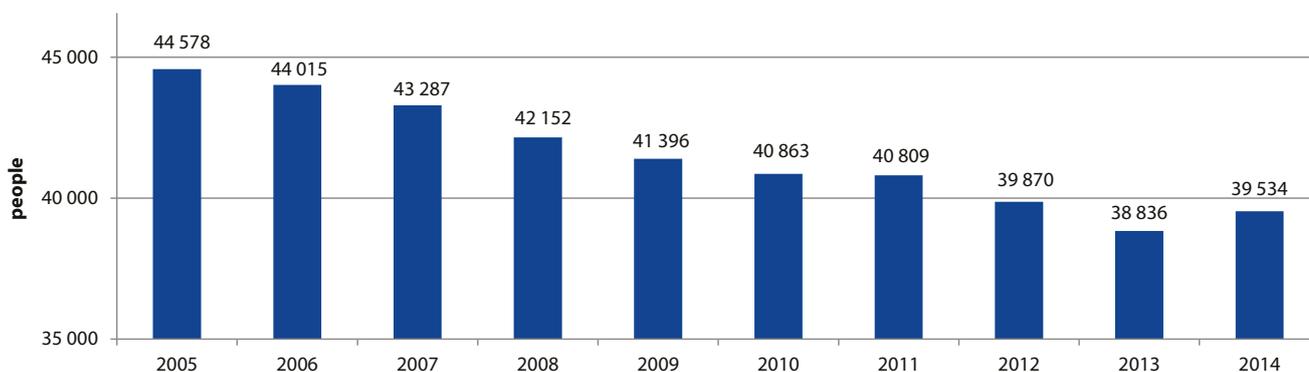
- the number of infrastructure managers - 11, including:
  - infrastructure providers - 9

In the 2014/2015 timetable, the average network rate slightly grew – to PLN 8.99/ train-km

- (managers which do not provide their infrastructures are PKP LHS and WKD)
- annual market revenue - PLN 4.69 bn
- annual rail service provision costs - PLN 5.25 bn
- employment - 39 534 people
- total train kilometres purchased - 206.24 m,
- the number of paths sold - 2.602 m

At the end of 2014, the workforce comprised 39 534 employees, i.e. 1.8% more than in 2013, but 0.8% less than in 2012. Fluctuations in the last two years resulted from changes in the employment level at PKP PLK which in 2013 reduced its employment by more than a thousand people and increased it by 650 people in 2014. A large decrease in employment level occurred in KP Kotlarnia, whereas the largest relative increase was recorded by CTL Maczki-Bór. The main infrastructure manager had a 96.79% share in the total employment, which means a decrease from last year's 96.85%.

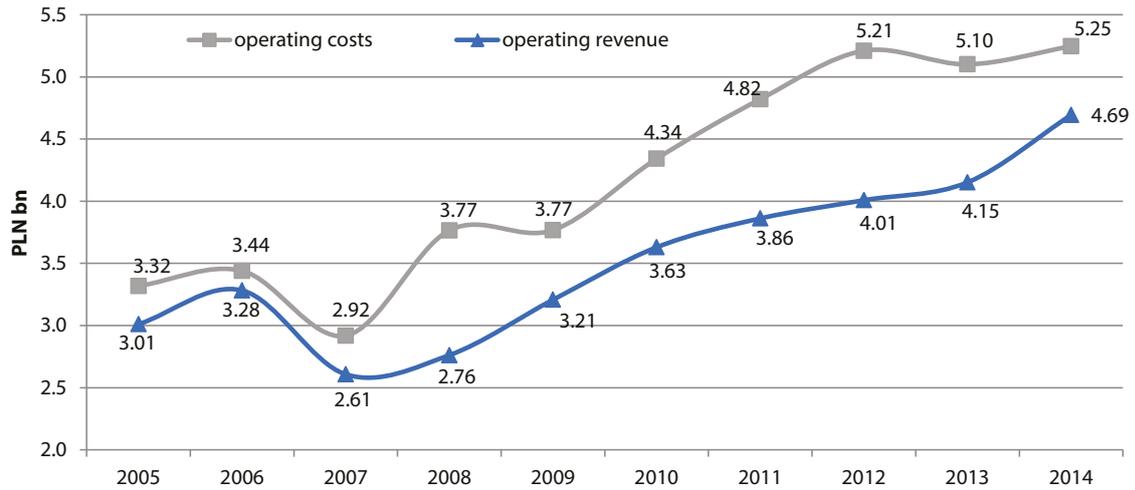
**Fig. 71: Employment in infrastructure managers in the years 2005-2014**



Source: prepared by UTK

In 2014, the operating costs grew by 2.8% from PLN 5.1 bn to 5.3 bn, reaching a new, record high level. A record increase (13.1%) was observed also in revenues, leading to a smaller negative difference between revenues and operating costs from PLN 0.95 bn to PLN 0.55 bn. This was mainly due to larger subsidies for the main infrastructure manager.

Fig. 72: The operating performance of infrastructure managers (in PLN bn) in the years 2005-2014



Source: prepared by UTK





## 4. Summary

The year 2014 brought decreases both on the passenger and the freight transport markets.

The decrease on the passenger market was lower than in 2013 and generally affected transport performance (4.3%). This seems to confirm the recent years' trend for long-distance rail transport to lose in importance. PKP Intercity transported nearly 5.2 m passengers fewer than in 2013, when the drop in relation to 2012 oscillated around 4.5 m. Between 2010 and 2014, PKP Intercity lost nearly 1/3 of its passenger base. The largest drop in 2014 occurred in the category of fast trains. Such a clear drop in the number of passengers of PKP Intercity was related, inter alia, with a number of modernisation works on PKP PLK's network. Prolonged track repairs lead to cut downs in the number of offered connections, as well as longer travel times and high unpredictability. In 2014, most RUs recorded worse punctuality figures (all in all by 0.5 percentage point), with the long-distance RU in particular (by 7.8 percentage points).

Repairs of the infrastructure under the EU's financial perspective for 2007-2013 (with the clearing period lasting until the end of 2015) were very numerous in 2014. An additional incentive for accelerating modernisation of the infrastructure, besides the closing financial perspective, came from the introduction of Pendolino trains, starting from the 2014/2015 timetable. The Pendolinos started running on paths between Warsaw and Gdańsk, Kraków, Katowice and Wrocław, reaching speeds of over 160 km/h in regular traffic. Shortening travel times and expanding the range of offered services has attracted new passengers to these lines in 2015. However, a large number of modernisation projects on the railway network is suffering from delays and it is now known that many of them will not be completed by the end of 2015 (including the following paths: Katowice-Kraków-Rzeszów, Warszawa-Radom and Warszawa-Białystok). Streamlining the investment process and accelerating

the absorption of EU funds seems to be the central challenge for the rail sector, especially in view of the financial perspective 2014-2020. Experience to date has shown that the funds for road infrastructure are not only spent much faster, but there are more of them (according to "The Implementation Document to the Transport Development Strategy until 2020" it is a proportion of 76:24 in favour of the road transport). Such a situation leads to an increase in road transport's competitive edge.

Rail transport was starting to gain competitive edge in 2014, mainly within certain region- and agglomeration-based connections. This regards in particular the Warsaw metropolitan area, where rail offers a genuine alternative to jamming roads that lead to the Polish capital. This is a result of frequent connections and the tariff integration with the city's public transport. In 2014, SKM Warszawa saw an increase in its customer-base by over 13%, WKD by 7%, which, combined with a small increase in Koleje Mazowieckie, gives a total of 3.6 m more in the number of passengers on the trains of these three railway undertakings. Warsaw and the Mazowsze (Mazovia) region are therefore continuing to assert their dominance. The Mazowieckie Province accounted for nearly 38% of all passengers in 2014, although this region is inhabited by around 14% of the entire population of Poland.

In the remaining Polish regions, the connections of Przewozy Regionalne were continued to be acquired by other railway undertakings. In the Kujawsko-Pomorskie Province, Arriva RP took over a large proportion of connections on electrified lines, which led to an 85% increase in the number of passengers using the services of this DB Group railway undertaking. A marked upturn, as compared to 2013, was also recorded by Koleje Dolnośląskie and Koleje Wielkopolskie. Furthermore, the Dolnośląskie Province can boast the second largest (following the Mazowieckie Province) growth, as regards the number of

checked-in passengers. In 2014, two new RUs made their debut on the market: Łódzka Kolej Aglomeracyjna (in June) and Koleje Małopolskie (in December). Their market shares are still low, but continue to grow as the two companies start providing services on successive paths. The above-mentioned RUs and Koleje Śląskie together transported 5.2 m passengers more than in 2013, while Przewozy Regionalne saw a decrease by 5.55 m – an overall drop by around 350 thousand. In the same perspective, 2013 saw a decrease by 6 million passengers. The growing significance of regional RUs over those offering long-distance connections is clearly visible, if we consider the average travel distance which in 2014 fell by 2.4 km to 59.7 km.

The key aspect in one's decision to choose rail as his/her means of transport is the quality of the rolling stock offered by the RUs. In 2014, PKP Intercity launched Pendolino train sets onto the tracks, and Łódzka Kolej Aglomeracyjna introduced Filrt3. Overall, this led to a 6% increase in the number of electric multiple units and a 4.5% drop in the number of locomotives. This process is expected to continue in the years to come in line with the investment projects planned by the long-distance (EMUs to be introduced in December 2015) and local government RUs. At this point it should be emphasised that replacing and modernising the rolling stock to provide high-quality services forms one of the aspects determining the attractiveness of railway services, which not only have to compete with private, but also bus transport. One of such services is free Internet access during travel.

In 2014, the modernisation of train stations continued, as a process important for RUs' public image. More than ten facilities in various parts of the country underwent modernisation, including a number of historic buildings, e.g. in Legnica, Kostrzyn, Lębork, Elk, Biała Podlaska, Nowy Sącz and Pszczyna.

The goods market, following 2013 which was a year marked by upward trends, saw a decline by ca. 1.8% in terms of weight and around 1.6% in terms of transport performance. The transport of bulk goods, for years being the pillar of the Polish rail transport, is exerting central impact on the market situation. Understandably, the major role here is played by the transport of coal which in 2014 experienced a decrease by 5% in terms of weight and by 12% in terms of transport performance. This was a consequence of several factors such as mild weather conditions both at the beginning and end of the year, and the smaller demand for coal on global markets, which translated into Polish mines' lower extraction figures.

2014 also witnessed a slight decrease in weight volume and transport performance in international transport. It was the situation of the coal market that spurred declines in exports – around 6% in weight and 12% in work. Still playing a marginal role, transit suffered the largest drops. Imports grew by approx. 6% in weight and 10% in work.

It can be seen that reduction in the rates for access to the infrastructure that took place starting from the 2013/2014 timetable is not a factor which might substantially impact on the transport of bulk goods. Its impact might nevertheless be visible in the case of intermodal transport, where direct competition occurs

between rail and road undertakings. The market of intermodal rail transport grew by ca. 11% in weight and transport performance.

The number of transported units underwent a small increase which was accompanied by a slight drop in the number of TEUs. This shows a trend towards the transport of heavier and smaller containers. In 2014, although the number of RUs providing intermodal transport services grew from 10 to 12, it still remains at a fairly low level, quite as much as the share of the intermodal segment in the total market (4.2% in weight and 6.8% in work). In addition to intermodal transport, transport of biomass seems to be a market that offers promising opportunities, growing in weight and transport performance by ca. 40% in 2014.

With a preferential level of granting discounts for intermodal trains at a sufficiently high level, the intermodal transport share in the rail market may still grow to reach a dozen or so percent by 2020. An important aspect in fostering the development of intermodal transport involves infrastructure modernisation projects, the expansion of existing and the construction of new transshipment terminals (also in seaports), as well as establishing regional logistics centres in the vicinity of large agglomerations. A stable policy aimed at supporting intermodal transport over a longer period of time should mitigate the disproportions between Poland and other EU Member States. Thanks to its geographical location, Poland has chances to become a major partner in trade exchange and transit transport.

However, the steady growth of freight transport is being inhibited by the condition of the railway infrastructure. Many lines used principally for freight transport are characterised by very strict speed limits (especially in Silesia), in addition to many bottlenecks and the continuing liquidation of devastated sidings and loading terminals that once used to be the main traffic generators. Another problem lies in the poor technical condition of side and additional tracks of significance for many stations all across the country. At the same time, the prolonged repairs of rail lines are causing disruptions in the freight train traffic, resulting in delays which discourage customers, who expect timely deliveries, from using rail services. The year 2014 witnessed a substantial worsening in the punctuality of freight trains, with the share of delayed trains increasing from 52.6% to 58.6%. Furthermore, nearly 41% of all freight trains recorded arrivals delayed by more than 120 minutes, as compared to 34% in 2013.

Although still an established leader in the freight transport market, PKP Cargo experienced a slight drop in its market share. 2014 concluded for PKP LHS with increases in weight and work. Lotos Kolej and Freightliner PL recorded the highest increases in their transport figures. Considerable declines in weight and transport performance were observed in the case of DB Schenker, and CTL Group recorded a drop in weight. There is a continuing trend for smaller RUs (up to 0.5% in market share) to carve out a growing share in the market. The overall number of railway undertakings grew from 61 to 68.

As far as infrastructure managers are concerned, in 2014 Euroterminal Sławków was granted a safety authorisation and CARGOTOR was in the process of obtaining such an authorisation. 2014 did not see any major changes to the length of rail-

## Summary

way lines, in comparison to the previous year, when PKP PLK shut down nearly 660 km of lines. 2014 brought about further shortening in the length of sold paths - by 2.2%.

2014 was marked by railway lines undergoing upgrading. In 2015, some works are still being continued (for instance the modernisation of key sections along line 1 from Warsaw to Katowice), but those which have been completed should allow rail transport to successfully compete with road and air transport. The good condition of the infrastructure serves as a starting point for preparing a package tailored both to passengers and users of freight transport. The attractiveness of this package in terms of timeliness, prices and quality of transport will be the deciding factor for the rail sector's success in the increasingly competitive business environment, which mostly results from faster improvements in the quality of the road infrastructure which, generally, is less expensive in terms of access.





PART II:  
A REVIEW OF RAIL TRAFFIC  
SAFETY IN 2014

# Introduction

This part of the publication provides a cross-section presentation of safety in rail transport in 2014, indicating critical areas, and presenting the possible reasons for their occurrence, as well as identifying corrective measures which should be focused on in the coming years. Assessing the safety level goes in line also with the role imposed by legislative acts on the President of UTK with regard to monitoring, promoting and, where appropriate, enforcing and expanding the legal safety framework, including the system of national safety rules. This part of the Report is divided into several key chapters discussing the following issues:

- Considerations underlying the rail system's safety;
- Rail event analysis;
- Events involving unauthorised persons on railway premises;
- Safety on level crossings;
- Hooligan incidents on the railway network;
- The safety of transport of hazardous goods;
- A review of the technical condition of the railway infrastructure;
- A review of the technical condition of rail vehicles;
- Supervision of railway market entities.

The Report was compiled primarily by means of the statistical analyses of data accumulated in the Rail Event Register kept by the President of UTK. Rail companies are required to supply these data under applicable laws. For this reason the full responsibility for the quality and validity of data used in the analyses conducted by the President of UTK, rests with relevant rail sector entities. At this point it should be noted that in order to ensure maximum reliability to this Report, the President of UTK, in cooperation with rail sector entities, took a number of measures aimed to verify and adjust data before their publication. These measures do not exclude, however, the possibility of further adjustment of data in the future (including historic data that cover years prior to the analysed period), in particular in connection with changes to the classification of certain events. The statistical data in the Report are valid as at 30 June 2015.

In parallel to the statistical data processed within the register of rail events, a range of additional information was used during the work on the Report, as a result of carrying out certain railway safety procedures falling within the competence of the President of UTK. Some sections use data from organisations external to the Polish rail system, 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 document covers data and information on maintenance operations on the network that is jointly operated by eleven infrastructure managers (listed below), required to provide access to the infrastructure to railway undertakings, and managers of dedicated infrastructure:

- \* PKP Polskie Linie Kolejowe S.A.;
- PKP SKM w Trójmieście Sp. z o.o.;
- PKP LHS Sp. z o.o.;
- Infra Silesia S.A.;
- CTL Maczki-Bór Sp. z o.o.;
- Jastrzębska Spółka Kolejowa Sp. z o.o.;
- Kopalnia Piasku Kotłarnia - Linie Kolejowe Sp. z o.o.;
- PMT Linie Kolejowe Sp. z o.o.;
- Euroterminal Sławków sp. z o.o.;
- Warszawska Kolej Dojazdowa Sp. z o.o.;
- Cargotor sp. z o.o.

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 provide such data.

In recognition of the broad scope of entities that this report covers, for some areas in which the availability of 2014 data was limited, the President of UTK presented information which includes only selected aspects of the national rail system, aiming to ensure the accuracy of conclusions in the report.



## 5. Considerations underlying the rail system's safety

**In accordance with the national and European law in force, full responsibility for the safe operation of a railway system in a given Member State rests with all entities active in such a system, each in charge of the area corresponding with its field of activity, taking into account the sphere of interaction with other entities.**

The said responsibility applies especially to infrastructure managers and railway undertakings, but also all their suppliers and subcontractors providing services for them, including in particular manufacturers and suppliers of components and devices as well as entities carrying out maintenance work on rail vehicles.

Given the broad spectrum of rail sector entities, performing different functions within the system, it is particularly important to promote effective and accurate exchange of information between those entities on matters important in terms of safety, and to jointly implement measures that will facilitate an optimal control of the risks connected with the functioning of the rail transport sector.

In this context, the role to be played by public authorities involves the provision of an appropriate legal framework for companies to function in the rail transport sector, including in particular solutions designed to allow individual entities to manage

the safety of their operations on their own (vide SMS - Safety Management Systems, and MMS - Maintenance Management Systems) and to impose regular assessment of risks related to the operations, and, in consequence, to implement appropriate means of their control.

Furthermore, in accordance with the applicable requirements, public authorities must **assess individual entities for their capacity to meet legal requirements in force and safely operate in the rail transport sector, before their entry onto the market** (see: the relevant certification, authorisation and other processes rooted in the system of national law and associated with the issuance of other documents which confirm compliance with specific requirements). **They are also required to continuously monitor the competence of these entities to safely manage the business as part of their current operations.**

It should be stressed that due to the ongoing liberalisation of the rail sector, with its wide range of different entities, public authorities are not and will never be able to assume responsibility for the safety of both individual enterprises and the rail sector as a whole. 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 these entities alone, by means of Safety Management Systems as well as uniform and mandatory tools, such as **a common safety method on risk evaluation** (Commission Regulation No 352/2009 and the new Regulation No. 402/2013 invocable since May 2015) and **a common safety method on monitoring** (Commission Regulation No. 1078/2012).

The approach to the question of responsibility, as indicated in this section, is a direct result of the implementation into the national legal system of the requirements set out in EU legislation, aimed at promoting a systemic approach to safety. Under this concept, each entity is obliged not only to observe the applicable regulations, but to devise solutions that will allow an active identification of risks and the implementation of preventive measures optimised for a given situation. In this system, we are witnessing a departure from the approach according to which most issues of relevance in terms of safety were regulated at the level of national regulations towards solutions which concentrate on the active and responsible management of safety by various entities through their use of appropriate management systems. Correspondingly, a specific change will also occur in the role of State institutions carrying out supervision. In this aspect, focus is being shifted from detailed inspections, which are to verify compliance with legal or technical regulations, towards an assessment of entities' capacity to manage the safety of their operations in a comprehensive, responsible manner.

The section below provides a synthetic description of the key areas in which the President of UTK is active in respect of rail transport safety.

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

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

The goals of the Task Force are to monitor the safety level of the national railway sector, identify alarming issues and trends in the field of safety, and distribute related information among rail sector entities.

The main duties 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

**In accordance with the applicable requirements, public authorities must assess individual entities for their capacity to meet legal requirements in force and safely operate in the rail transport sector, before their entry onto the market. They are also required to continuously monitor the competence of these entities to safely manage their business as part of their current operations**

sector entities as well as eliminating any irregularities found in this area.

Meetings include presentations of statistical data on rail events and accidents by categories, analysed according to time intervals and compared with each other. Furthermore, discussions are held on the ways to improve or amend regulations with a view to enhancing safety in the national railway sector (the discussed issues included the problem of providing signalling equipment to level crossings from the road side, transport in congested/overcrowded trains, etc.).

Other meeting topics include the circumstances and causes of events as well as remedial measures undertaken by entities to maintain the appropriate safety level in the railway sector.

The main topic addressed at the latest meetings of the Task Force in 2014 were rail events from categories B04 and C44. According to Appendix 6 to the Regulation of the Minister of Transport of 30 April 2007 on serious accidents, accidents and incidents on railway lines (Journal of Laws 2007 No. 89 item 593), these categories denote respectively an accident or an incident caused by a railway vehicle which failed to stop at the "Stop" signal or at the spot where it should have stopped, or an accident caused by the activation of a railway vehicle by an unauthorised person. The reasons of the above-mentioned events are usually thought to stem from the so-called human error, i.e. failure to exercise caution, improper observation of the area in front of the driver, erroneous reading of indications in the signalling equipment, ineffective cooperation between drivers and the train manager, ignoring instructions given by the traffic controller and starting the train in the wrong direction, the driver's failure to respond to shunting signals immediately before an event, failure to adjust speed to local conditions, etc. The Office of Rail Transport wishes to highlight the fact of constant increases in this category of accidents and incidents in the years 2010-2014. This unsettling trend, caused in most cases by the human error, could be eliminated through technical protection solutions deployed in vehicles and the railway infrastructure. Other frequently mentioned causes of events include technical conditions, such as defective radio commu-

nication devices in trains, faulty brakes and incorrect lighting on railway platforms or semaphore, due to stolen components of the infrastructure.

## 5.2. Supervision of railway market entities

Another important aspect in the activities of the President of UTK regards supervision of entities from the railway transport market, in order to ensure a systematic verification of whether they meet the legal safety requirements. In the context of administration's impact on the safety of railway system, the supervisory activities of the President of UTK on the one hand goes in line with the stage connected with the entity's capability to maintain a safe manner of operation, while on the other hand with the stage of the entity's preparations to renew its licences.

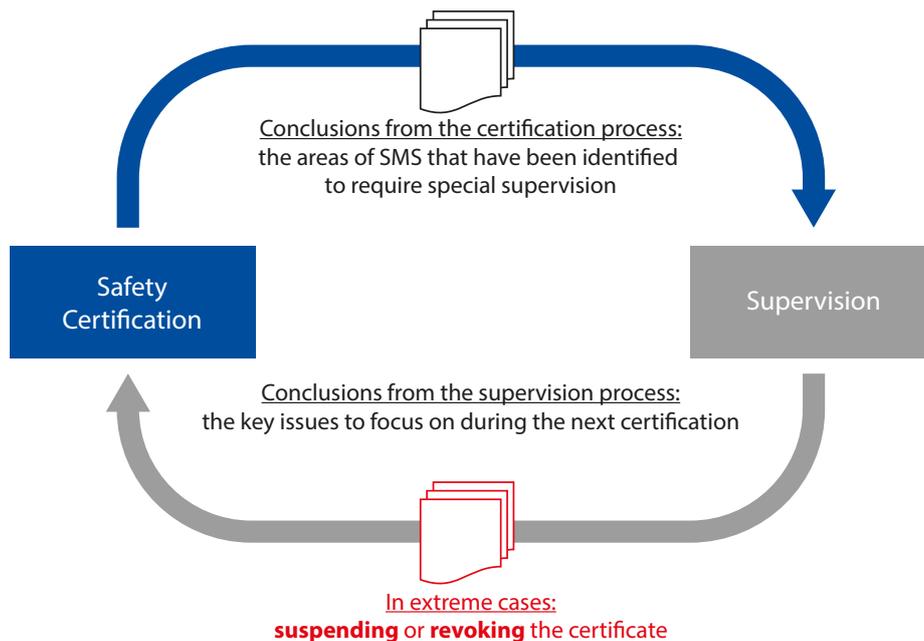
As we are facing a change in the approach to the management of rail transport safety, implemented as a result of new EU regulation, a change that merits highlighting is the one pertaining to the mechanism of supervision of the railway market. According to the European approach, the role of the President of UTK should focus on the systemic verification of the company's capacity to ensure safety by means of appropriate procedures under a devised, deployed and systematically improved safety management system. In this regard, it will be necessary to gradually depart from supervision as it is currently carried out by the President of UTK, i.e. similar to an internal audit in a company,

e.g. serving verification of the efficiency of safety devices or their technical condition. This role should be first and foremost the role of railway undertakings and infrastructure managers, and should be performed on the basis of relevant procedures of the Safety Management Systems. The above approach finds reflection in the activities of the President of UTK serving the gradual introduction of the control mechanism, which is close in terms of form, scope and organisation to audits under the Safety Management Systems or the Management Maintenance Systems.

In addition, the new provisions of EU law pertaining to supervision of railway companies and infrastructure managers, require a fuller exchange of information between the national safety authorities and certification and supervision processes. The concept underlying this principle is the mutual exchange of information on the weaknesses of the safety management system of a given entity, which are identified as part of a certification process and which should become an area of special interest during the supervision process. Conversely, this exchange should take place in the opposite direction so that information and conclusions collected during the supervision process can be used during the process of renewed certification of the enterprise. A graphic depiction of this principle is shown in Fig. 73.



**Fig. 73: The exchange of information between the supervision and safety certification processes**



Source: prepared by UTK

More details on the supervision exercised by the President of UTK are provided in Chapter 9 of this Report.

### 5.3. Improving the safety system of the rail sector

The task of the President of UTK is to constantly improve the safety system of the rail sector as a whole. This issue should be understood, first of all, as the continuous improvement of the Safety Management Systems or the holding of respective railway undertakings, infrastructure managers and entities responsible for maintenance, and secondly as the monitoring and improvement of the legal system shaping the rules of safety management in the rail sector.

The President of UTK, acting as the national safety authority under EU regulations, has a multidisciplinary knowledge on the safety of the railway system, obtained within the entire spectrum of activities, in particular those concerning certification, monitoring and supervision processes. The President of UTK receives annual reports on the safety in various companies, information on rail events, related recommendations of relevant authorities as well as a range of other information of interest to the railway system. The entire body of knowledge collected by the President of UTK should be used to introduce improvements to the system of legal framework with regard to, inter alia, the NSA task as set forth in Art. 16 (2)(f) of the Safety Directive (monitoring, promoting and, where appropriate, introducing and developing safety regulations, including the system of national safety regulations).





## 6. Rail event analysis

**In line with the applicable national law, rail events include accidents, serious accidents and incidents within a railway network.**

**An accident**, as defined in the Rail Transport Act, is an unintended sudden event or sequence of events involving a rail vehicle with an adverse impact on human health, property or the environment. Accidents include in particular any collisions, derailments, level crossing events, events involving pedestrians and caused by a rail vehicle in motion, and fire on a rail vehicle.

**A serious accident** is an accident caused by a collision, train derailment or a similar event with at least one fatality or five serious injuries, or resulting in a major damage to the rail vehicle, the railway infrastructure or the environment, the value of which can be immediately assessed by the rail accident investigation committee at least EUR 2 million and which has an evident impact on railway safety regulations or safety management.

**An incident** is any event other than an accident or serious accident that involves train traffic and impacts on its safety.

Statistical data on the rail system's 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 National Rail Accident Investigation Committee (NRAIC) is a clear example of the legally sanctioned differences with regard to the data coverage. The UTK is required to process and report information on events within the public rail system and the dedicated network. The NRAIC processes and reports data only on events within the public rail system (excluding the dedicated network).

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 railway safety system. **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.**

The statistical part of this safety report for 2014 makes use of ongoing event data that the President of UTK receives over the year from rail sector entities and enters in the Rail Event Register. This data were reviewed and revised as part of the formal safety reporting procedure which is binding on rail sector entities under the applicable law.

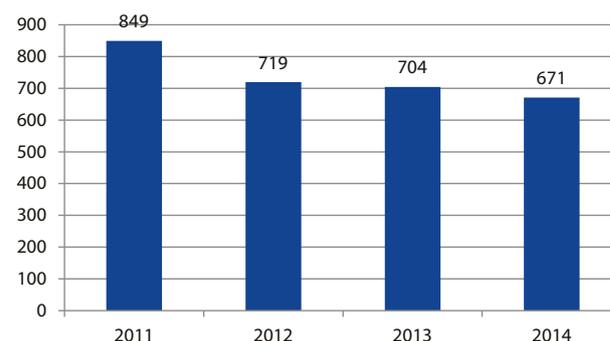
## 6.1. Rail accidents

Statistical data accumulated in the Rail Event Register show that the rail system's safety slightly improved compared to the year before, as reflected in less events recorded and also less fatalities and serious injuries related to rail accidents, with a lower volume of total train kilometres in 2014 (by approx. 0.5% in comparison to the previous year).

In 2014, the number of accidents and serious accidents within the national public rail network and the dedicated network, as compared to the previous year, dropped by 4.7%, i.e. from 704 accidents in total in 2013 to 671 accidents in 2014.



**Fig. 74: An overview of rail accidents in the years 2011 - 2014**



Source: prepared by UTK on the basis of the Rail Event Register data

The classification of rail accidents by type, used by the President of UTK in respect of all events, includes in particular:

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

**Tab. 12: The types of accidents (the public and the dedicated networks) in the years 2011-2014**

no.	type of event	2011		2012		2013		2014	
		accident	serious accident*	accident	serious accident	accident	serious accident	accident	serious accident
1.	collisions	27	0	41	1	55	0	56	1
2.	derailments	104	1	112	0	136	0	134	0
3.	level crossing events	226	27	272	0	254	1	216	0
4.	events involving pedestrians and caused by a rail vehicle in motion	324	53	286	0	253	0	254	0
5.	fire on a rail vehicle.	4	0	1	0	2	0	3	0
6.	other	82	1	6	0	3	0	7	0
7.	in total	849		719		704		671	

\* 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 on the basis of the Rail Event Register data

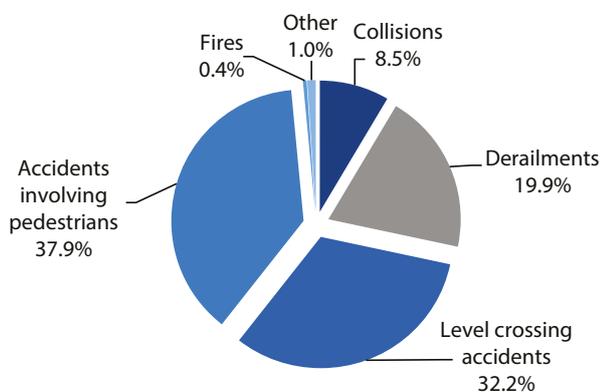
The presented data indicate that the most common type of accident to have occurred in 2014 were accidents involving pedestrians and caused by a rail vehicle in motion (with a share of 37.9%). The second largest group were accidents at level crossings (a share of 32.2%), as much as 92.5% of which were trespassing accidents where a pedestrian was run into by a rail vehicle. 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 entities that are responsible for minimising the risks in this area.

Chapter five offers a broader discussion of accidents at level crossings and pedestrian level crossings, and chapter six addresses accidents involving pedestrians caused by a rail vehicle in motion.

Collisions and derailments, which accounted for about 28.4% of all rail accidents in 2014, are usually caused by the broadly defined rail system, including technology malfunctions, ineffective procedures or the human error (on the part of railway undertakings and infrastructure managers). It should be noted that collisions also include accidents caused by rail vehicles running into road vehicles and vice versa outside level crossings located on stations and rail paths, as a result of the road vehicle appearing within the loading gauge. In 2014, there were 11 such events, which accounts for ca. 1/5 of all collisions. The potential to reduce these two types of accidents 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.

**Fig. 75: Rail network events in 2014 broken down by type of event**



Source: prepared by UTK on the basis of the Rail Event Register data

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

As indicated above, when analysing statistical data on rail system safety, one should remember that some of the events are inherent to the rail system while other are substantially or fully caused by extraneous factors and third parties. As such, all rail events can be classified into two groups:

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

It is important to note that in 2014 about a quarter of all accidents were caused by internal systemic factors, while nearly three quarters were events overlapping between the rail system and third parties. Events within the rail system were primarily caused by (in descending order):

- a damaged or poorly maintained superstructure or engineering structures;

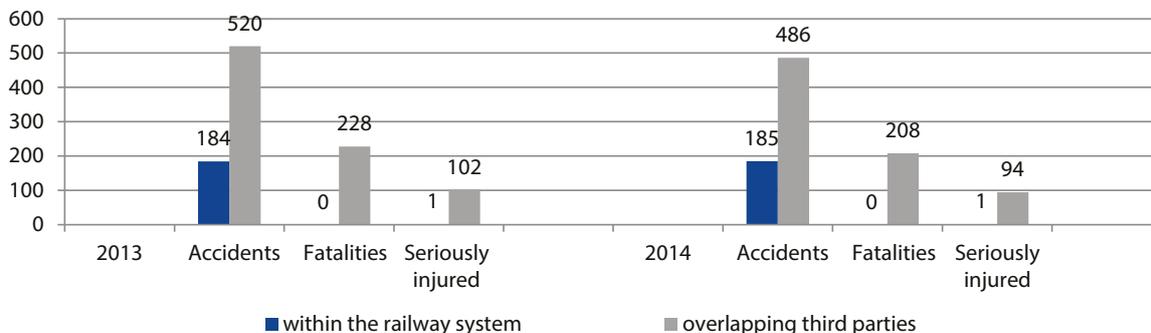
- a train passing a „Stop“ or
- „No Shunting“ signal;
- a poor technical condition of a wagon;
- a train running into another rail vehicle or other obstacle;
- a train being dispatched to an inappropriately laid out and unprotected signalling block section;
- cargo-related irregularities;
- a prematurely cleared signalling block section and a shift of the switch under a vehicle.
- These events resulted in no fatalities, with one serious injury.
- Accidents involving third parties (in principle, non-rail related):
- involve unauthorised persons on railway premises (a trespasser illegally entering railway premises);
- are caused at level crossings;
- involve malicious mischief to the rail system;
- involve passengers (train hopping and jumping out of the train);
- involving road vehicles outside level crossings located on stations and rail paths.

In 2014, a total of 486 such events, with 208 fatalities, were reported. These events are generally not related to the rail system and often the rail system alone has a limited ability to effectively counteract them. 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 **72.4% of all events**.

The data presented in the breakdown above clearly show that third parties constitute an important element in these events and account for the majority of the events.

In 2014, about a quarter of all accidents were caused by internal systemic factors, while nearly three quarters were events overlapping between the rail system and third parties

**Fig. 76: Rail-related and non-rail related events and their consequences in the years 2013-2014**



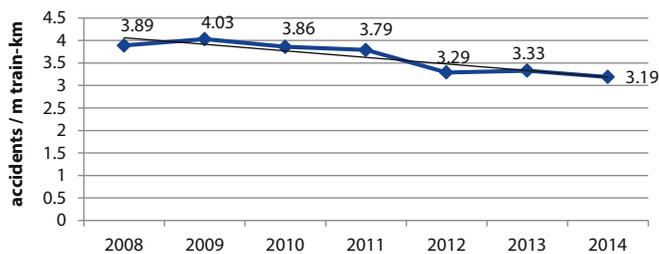
Source: prepared by UTK on the basis of the Rail Event Register data

The above data suggest that both the number of events within the railway system and the casualty rates in 2014 remained at the same level as in the previous year.

### 6.3. The accident index

For a clearer picture of safety data and trends, the President of UTK uses the available data to calculate, on an annual basis, the so-called accident index by comparing the number of rail network accidents in a given year and total train kilometres travelled. As mentioned at the beginning of this chapter, the number of accidents in 2013 slightly decreased, as did total train kilometres. This makes the 2014 accident index slightly lower (by 0.14) than the year before and means that the level of safety remains relatively constant. Worth noting is the fact that in 2014 the index reached its lowest value in the last 7 years.

**Fig. 77: The accident index in the years 2008 - 2014**



Source: prepared by UTK on the basis of the Rail Event Register data and reports from railway undertakings

### 6.4. Rail accident casualties

The number of casualties in accidents within the general and dedicated networks of the rail system in 2014 was 303, of which 208 were fatalities and 95 serious injuries. A detailed classification of casualties along with the annual trend is presented in the table below.



The number of fatalities is directly correlated to the number of the individual types of event. **Unauthorised persons** on railway premises (162 fatalities, which makes up 77.9% of all fatalities) and **level crossing and pedestrian level crossing users (38 fatalities, which makes up 18.3% of all fatalities)** accounted for the large bulk of accident fatalities in 2014.

A similar pattern applies to serious injuries. Unauthorised persons on railway premises formed the largest group (57 casualties, which makes up **60.0%** of all serious injuries) in these terms. **Level crossing and pedestrian level crossing users** were the second-largest group of serious injuries (24 serious injuries, which makes up **25.3%** of all serious injuries).

**Tab. 13: Number of casualties (the public and the dedicated networks), excluding suicides**

no.	type of event	fatalities				seriously injured			
			2012	2013	2014	2011	2012	2013	2014
1.	collisions	0	<sup>162)</sup>	<sup>13)</sup>	<sup>13)</sup>	6	<sup>632)</sup>	1	<sup>34)</sup>
	change	-	-----	-93.8 %	0 %	-	+950 %	-98.4 %	+200 %
2.	derailments	<sup>21)</sup>	0	0	0	<sup>341)</sup>	0	0	0
	change	-	-----	-----	0 %	-	-----	-----	0 %
3.	level crossing events	62	62	52	43	53	36	37	25
	change	-	0 %	-16.1 %	-17.3 %	-	-32.1 %	+2.8 %	-32.4 %
4.	events involving pedestrians and caused by a rail vehicle in motion	253	198	175	164	116	86	64	67
	change	-	-21.7 %	-11.6 %	-6.3 %	-	-25.9 %	-25.6 %	+4.7 %
5.	fire on a rail vehicle.	0	0	0	0	0	0	0	0
	change	-	-----	-----	-----	-	-----	-----	-----
6.	other	5	0	0	0	2	3	1	0
	change	-	-----	-----	-----	-	+50.0 %	-68.7 %	-----
<b>7.</b>	<b>total</b>	<b>322</b>	<b>276</b>	<b>228</b>	<b>208</b>	<b>211</b>	<b>188</b>	<b>103</b>	<b>95</b>
	change	-	-14.3 %	-17.4 %	-8.8 %	-	-10.9 %	-42.5 %	-7.8 %

1) including a serious accident at the Baby Station, with 2 fatalities and 34 serious injuries.

2) including a serious accident near Szczekociny, with 16 fatalities and 61 serious injuries.

3) including accidents caused by rail vehicles running into road vehicles outside level crossings.

4) including 2 serious injuries caused by rail vehicles running into road vehicles outside level crossings.

Source: prepared by UTK on the basis of the Rail Event Register data

The data on respective groups of casualties, as presented in the table below, show that there were 26.9% less fatalities among level crossing and pedestrian level crossing users and 2.4% less fatalities among unauthorised persons on railway premises in the previous year. Detailed numerical data on persons injured in rail accidents in the years 2011-2014 are shown in the tables below, with the percentage share of various groups is shown in the figures.

The table below presents the number of casualties by categories. The collected data seem to confirm that most casualties result from accidents in which a rail vehicle ran into a trespassing pedestrian. The number of casualties in those events remained at a level similar to the previous year. A positive change was recorded with regard to accidents at level crossings (a decrease by 26.9% in the number of fatalities and by **31.4%** in the number of seriously injured).

**Tab. 14: Accident fatalities in the years 2011-2014**

no.	category	fatalities				seriously injured			
			2012	2013	2014	2011	2012	2013	2014
1.	passenger	<sup>101)</sup>	<sup>142)</sup>	6	2	58*	<sup>812)</sup>	8	6
	change	-	+40.0 %	-57.1 %	-66.7 %	-	+39.7 %	-90.1 %	-25.0 %
2.	employee or subcontractor	2	<sup>153)</sup>	2	1	11	<sup>63)</sup>	4	4
	change	-	+650.0 %	-86.7 %	-50 %	-	-45.5 %	-33.3 %	0 %
3.	level crossing user	60	62	52	38	48	36	35	24
	change	-	+3.3 %	-16.1 %	-26.9 %	-	+25.0 %	-2.8 %	-31.4 %
4.	unauthorised party	246	185	166	162	93	64	56	57
	change	-	-24.8 %	-10.3 %	-2.4 %	-	-31.2 %	-12.5 %	+1.8 %
5.	others	4	0	2	5	1	1	0	4
	change	-	-----	-----	+150 %	-	0 %	-100 %	-----
<b>6.</b>	<b>total</b>	<b>322</b>	<b>276</b>	<b>228</b>	<b>208</b>	<b>211</b>	<b>188</b>	<b>103</b>	<b>95</b>
	change	-	-14.3 %	-17.4 %	-8.8 %	-	-10.9 %	-45.2 %	-7.8 %

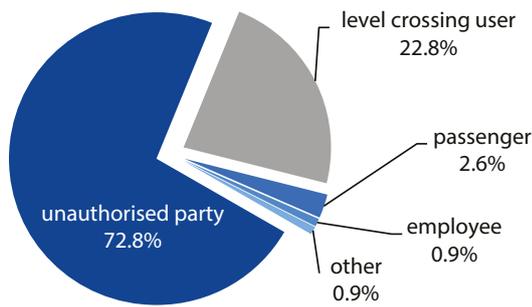
1) including a serious accident at the Baby Station, with 2 fatalities and 33 serious injuries among passengers.

2) including a serious accident near Szczekociny with 11 fatalities and 59 serious injuries among passengers.

3) including a serious accident near Szczekociny with 5 fatalities and 2 serious injuries among employees.

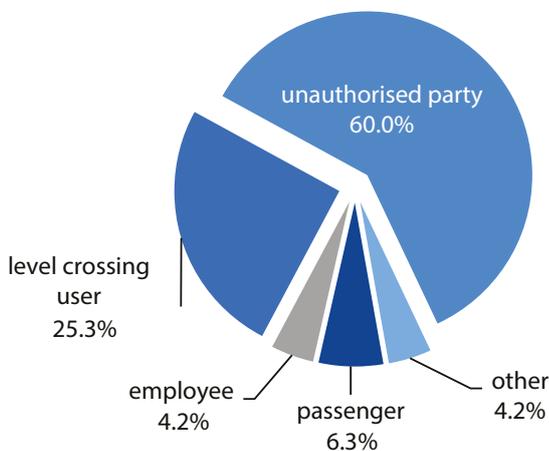
Source: prepared by UTK on the basis of the Rail Event Register data

**Fig. 78: The percentage share of individual types of fatalities in rail accidents in 2014 (excluding suicides)**



Source: prepared by UTK on the basis of the Rail Event Register data

**Fig. 79: The percentage share of individual groups of persons seriously injured in rail accidents in 2014 (excluding suicide attempts)**



Source: prepared by UTK on the basis of the Rail Event Register data

## 6.5. Incidents

An important group of accidents related to train traffic and requiring constant monitoring are **incidents**. An incident, as defined in the Rail Transport Act, is any event other than an accident or a serious accident, connected with train traffic and having an adverse impact on its safety. **Incidents, in contrast to accidents and serious accidents, do not bring about negative consequences such as fatalities and seriously injured persons, or severe property damage, but they nevertheless indicate the sources of threat and are valuable when it comes to determining which areas of activity of railway undertakings or managers require improvements with regard to rail traffic safety.**

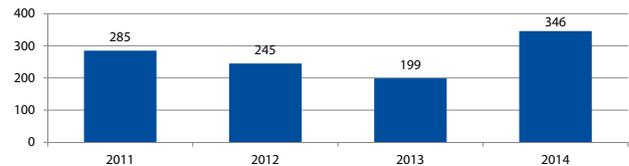
The causes of three quarters of incidents can be attributed to the railway system. This is because this group of events does not include level crossing events and accidents with rail vehicles running into trespassing persons, as these belong to the accident group only.

**Tab. 15: An overview of rail incidents in the years 2011-2014**

no.	event	2011	2012	2013	2014
1.	incidents	285	245	199	346
	change	-	-14.0 %	-18.8 %	+73.9

Source: prepared by UTK on the basis of the Rail Event Register data

**Fig. 80: An overview of rail incidents in the years 2011-2014**



Source: prepared by UTK on the basis of the Rail Event Register data

At the same time, it should be noted that in the second half of 2013 the President of UTK undertook actions aimed at verifying whether events were accurately classified by railway sector entities. Supervisory activities in the field connected with the Safety Management Systems of railway undertakings and infrastructure managers have indicated the possibility of some incidents and accidents being incorrectly classified, which might be covered by official statistical data submitted to the President of UTK or the Chairman of NRAIC. As a result of UTK President's efforts to enforce the accurate classification of events, 2014 saw an increase in the number of reported incidents, in particular incidents related to the trains' technical condition.

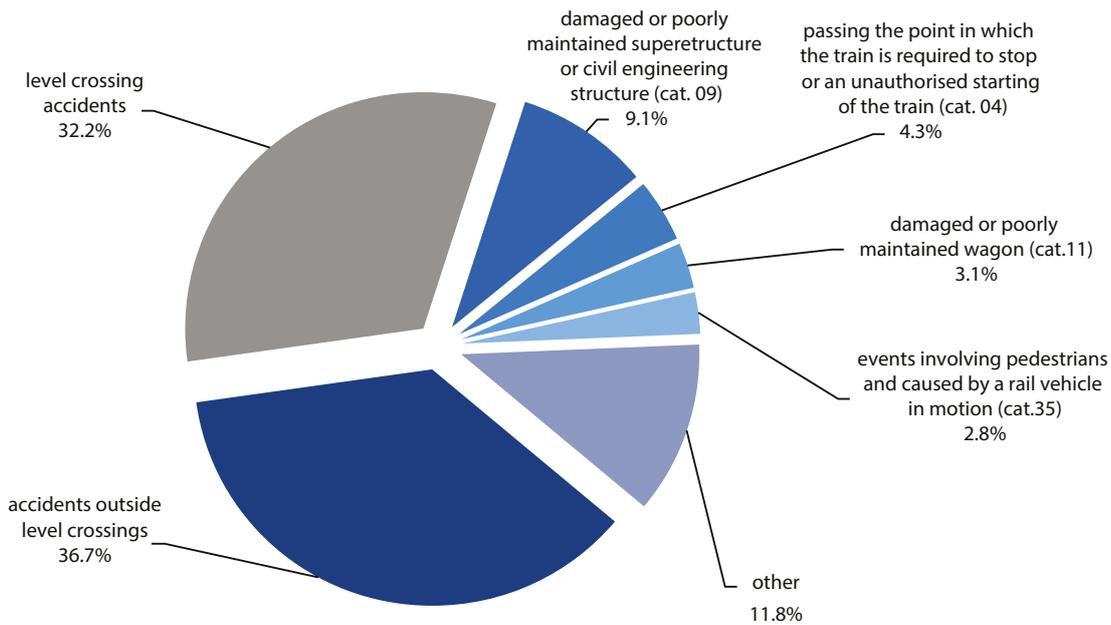
## 6.6. Analysis of causes of rail events

The nature and direct cause of an event is established by an inquiry commission. Also, if necessary, the NRAIC categorises the event 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 **XYZ** pattern, where **X** defines the seriousness of the event (**A** is a serious accident, **B** is an accident, and **C** is an incident) and **YY** is a numeric category related to the cause classification.

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

In the analysed year 2014, most accidents were caused by trains which hit trespassing individuals or vehicles (categories 34 and 23) and rail vehicles colliding with road vehicles or hitting individuals at level crossings or pedestrian level crossings (categories 18-22 and 31-33). Accidents involving road vehicles and individuals at and outside level crossings accounted for **68.9% of all rail network accidents.**

**Fig. 81: The percentage share of accidents in 2014 by category**



Source: prepared by UTK on the basis of the Rail Event Register data

The remaining 31.1% of events were attributable to other causes. These primarily included accidents caused by a damaged or poorly maintained superstructure or engineering structure (category 09), accidents caused by a train's failure to stop or its unauthorised starting (category 04), accidents caused by a damaged or poorly maintained wagon (category 11), events involving pedestrians and caused by a rail vehicle in motion (category 35), and also caused by a train proceeding in an inappropriately laid out block section or by mishandling rail traffic control devices (category 03) and a rail vehicle colliding with another rail vehicle or any other obstacle (category 13).

The tables below show the number of events in particular categories in the years 2012-2014 and the change in the number of events in 2014, as compared to 2013. The above-mentioned accident categories include those most frequent. Also, some categories show substantial deviations from 2012 in terms of the number of events. Selected event categories with substantial changes in the number of accidents are presented in the tables below.



**Tab. 16: The number of accidents in the years 2013-2014 by numeric categories**

no.	numeric category	cause description	2013	2014	change 2013/2014	
1.	01	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	1	0	-100.0%	
2.	03	dispatching or allowing a rail vehicle towards or into an inappropriately laid-out block section or mishandling rail traffic control devices	14	15	+7.1%	
3.	04	passing a "stop" signal or any point in which the train is required to stop, or an unauthorised starting of the train	16	29	+81.2%	
4.	06	exceeding the maximum speed allowed	0	0	-----	
5.	07	manoeuvring in a way that puts the safety of rail traffic at risk	1	2	+100.0%	
6.	08	rail vehicle runaway	7	5	-28.6%	
7.	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.	73	61	-16.4%	
8.	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)	6	5	-16.7%	
9.	11	a damaged or poorly maintained wagon (including running into a structural component of a wagon)	15	21	+40%	
10.	12	damaged or malfunctioning rail traffic control devices	2	2	0.0%	
11.	13	a rail vehicle running into another rail vehicle or other obstacle (e.g. brake skid, luggage trolley, mail trolley, etc.)	13	15	+15.4%	
12.	15	a prematurely cleared signalling block section and a shift of the switch under a train;	23	11	-52.2%	
13.	17	improper loading, unloading, load securing or any other cargo-related irregularities	6	13	+116.7%	
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 barrier level crossing (category a according to the crossing specification)	9	5	-44.4%
15.		19	a rail vehicle running into a road vehicle or vice versa at a half barrier automated level crossing (category b)	15	12	-20.0%
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)	40	41	+2.5%
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)	167	133	-20.4%
18.		22	a rail vehicle running into a road vehicle or vice versa at a private-use level crossing (category f)	2	0	-100%
19.		31	a rail vehicle running into a pedestrian at a guarded level crossing	4	4	0.0%
20.		32	a rail vehicle running into a pedestrian at a level crossing with an automatic signalling system (categories b and c)	4	7	+75.0%
21.		33	a rail vehicle running into a pedestrian at other level crossings	14	14	0.0%
22.		Total collisions with road vehicles and accidents involving pedestrians at level crossings		255	216	-15.3%
23.		23	a rail vehicle running into a road vehicle or vice versa outside level crossings, at stations, rail paths or siding connection tracks	4	11	+175.0%
24.	24	train fire	2	3	+50.0%	
25.	28	natural disasters (e.g. floods, snowdrifts, ice dams, landslides)	4	2	-50.0%	
26.	30	malicious mischief, vandalism or reckless behaviour (e.g. pelting of trains, placing obstacles on tracks, vandalising power facilities, communication or traffic control devices or superstructures, or tampering with such devices)	4	3	-25.0%	
27.	34	a rail vehicle running into a pedestrian outside level crossings at stations or rail paths	232	235	+1.3%	
28.	35	events involving pedestrians 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);	21	19	-9.5%	
29.	37	a train uncoupling without a wagon runaway	1	0	-100%	
30.	38	theft-related malfunctioning of rail traffic control buildings and devices or level crossings	0	0	-----	
31.	no category	the category has not been determined or the event cause is being investigated	3	3	-----	

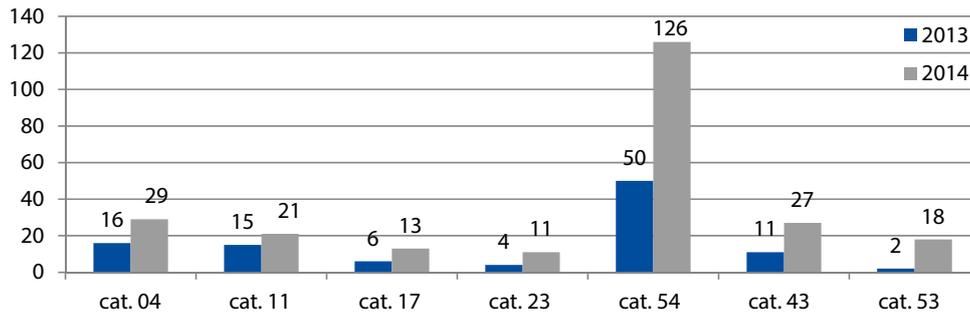
Source: prepared by UTK on the basis of the Rail Event Register data

**Tab. 17: The number of incidents in the years 2013-2014 by numeric categories**

no.	numeric category	cause description	2013	2014	change
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	2	0.0%
2.	C42	allowing a rail vehicle into a station, on an occupied or closed track	1	2	+100.0%
3.	C43	dispatching or allowing a rail vehicle towards or into an inappropriately laid-out block section or mishandling rail traffic control devices	11	27	+145.5%
4.	C44	passing a "stop" signal or any point in which the train is required to stop, or an unauthorised starting of the train	19	35	+84.2%
5.	C46	manoeuvring in a way that puts the safety of rail traffic at risk	1	0	-100.0%
6.	C47	rail vehicle runaway	4	1	-75.0%
7.	C48	a prematurely cleared signalling block section and a shift of the switch under a train;	0	0	-----
8.	C49	improper making-up of a train	0	1	-----
9.	C50	improper loading, unloading, load securing or any other cargo-related irregularities	2	7	+250%
10.	C51	a damaged superstructure, bridge, viaduct or traction network, including negligence such as the improper unloading of materials or leaving materials or equipment lying on the track or within the loading gauge	13	19	+46.2%
11.	C52	malfunctioning rail traffic control devices resulting in:	5	2	-60.0%
12.	-	failure to cover the space from the line block system, occupied by a rail vehicle, with a "stop" signal	2	18	+800.0%
13.	-	setting up a permission signal on the semaphore with an inappropriately laid out block section, malfunctioning of devices signalling the non-usage of tracks or points, malfunctioning of a junction interlocking or a line block system	5	2	-60.0%
14.	C53	a damaged or poorly maintained rail vehicle with traction or a designated-purpose rail vehicle which must be removed from operation.	2	18	+800.0%
15.	C54	a damaged or poorly maintained wagon which must be removed from operation	50	126	+152.0%
16.	C55	train fire	22	30	+36.4%
17.	C56	fire in a rail vehicle, except for train fires	0	3	-----
18.	C57	fire in a civil structure, etc., within railway premises, forest fires within the premises until the end of the fire section; crop, grass and trackway fires within railway premises	1	1	0.0%
19.	C59	uncontrolled release of hazardous material or packaging from the wagon, which necessitates the use of mitigation measures against a fire, chemical or biological threat on a station	5	1	-80.0%
20.	C60	a rail vehicle running into an obstacle (e.g. brake skid, luggage trolley, mail trolley, etc.), without derailment and casualties	15	25	+66.7%
21.	C62	natural disasters (e.g. floods, snowdrifts, ice dams, hurricanes, landslides)	4	8	+100.0%
22.	C64	malicious mischief, vandalism or reckless behaviour (e.g. pelting of trains, placing obstacles on tracks, vandalising power facilities, communication or traffic control devices or superstructures, or tampering with devices)	15	21	+40.0%
23.	C65	events involving pedestrians 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), not resulting in casualties	26	12	-53.8%
	C66	failure of a road vehicle to stop before a closed barrier (a half-barrier), causing damage to it or to road signals.	1	1	0.0%
	C67	theft-related malfunctioning of rail traffic control devices or rail vehicles	0	2	-----

Source: prepared by UTK on the basis of the Rail Event Register data

**Fig. 82: The number of events from selected categories compared with the upward trends in 2014**



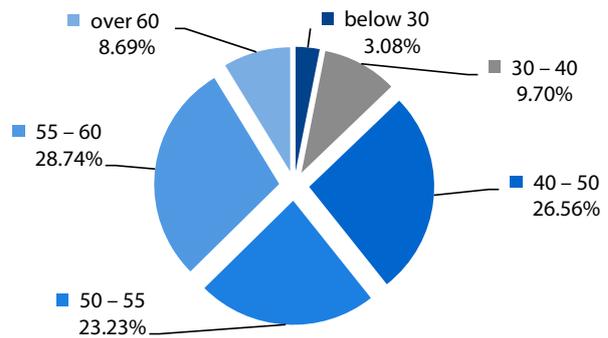
Source: prepared by UTK on the basis of the Rail Event Register data

In 2014, a substantial increase was recorded in the number of accidents in categories such as passing a ‘Stop’ signal (cat. 04, an increase by 81.2%), a damaged or poorly maintained wagon (cat. 11, an increase by 40.0%) and cargo-related irregularities (cat. 17, an increase by 116.7%). There were also more cases of a rail vehicle colliding with a road vehicle and vice versa, outside level crossings located on stations and rail paths (cat. 23, an increase by 175%). The Incident group also recorded an increased number of events due to, among other things, rail vehicles being dispatched or accepted to an inappropriately laid out and unprotected block section or due to the mishandling of rail traffic control devices (cat. 43, an increase by 145.5%) as well as events related to damaged or poorly maintained rail vehicle: a vehicle with traction (cat. 53, an increase by 800.0%) and a wagon (cat. 54, an increase by 152.0%). As mentioned earlier in section 3.5, the increase in the number of incidents related to the technical condition of the rolling stock, recorded in 2014, might result from the measures undertaken by the President of UTK aimed to enforce the correct classification of this type of events.

Given the increased number of events caused by the passing of a “Stop” or any point in which the rail vehicle is required to stop, or an unauthorised starting of the train, locomotive drivers merit being mentioned, as it is the quality of their work and professional preparation that determine the occurrence of events from this category.

The age structure among locomotive drivers in Poland, as shown in the figure below, is highly unfavourable. Currently, 52% of all drivers in the age group of 50-60, of which ca. 23% in the 50-55 group and 29% in the 55-60 group. The vast majority of these (9899 people) are drivers aged over 50. The very slowly growing number of drivers aged below 30 (from 342 to 503 people) is quite an alarming trend. There are too few young drivers joining the profession to ensure an efficient replacement of those who retire, which is why we might be facing the absence of skilled workforce as senior drivers leave the profession.

**Fig. 83: Age structure among locomotive drivers in 2014**

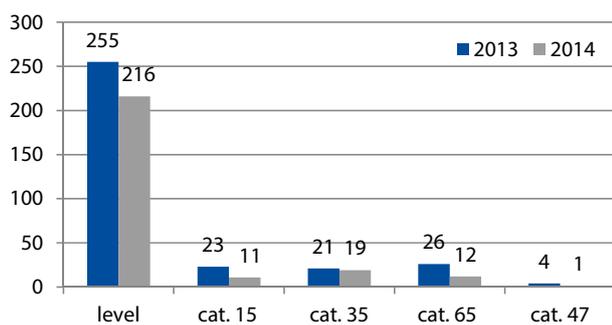


Source: prepared by UTK on the basis of the Driving Licence Register.

There being not enough drivers trained and employed in transport services, the current workforce is forced to work longer hours. The vocational training of future drivers, including drivers of railway vehicles, will form a major challenge for the existing training centres which were established under the new legal regulations in force across the entire European Union. The insufficient number of drivers, connected with the absence of well-trained personnel might cause a major surge in pathological situations where, e.g. one person is employed under many contracts or the work-time regulations are violated, directly affecting the safety of the railway traffic.

In comparison with 2013, there were fewer level crossing accidents (cat. 18-22 and 31-33 - a drop by 15.2%), accidents due to a prematurely cleared signalling block section (cat. 15, a drop by 52.2%) and events involving a vehicle in motion (cat. 35, a drop by 9.5%). A decrease in the number of incidents was recorded, i.a., in events involving pedestrians, connected with a rail vehicle in motion (cat. 65, a drop by 53.8%), and caused by a rail vehicle runaway (cat. 47, a drop by 75.0%).

**Fig. 84: An overview of the number of events from selected categories with downward trends in 2014**



Source: prepared by UTK on the basis of the Rail Event Register data

The statistical data show that the number of events caused by poorly maintained or damaged railway infrastructure still makes up a considerable percentage of all accidents and is the main reason of events within the railway system. In this regard, the President of UTK undertook special supervisory measures in 2014 resulting, i.a., in the issuance of administrative decisions on irregularities in the field of the maintenance of the railway infrastructure. This issue was addressed in more detail in chapter 13, which deals with supervisory measures.





## 7. Events involving unauthorised persons on railway premises

**The category of unauthorised persons on railway premises includes trespassers on railway property. These are primarily individuals who take short cuts by crossing railway lines in random, unmarked locations (illegal crossings) 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 for accident-related statistics to classify certain events as suicides or accidents involving unauthorised persons on railway premises. The correct classification of a given event is not always straightforward and obvious.

This means that suicide-related events are also included in the primary category of events involving trespassing on railway tracks. It is only after a prosecutor's office has qualified an event as a suicide that such an event is excluded from the said category. For this reason, 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 being family tragedies, accidents involving pedestrians hit by trains disrupt the rail system, generating financial losses for rail enterprises and their clients and, as a result, making it difficult to keep to the timetable. 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 investigated by the police. Occasionally, the RU might need to arrange for buses to provide substitute transport for the passengers.

**Fig. 85: Illegal crossings**



Source: [trybunaczestochowska.pl](http://trybunaczestochowska.pl) and <http://bedzin.naszemiasto.pl/>

Due to the tragic statistics, the UTK-supported “Safe crossing - stop for your life” social campaign, run for a number of years by PKP PLK S.A., as the infrastructure manager, and the Railroad Guard, was extended in October 2012 to include counteracting trespassing on rail tracks. The “Zero tolerance for rail trespassers” effort was initiated as part of this campaign. The scale of the problem of railway track trespassers is reflected in the results of the said social campaign in its initial months. In 2014, the Rail Guard made more than 17300 interventions with regard to illegal crossings - 16.5 thousand officers checked documents of 1017 individuals, admonished 4104 of them and fined 1892

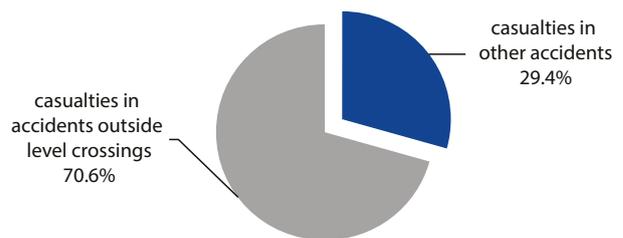
**2014 saw a total of 235 accidents in which rail vehicles ran into pedestrians outside level crossings on stations or rail paths, which makes up about 35% of all registered events. These events resulted in 214 casualties, 161 of which were fatalities**

people for trespassing tracks. This was in addition to 235 cases brought to court.

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

The figures for fatalities and severe injuries are clearly correlated with the accidents involving pedestrians and caused by trains in motion. 2014 saw a total of 235 accidents in which rail vehicles ran into pedestrians outside level crossings on stations or rail paths, which makes up about 35% of all registered events. These events resulted in 214 casualties, 161 of which were fatalities. Railway line trespassers represent a substantial proportion of all casualties in railway track accidents.

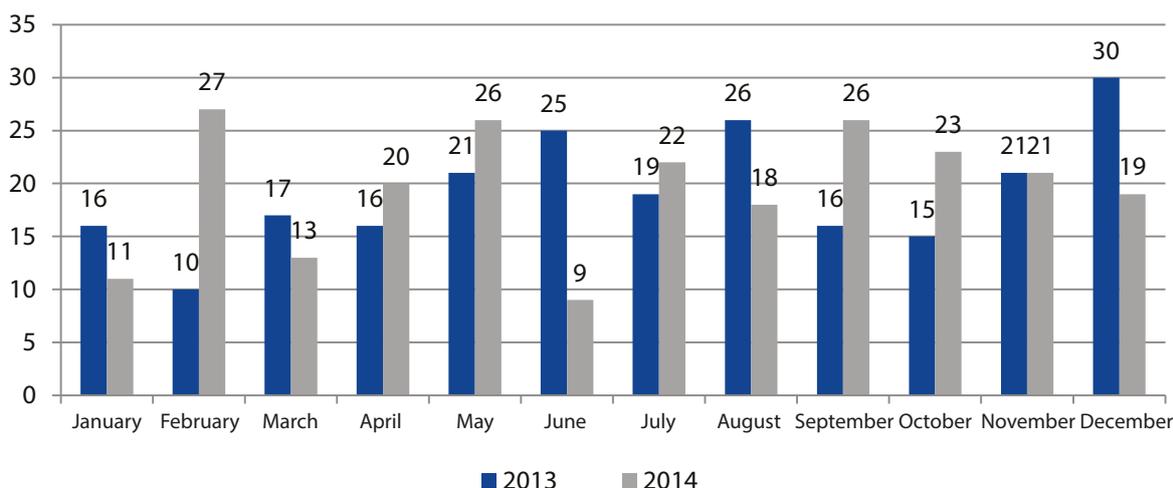
**Fig. 86: The proportion of fatalities and severe injuries resulting from pedestrians crossing rail tracks outside level crossings and pedestrian level crossings on stations or rail paths in 2014 (excluding suicides and suicide attempts)**



Source: prepared by UTK on the basis of the Rail Even Register data



**Fig. 87: The number of events with rail vehicles running into pedestrians outside level crossings on stations or rail paths in 2013 and 2014 by month**



Source: prepared by UTK on the basis of the Rail Even Register data.

As shown in the diagram above, the number of events connected with rail vehicles which ran into individuals while they were trespassing tracks outside level crossings on stations or rail paths, is not affected by the season of the year. In addition there seem to be no particular trend that would be shared by the analysed periods, which poses yet another difficulty in suggesting any preventive measures.

## 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 qualified by inquiry commissions as a B34-category accident, i.e. “a rail vehicle running into a pedestrian outside a level crossing on a station or rail path.” It is only after a prosecutor’s office has found the event to be a suicide that such an event is reclassified from the B-34 category to a suicide.

In the analysed year 2014, there were 77 events of this type, resulting in 71 fatalities and 6 seriously injured persons. Compared to 2013, when 79 events were qualified as suicides or suicide attempts, there were 2.5% less events of this type in 2014. An increase in the number of events reclassified since 2012 as suicides, where rail vehicles ran into pedestrians outside level crossings on stations or rail paths (cat. 34), is the result of closer

cooperation between the inquiry commissions and the Police and the public prosecutor’s office.

**Tab. 18: An overview of suicides and suicide attempts in the years 2011 - 2014**

no.	event <sup>1)</sup>	2011	2012	2013	2014
1.	suicides and suicide attempts	28	82	79	77
	change	-	+192.9%	-3.7 %	-2.5%

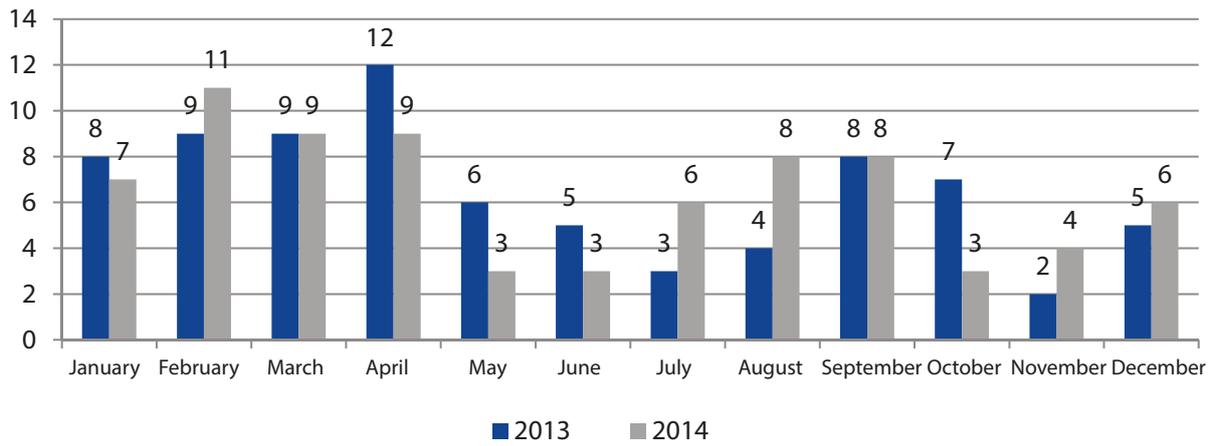
1) including suicide attempts: in 2012 – 2, in 2013 – 8, in 2014 – 6.

Source: prepared by UTK on the basis of the Rail Event Register data

The locations and frequency of this problem throughout 2014 were determined on the basis of RER data. As was the case with the events involving rail vehicles running into pedestrians outside level crossings located on stations and rail paths, the locations of these events are generally random and almost equally prevalent all across Poland. The diagram below presents suicide and suicide attempt figures throughout the year, indicating an upward trend in this respect in winter and summer.



**Fig. 88: The number of suicides and suicide attempts by in 2013-2014 by month**



Source: prepared by UTK on the basis of the Rail Event Register data

As shown by the above data, the number of railway-related suicides and suicide attempts remains at a stable level.





## 8. Safety on level crossings

**Level crossings, that is 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 types of transport (by rail and by road).**

Also, rail sector entities have limited capabilities for minimising the risk generated by level 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 deaths or serious injuries.

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 errors made by rail personnel.

To ensure a satisfactory level of safety for level crossing users, these facilities are fitted with various types of 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 crossing safety devices in Poland by category and type

The national solutions for one-level intersections of railway lines and roads correspond to the requirements set out in the Regulation of the Minister of Transport and the Maritime Economy of 26 February 1996 on the technical conditions to be met by intersections of railway lines and public roads, and the location of such intersections. This Regulation allows the use of six one-level crossing and pedestrian one-level crossing categories on railway lines with the maximum allowed train speed of 160 km/h. According to the said Regulation, level crossings and pedestrian level crossings are classified into specific categories depending on the road category and the traffic factor (the number of road vehicles multiplied by the number of rail vehicles going through a level crossing per 24 hours). Moreover, the Regulation provides for certain active and passive safety devices, including:

**The majority of events at level crossing is caused by the inappropriate (i.e. illegal) behaviour of road users (drivers and pedestrians)**

## Level crossing safety devices in Poland by category and type

- 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** – public level crossings with or without barriers, in which road traffic is controlled by signals given by rail personnel, or signal lights; personnel-controlled level crossings (controlled on-site or remotely, from a distance of up to 1000 m); remote control relying on a CCTV system, which enables the gatekeeper to monitor the crossing zone as the barriers are closing and avoid “trapping” between the barriers a user who has ignored signal lights (a red flashing light) and entered the crossing;
- **Category B** – public level crossings with automatic signal lights and half barriers; these devices are activated by a

train running over track detectors, which are located at such a distance as to make sure that the fastest train on a given line reaches the crossing not earlier than within 35 seconds after it has been closed (once the detectors have been activated, signal lights begin to flash and 5 seconds later half barriers begin to close down – the process lasts 10–15 seconds, depending on the barrier type);

- **Category C** – public level crossings with automatic or personnel-controlled signal lights work the same way as B-category crossings, except for half barriers (which are unavailable in the crossings in question);
- **Category D** – public level crossings without full or half barriers and automatic signal lights (no rail traffic control devices);
- **Category E** – public pedestrian level crossings, some equipped with warning devices (signal lights), mazes and personnel-controlled barriers;
- **Category F** – private level crossings and pedestrian level crossings equipped with user-controlled barriers (e.g. by property, plant, or field owners).

**Tab. 19: The number of active level crossings within public and separate networks at the end of 2014**

no.	infrastructure manager	crossing type						total
			b	c	d	e	f	
1.	PKP PLK S.A.	2 516	856	1 283	7 158	494	593	12 900
2.	PKP LHS sp. z o.o.	34	4	7	198	9	11	263
3.	PKP SKM w Trójmieście sp. z o.o.	3	0	0	1	1	0	5
4.	CTL Maczki – Bór sp. z o. o.	6	0	0	19	1	2	28
5.	Infra SILESIA S.A.	14	0	1	16	2	3	36
6.	Jastrzębska Spółka Kolejowa sp. z o.o.	11	1	1	16	2	2	33
7.	Kopalnia Piasku Kotłarnia – Linie Kolejowe sp. z o. o.	8	0	0	78	2	7	95
8.	PMT Linie Kolejowe sp. z o.o.	1	4	2	24	1	0	32
9.	CARGOTOR sp. z o.o.	1	0	0	31	0	2	34
10.	Euroterminal Sławków sp. z o.o.	4	0	0	16	0	1	21
11.	WKD sp. z o.o.	0	0	11	27	1	0	39
12.	<b>Total</b>	<b>2 598</b>	<b>865</b>	<b>1 305</b>	<b>7 584</b>	<b>513</b>	<b>621</b>	<b>13 486</b>

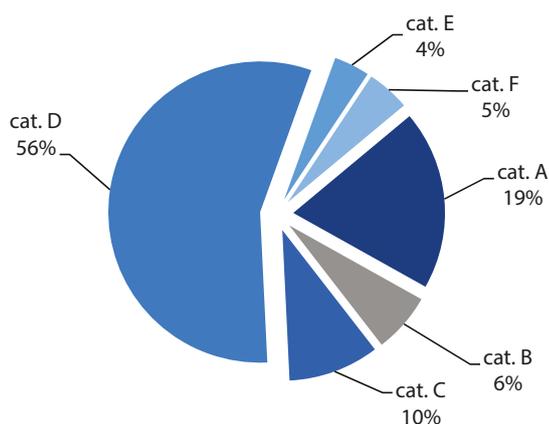
Source: prepared by UTK on the basis of data from 2014 safety reports

In addition, to improve traffic safety on level crossings, the rail network features warning signs for engine drivers to advise them of the protection status of level crossings. These warning signs are placed before level crossings within the braking distance of the fastest train which may be operated on a given line.

As at 31 December 2014, the national rail network, managed by 11 infrastructure managers, had 13 486 active level crossings and pedestrian level crossings. D-category crossings are by far the most prevalent (7 584) and account for 56% of all crossings. The second largest crossing category is A (2 598 crossings), which accounts for 19% of all crossings, and the third is category C (1 305), which accounts for 10% of all crossings. At the end of

2014 there were 865 B-category (6%) and 621 F-category (5%) crossings in Poland. Category E pedestrian level crossings (513) account for 4% of all level crossings. The number of level crossings and pedestrian level crossings was by 163 lower than the year before; however, their percentage share did not change significantly.

**Fig. 89: The percentage of level crossings on public and separate networks broken down by category**



Source: prepared by UTK on the basis of data from 2014 safety reports submitted by infrastructure managers

The data shows that in Poland the **average distance between intersections at the level of tracks** on lines used within the publicly accessible rail network is **1.43 km**.

Furthermore, taking into account the number of level crossings and pedestrian level crossings (13 447) it is possible to determine their frequency on used railway lines in Poland, which equals 0.70 crossings/km of the line.

## 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, as well as sufficient visibility ensured within the level crossing.

The currently operated level crossing traffic safety devices use different technologies, from the oldest key-based solutions to hybrid and microprocessor technologies. Relatively few level crossings are protected by devices that were designed in the 21st century and comply, technology- and design-wise, with European level crossing safety standards.

The table below compiles information on level crossings in line with the classification of the types of level crossing safety devices and in accordance with the Commission Directive 2009/149/EC of 27 November 2009 amending Directive 2004/49/EC of the European Parliament and of the Council as regards Common Safety Indicators and common methods to calculate accident costs. It follows from the table that over 62% of all level crossings within the rail network have passive protection systems (cat. D).

**Tab. 20: The number of level crossings and pedestrian level crossings broken down by the type of the protection system**

lp.	type of crossing	total
1.	level crossings with active protection systems including	5 067
2.	automatic user-side warning system	1 302
3.	automatic user-side protection system	0
4.	automatic user-side protection and warning system	429
5.	automatic user-side protection and warning, and rail-side protection system	506
6.	manual user-side warning system	55
7.	manual user-side protection system	1 216
8.	manual user-side protection and warning system	1 559
9.	level crossings with passive protection systems	8 419
10.	<b>total level crossings</b>	<b>13 486</b>

Source: prepared by UTK on the basis of data from 2014 safety reports

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

- Non-compliance with road traffic rules by road users;
- The inclination of some drivers to underestimate the efficiency of safety devices (e.g. due to long barrier closure times) and their attempts to bypass protection systems;
- Professional discipline by the personnel involved directly in rail traffic control;

**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, as well as sufficient visibility ensured within the level crossing.**

- 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

As already mentioned in the statistical part of this study, level crossing accidents make up a substantial portion of all events.

In 2011, 2012, 2013 and 2014, these accounted for ca. 30%, ca. 38%, ca. 36% and ca. 32% 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 2014 there were 216 level crossing and pedestrian level crossings accidents, which resulted in 43 deaths and 25 serious injuries. Detailed data in this respect, broken down by the categories of level crossings, are presented in the table below.

**Tab. 21: The number of accidents on public and separate network level crossings in the years 2011–2014**

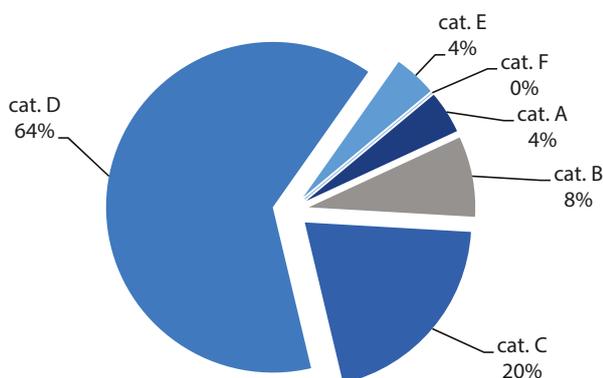
no.	crossing type	events			
			2012	2013	2014
1.	category A	13	18	13	9
	change	-	+38.5%	-27.8%	-30.8%
2.	category B	28	25	18	17
	change	-	+10.7%	-28.0%	-5.6%
3.	category C	46	53	41	44
	change	-	+15.2%	-22.6%	+7.3%
4.	category D	152	165	173	137
	change	-	+8.6%	+4.8%	-20.8%
5.	category E <sup>1)</sup>	10	9	6	9
	change	-	-10.0%	-33.3%	+50.0%
6.	category F <sup>2)</sup>	4	2	4	0
	change	-	-50.0%	+100.0%	-100.0%
<b>7.</b>	<b>total</b>	<b>253</b>	<b>272</b>	<b>255</b>	<b>216</b>
	<b>change</b>	<b>-</b>	<b>+7.5%</b>	<b>-6.3%</b>	<b>-15.3%</b>

1) pedestrian level crossings

2) private level crossings and pedestrian level crossings

Source: prepared by UTK on the basis of the Railway Event Register data

**Fig. 90: Level crossing and pedestrian level crossing accidents by level crossing category in 2014**



Source: prepared by UTK on the basis of the Railway Event Register data

Out of all events that took place on level crossings approx. **two thirds** of accidents happened on crossings without any warning devices (traffic lights) or security equipment (barriers or half barriers). One out of eight accidents took place on a crossing secured by barriers or half barriers (cat. A or cat. B). This proportion of events that took place on level crossings remained

constant; however, when compared to the year before, in 2014 there were more than 15% less accidents on level crossings. A significant drop in the number of events also took place on category D crossings (by more than 20%). The percentage share of accidents on level crossings within the respective categories and pedestrian level crossings is presented on the chart above.

The presented statistical data indicate that the number of accidents on crossings equipped with automatic signal lights and half barriers (categories B and C crossings) is more than two times smaller than on crossings equipped with passive systems only (cat. D crossings). As emphasised earlier, one should keep in mind that while category D level crossings are the most numerous within the rail network, they should have the lowest traffic factor.

The President of UTK argues, 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

**Level crossing accidents, despite a drop in their number in relation to 2013, in 2014 constituted nearly 1/3 of all accidents on railway lines**

such level crossings. The accident frequency ratio for specific-category level crossings is presented in the table and figure below. In addition, for comparison purposes, the figure presents the accident frequency ratios for the years 2012-2014.

**Tab. 22: The accident frequency ratio for 2014 by level crossing category**

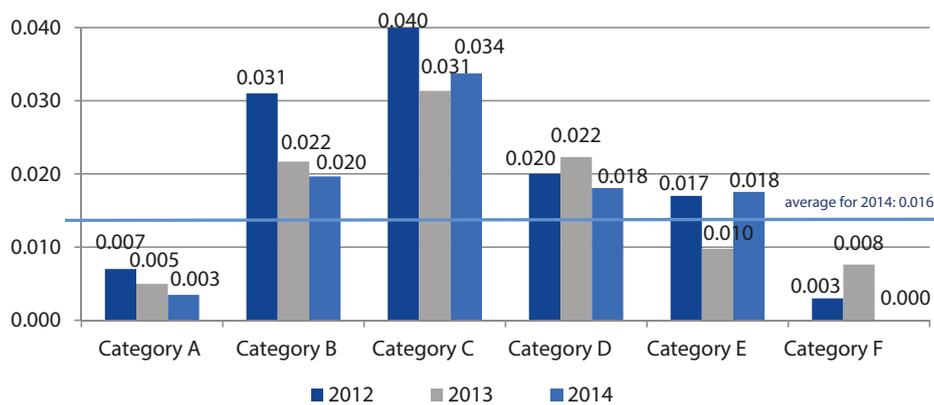
no.	crossing type	number of level crossings	number of accidents	ratio
1.	category A	2 598	9	0.00346
2.	category B	865	17	0.01965
3.	category C	1305	44	0.03372
4.	category D	7 584	137	0.01806
5.	category E	513	9	0.01754
6.	category F	621	0	0.00000
7.	<b>total</b>	<b>13 486</b>	<b>216</b>	<b>0,01602</b>

Source: prepared by UTK on the basis of the Railway 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 barriers (category B), and also level crossings without signal lights and protection systems (category D).

A comparison of 2013 and 2014 data shows a small decrease in accident frequency ratios, which is attributable to the drop in the overall number of events at level crossings. Category D level crossings experienced a slight growth in this ratio, as did private level crossings and pedestrian level crossings managed by the respective owners of properties and plants.

**Fig. 91: The accident frequency ratio by level crossing category in the years 2012-2014**



Source: prepared by UTK on the basis of the Railway Event Register data

In terms of events that took place on level crossings and pedestrian level crossings, it is possible to distinguish groups of road users that were involved in rail vehicle events. The table below

identifies road users participating in level crossing events and specifies the number of events in which they took part.

**Tab. 23: Road users in events on level crossings in the years 2013-2014**

no.	road users	number of events	
		2013	2014
1.	passenger cars	173	138
2.	pedestrians	21	25
3.	lorries	18	21
4.	delivery trucks	17	10
5.	tractors	7	3
6.	bicycles	5	4
7.	other	14	15
8.	<b>total</b>	<b>255</b>	<b>216</b>

Source: prepared by UTK on the basis of the Railway Event Register data



Passenger cars comprise the most numerous group, as these were involved in as many as 64% of all events on the crossings. The second most numerous group are pedestrians (11%), who use pedestrian level crossings or level crossings. The third significant group (10%) are lorries. Delivery trucks participated in 5% of events.

The table below presents the number of deaths and serious injuries by level crossing category. In addition, the following figures provide a graphic representation of the number of deaths and serious injuries by level crossing category.

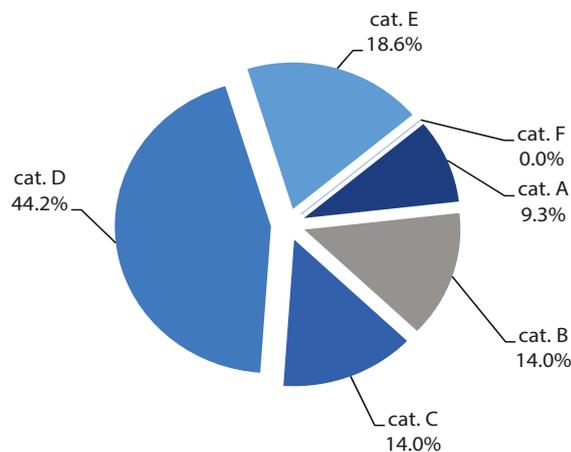
**Tab. 24: The number of injured in level crossing accidents in 2014 by category**

no.	crossing type	fatalities				serious injuries			
		2011	2012	2013	2014	2011	2012	2013	2014
1.	category A	8	5	3	4	0	6	5	0
	change	-	-37.5%	-27.8%	+33.3%	-	-	-16.7%	-100%
2.	category B	15	9	3	6	6	1	5	3
	change	-	-40.0%	-28.0%	+100%	-	-83.3%	+400.0%	-40.0%
3.	category C	12	7	9	6	13	6	7	4
	change	-	-41.7%	-22.6%	-33.3%	-	-53.8%	+16.7%	-42.9%
4.	category D	21	34	32	19	29	21	17	17
	change	-	+61.9%	+4.8%	-40.6%	-	-27.6%	-19.0%	0%
5.	category E <sup>1)</sup>	6	7	2	8	4	2	3	1
	change	-	+16.7%	-33.3%	+300%	-	-50.0%	+50.0%	-66.7%
6.	category F <sup>2)</sup>	0	0	3	-	1	0	0	-
	change	-	0%	+100.0%	-100.0%	-	-100.0%	-	0%
<b>7.</b>	<b>total</b>	<b>62</b>	<b>62</b>	<b>52</b>	<b>43</b>	<b>53</b>	<b>36</b>	<b>37</b>	<b>25</b>
	<b>change</b>	<b>-</b>	<b>0%</b>	<b>-16.1%</b>	<b>-17.3%</b>	<b>-</b>	<b>-32.1%</b>	<b>+2.8%</b>	<b>-9.6%</b>

1) pedestrian level crossings 2) private level crossings and pedestrian level crossings

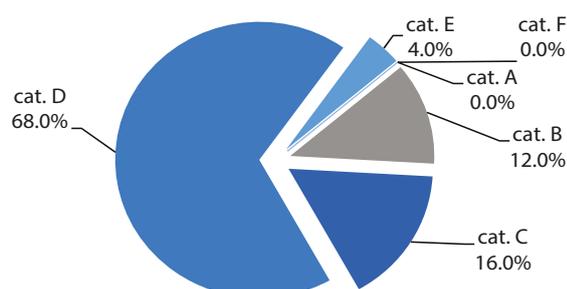
Source: prepared by UTK on the basis of the Railway Event Register data

**Fig. 92: Percentage share of fatalities by level crossing category in 2014**



Source: prepared by UTK on the basis of the Railway Event Register data

**Fig. 93: Seriously injured by level crossing category in 2014**



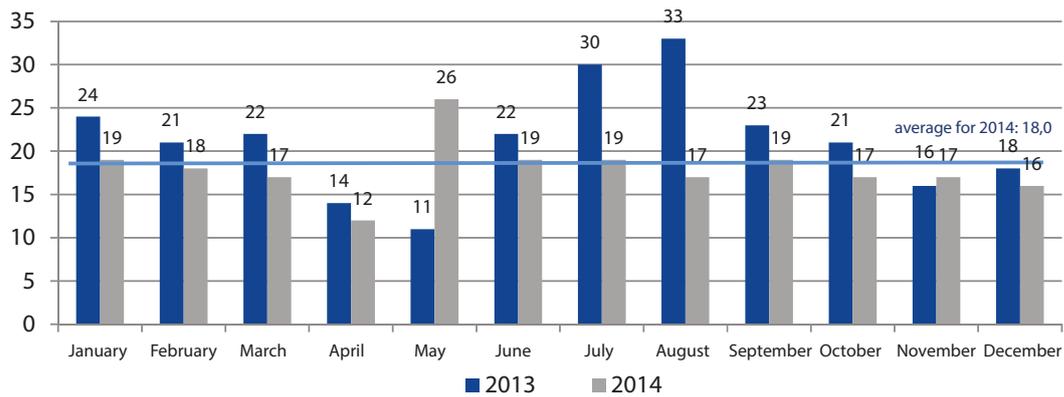
Source: prepared by UTK on the basis of the Railway Event Register data

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 A-category 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 available data show that the rates of level crossing accidents vary throughout the year, and are not rocketing in any particular period. The number of events was slightly above average in January, June, July and September, and the highest number of events took place in May. The chart below (fig. 94) presents the distribution of events in the years 2013-2014 by months of the year.

The analysis of data for all events allowed the identification of those level crossings where more than one event took place. These crossings had varying (without any specific pattern) accident frequency rates. The crossings are presented in the map below, and their exact locations are specified in table 25.

**Fig. 94: The number of level crossing and pedestrian level crossing events in 2013 and 2014 by month**



Source: prepared by UTK on the basis of the Railway Event Register data

**Tab. 25: Level crossings on which more than one event occurred in 2014**

no.	crossing type	station/path	number of events	line no.	km
1.	D	Radzymin – Emilianów	4	10	19.474
2.	D	Czerniewice – Włocławek	2	18	47.285
3.	D	Gryfice – Ploty	2	402	89.726
4.	C	Kąty Wrocławskie – Podg. Smolec	2	274	16.657
5.	D	Koźmin Wlkp. – Jarocin	2	281	87.530
6.	B	Modlin – Nasielsk	2	9	49.840
7.	D	Nida – Włoszczowice	2	73	18.595
8.	D	Opole Groszowice – Opole Główne	2	280	1.975
9.	D	Czerniejewo – Gębarzewo	2	281	150.188
10.	D	Rejowiec – Krasnystaw Fabryczny	2	69	1.422

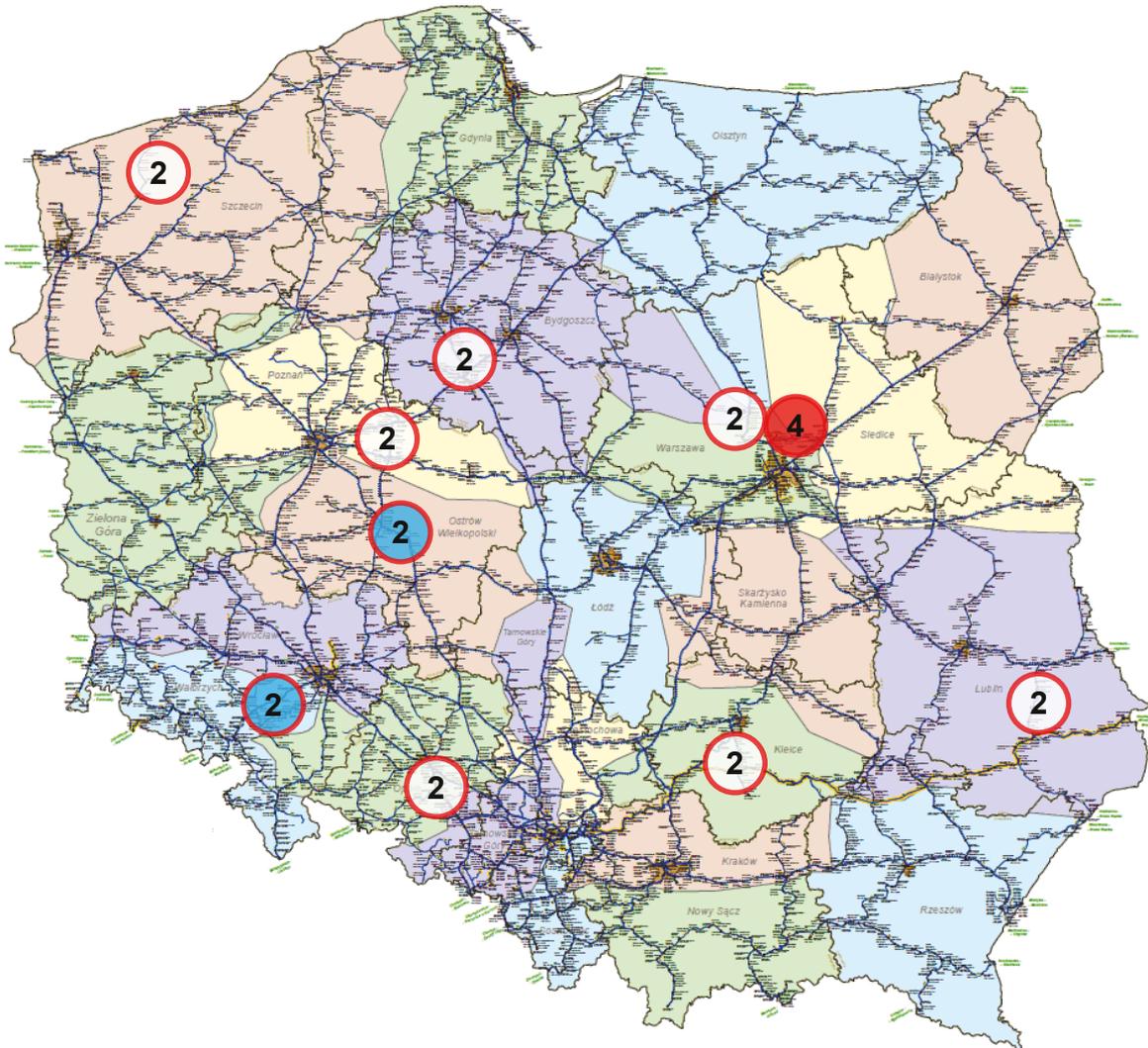
Source: prepared by UTK on the basis of the Railway Event Register data

It is worth noting that on two of the aforementioned level crossings (cat. D level crossing on the Koźmin Wielkopolski – Jarocin path, kilometre 87.530 of line 281 and cat. D level crossing on the Opole Groszowice – Opole Główne path, kilometre 1.975 of line 280), two events also took place in 2013.

Due to the occurrence of four accidents involving road vehicles on category D level crossing on kilometre 19.474 of line 10 over 3 months (from 20 February to 20 May 2014), the President of UTK initiated supervisory activities in respect of safety on the crossing in question.



Fig. 95: Level crossings on which more than one event occurred in 2014



Source: prepared by UTK on the basis of the Railway Event Register data and a map drawn up by PKP Polskie Linie Kolejowe S.A., [www.plk-sa.pl](http://www.plk-sa.pl)

## 8.4. Improving level crossing safety

As already mentioned, the bulk of accidents at one-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 accidents where failures of safety devices and gatekeeper errors are at fault). To improve level crossing safety, infrastructure managers undertake numerous investment and publicity efforts. The objectives being currently pursued include:

- To phase out level crossings and pedestrian level crossings (including illegal crossings) and replace them with tunnels or viaducts, or footbridges;
- To upgrade level crossings (to a higher category) by fitting them with additional warning and safety devices;
- To increase the maintenance of the existing level crossings and pedestrian level crossings;
- To run social campaigns and increase 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 over 96% of the public rail network and over 96% of 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 the period 2007–2014 on railway lines managed by PKP PLK S.A.

**Tab. 26: The number of active level crossings used on the railway lines managed by PKP PLK S.A. in the years 2007-2014**

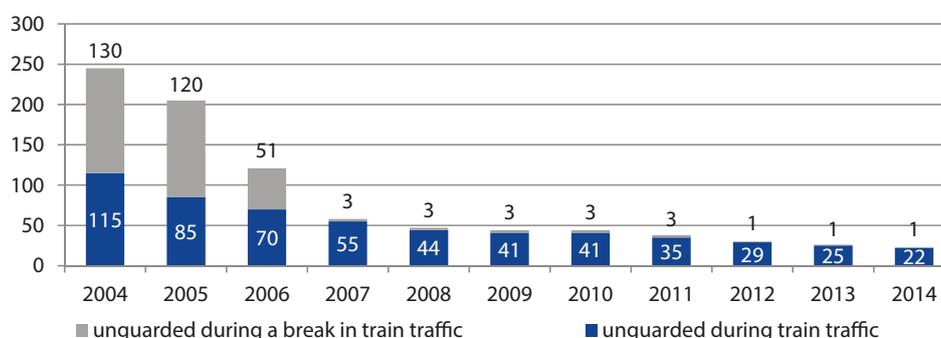
no.	year	cat. A	cat. B	cat. C	cat. D	cat. F	total
1.	2007	2 834	561	1 303	8 333	682	13 713
2.	2008	2 772 (-62)	645 (+84)	1 285 (-18)	8 362 (+29)	676 (-6)	13 740 (+37)
3.	2009	2 724 (-48)	665 (+20)	1 313 (+28)	8 314 (-48)	682 (+6)	13 698 (-42)
4.	2010	2 712 (-12)	684 (+19)	1 311 (-2)	8 270 (-44)	680 (-2)	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)

Source: prepared by UTK on the basis of data provided by the infrastructure manager (PKP PLK S.A.)

In order to improve safety, PKP PLK S.A. additionally puts level crossing warning signs (LCWS) along railway lines before technologically adapted crossings equipped with automatic signalling systems. The LCWS indicate to engine drivers whether level crossing devices are working properly (in which case trains may run at the maximum allowed train speed) or whether they have malfunctioned (in which case the train must slow down to 20 km/h). Malfunction also includes a blown bulb in a road signal device or an open or vandalised and broken-off half barrier. There are no devices, however, that warn rail vehicle drivers about obstacles (such as road vehicles) on level crossings.

A long-standing level crossing-related problem has 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 23 (including 22 crossings unguarded during rail traffic hours and 1 crossing unguarded outside rail traffic hours). For the number of category A level crossings with suspended operating personnel, based on data for the years 2004-2014 (as at 31 December 2014), see the figure below.

**Fig. 96: The number of Category A level crossings with suspended operating personnel within the rail network managed by PKP PLK S.A. in the years 2004-2014**



Source: the 2014 safety report by PKP PLK S.A.

The efforts undertaken by the infrastructure manager in the years 2004-2014 that facilitated a substantial reduction in the number of category A 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 is financially possible. In the years to come, the efforts addressing this problem will primarily include redevelopment and upgrade works as part of the “Safety improvement and elimination of operational hazards on level crossings” – stage I (Infrastructure and Environment Operational Programme 7.1-59) and stage II (Operational Programme Infrastructure and Environment 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 category A level crossings with suspended operating personnel and negligible rail traffic (e.g. on average 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. include the reconstruction of level crossings and pedestrian level crossings, together with their retrofitting with safety and/or warning devices. In many cases, the level crossings and pedestrian level crossings will be dismantled and replaced by viaducts (footbridges) or tunnels. While being the most expensive, building two-level crossings is by far the only fully effective method to eliminate the risk of accidents at intersections of railway lines and roads.

In 2014, 545 level crossings were upgraded within the PKP PLK S.A. network e.g. with automatic signalling systems (ASS devices), or retrofitted with CCTV. Also 163 rail and road viaducts were upgraded.

Redeveloping and upgrading level crossings is the subject of two separate investment projects. Below is some information on material scope, implementation status, schedule and expected outcomes (as at 31 December 2014) of the projects.

### Infrastructure and Environment Operational Programme, Action 7.1-59

*“Safety improvement and elimination of operational hazards on level crossings – stage I”*

The project is to upgrade 119 level crossings and its budget amounts to PLN 123 m.

Implementation status (as at 31.12.2014):

- the performance of 3 construction works contracts (3 proceedings were invalidated, the scope of the project was restricted) and 4 contracts for supervision and promotion services, is ongoing, the feasibility study and agreement on updating the preliminary documentation were drawn up;
- under the aforementioned project, 3 level crossings were constructed in 2014, the remaining ones are to be completed in 2015.

Detailed information on the material scope of the project is presented in the table below.

**Tab. 27: The material scope of the Infrastructure and Environment Operational Programme, Actions 7.1-59, stage I, and the Infrastructure and Environment Operational Programme, 7.1-80, stage II**

no.	current category	target category				total crossings
		A	B	C	E <sup>1)</sup>	
1.	A	3	23	1	---	27
2.	C	1	50	8	---	68
3.	D	15	72	128	---	215
4.	E	---	---	---	4	4
5.	<b>total crossings</b>	<b>19</b>	<b>145</b>	<b>137</b>	<b>4</b>	<b>305</b>

<sup>1)</sup>Category E with Category B devices

Source: the 2014 safety report by PKP PLK S.A.

The projects are expected to have the following outcomes:

- Reduced accident frequency rates;
- Improved rail and road traffic safety;
- Reduced number of level crossings without barriers, half barriers and signal lights, which have the highest accident frequency ratios;
- Eliminated rail and road traffic risks resulting from poorly maintained level crossing road surfaces and a high defectiveness of obsolete devices;
- Improved technical condition of poorly maintained road surfaces at level crossings;
- No more speed limits at level crossings where traffic factors reach threshold values;
- Current speed limits for trains removed;



- Improved quality of public transport systems.

**Infrastructure and Environment Operational Programme,  
Action 7.1-80**

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

The project is to upgrade 186 level crossings and its budget amounts to PLN 189 m.

Implementation status (as at 31.12.2014):

- 6 construction works contracts and 3 services contracts – for supervision, promotion, and the drawing up of a feasibility study;
- under the aforementioned project, 23 level crossings were constructed in 2014, the remaining ones are to be completed in 2015.

In order to improve safety at level crossings, PKP PLK S.A. also engages in publicity measures. This is especially important for category D level crossings, as almost all accidents they see 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 barriers or pass through barriers when they are being lowered. Consequently, the "Safe crossing – stop for your life" publicity campaign has been continuously propagated since 2005. This campaign is addressed to all road users (drivers, cyclists, pedestrians), both adults and children and young people, as well as to media, companies and institutions. The campaign is supported by governmental and non-governmental organisations, the police, the armed forces, fire departments, 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 Office of Rail Transport, through publicity and prevention activities at individual level crossings and promoting awareness among road vehicle drivers about the dangers of being insufficiently careful when crossing railway lines.





## 9. Vandalism within the railway network

**Acts of hooliganism endanger the safety of rail traffic and result in the temporary limitation or suspension of rail 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 of obstacles on tracks;
- Unauthorised emission of warning signals, resulting in the activation of the “Radiostop” system.

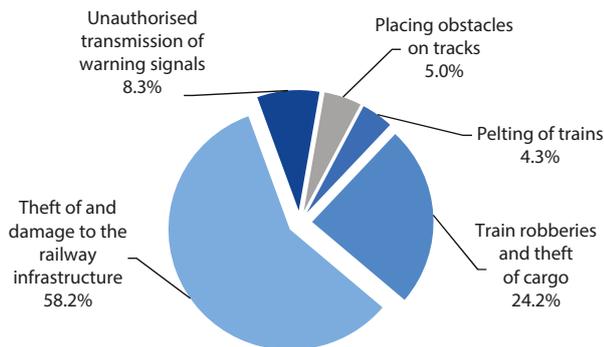
It should be noted that, in most cases, the perpetrators of these actions remain unknown. The possibilities of preventing such events are also limited, given the lack of the appropriate resources within the railway system, and especially the railway protection services.

This chapter features an analysis of particular types of vandalism within the railway network, based on the data gathered from infrastructure managers.

### 9.1. Theft of and damage to the railway infrastructure

Theft of and damage to railway safety devices (i.e. interlocking devices, electrical energy equipment and tele-information equipment) and railroad surface elements, constitute the major acts of hooliganism within the railway system, endangering the safety of rail traffic and resulting in the temporary limitation or suspension of rail traffic. As many as 4108 events of this kind were reported in 2014, with a strong prevalence of thefts (2941 cases). Damage to the railway infrastructure (1167 cases) accounted for ca. 30% of all events in question. It should be stated that when compared to the year before, the number of thefts (3399 in 2013) dropped by **13.5%**. Still, however, theft of and damage to the railway infrastructure comprise the bulk – more than 58% – of all acts of vandalism recorded on the active railway lines in 2014. The percentage share of various types of vandalism is presented below.

**Fig. 97: The percentage share of various categories of vandalism within the railway network reported in 2014**



Source: prepared by UTK on the basis of data provided by infrastructure managers

In 2014 cases of theft of and damage to the railway infrastructure were reported countrywide, with their highest frequency recorded in the Śląskie and Dolnośląskie Provinces, as presented in the table below. These events comprised nearly half of all recorded thefts and cases of damage throughout the whole of Poland in 2014.

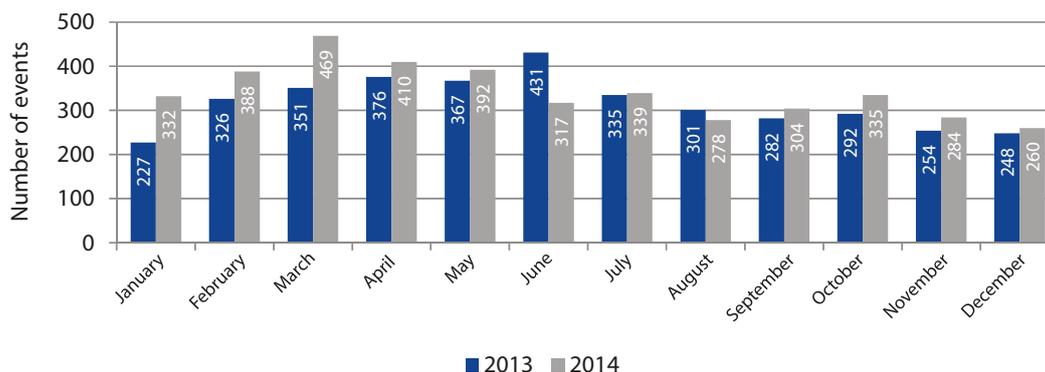
**Tab. 28: The provinces with the most events involving the theft of and damage to the railway infrastructure in Poland in 2014**

no.	province	number of events	percentage share
1.	Śląskie	1054	25.7%
2.	Dolnośląskie	757	18.4%
3.	other provinces	2297	55.9%
4.	<b>total</b>	<b>4 108</b>	<b>100%</b>

Source: prepared by UTK on the basis of data provided by infrastructure managers

In 2014 the number of cases of theft of and damage to railway infrastructure varied, as illustrated in the chart below. Most cases occurred in March, April and May – 469, 410 and 392 respectively, and the least in December – 260. Over the course of two years we could observe an increase in the number of cases of theft of and damage to the railway infrastructure in spring months, and a decrease in winter months.

**Fig. 98: The theft of and damage to the railway infrastructure in Poland in 2013 and 2014 by month**



Source: prepared by UTK on the basis of data provided by infrastructure manager

A large number (over 57%) of cases of theft of and damage to the railway infrastructure in 2014 involved interlocking devices, which are crucial for the safety of rail traffic.

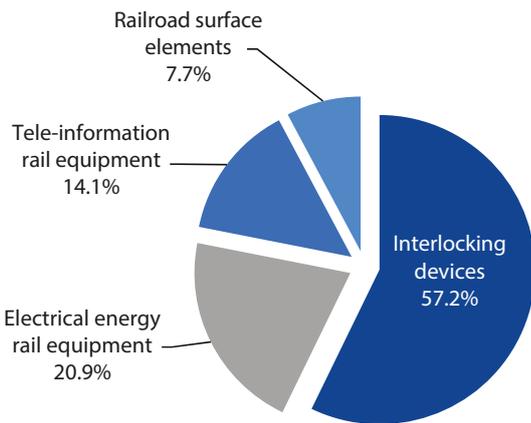
**Tab. 29: Property stolen or damaged in 2014**

no.	property stolen or damaged	number of events	percentage share
1.	interlocking devices	2 349	57.2%
2.	electrical energy rail equipment	860	20.9%
3.	tele-information rail equipment	581	14.1%
4.	railroad superstructure elements	318	7.7%
5.	<b>total</b>	<b>4 108</b>	<b>100,0%</b>

Source: prepared by UTK on the basis of data provided by infrastructure managers

A large number (over 57%) of cases of theft of and damage to the railway infrastructure in 2014 involved interlocking devices

**Fig. 99: The percentage share of various groups of railway theft and damage targets**



Source: prepared by UTK on the basis of data provided by infrastructure managers

The theft of and damage to such devices result primarily in defects and malfunctions of railway interlocking devices, which leads to lower traffic safety. Due to the fact that interlocking devices constitute a complicated and intertwined system, the theft of even a small element can result in the inability to manage rail traffic in an organised manner on 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. Most of all, they result in delays and cancellations of trains due to the limited path capacity and reduced train speed. In extreme cases, the theft of particular devices can result in long-term traffic suspension and the necessity to establish auxiliary lines of communication. The

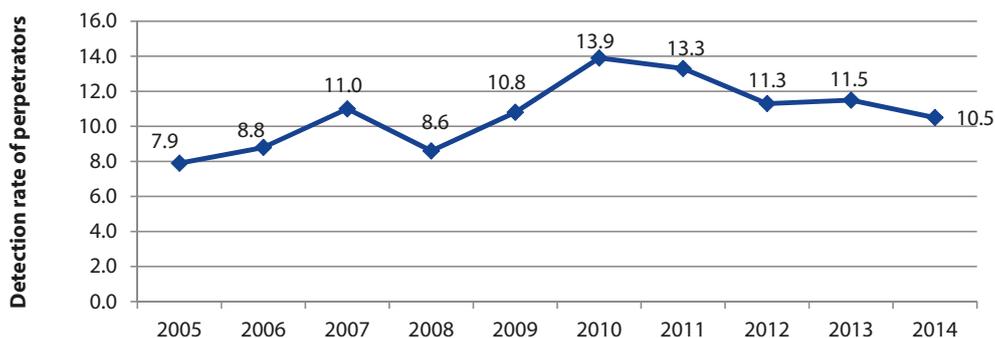
incidences of the theft of electrical energy equipment, such as traction network devices, have particularly severe consequences for the railway system. They result in considerable train delays, lasting up to over a dozen hours, resulting from the necessity to rebuild the damaged line devices, to provide diesel locomotives or to temporarily divert rail traffic.

**In 2014 passenger train delays caused by the theft of or damage to the railway infrastructure reached a total of 78 708 minutes, i.e. over 54 days**

For instance, in 2014 passenger train delays caused by the theft of or damage to the railway infrastructure reached a total of 78 708 minutes, i.e. over 54 days. It is worth pointing out that frequent incidents of this type, resulting in delays and disturbances to rail traffic, have an adverse impact on the image of railway transport and the services offered by specific railway undertakings. Freight train delays were even more serious in 2014. These are not so noticeable by the community; however, they still generate costs and translate into the disorganisation of the operation of undertakings that do not receive their cargo on time. Freight train delays amounted to 244 405 minutes, i.e. nearly 170 days in the period in question.

Moreover, the detection rate of theft perpetrators is low. As revealed by data provided by the Railroad Guard, when compared to the year before, it decreased and equals 10.5%.

**Fig. 100: The detection rate of the perpetrators responsible for the theft of and damage to traffic safety devices (in %)**



Source: prepared by UTK on the basis of data provided by the Railroad Guard Headquarters

The cases of theft of and damage to the railway infrastructure also generate considerable economic costs incurred by infrastructure managers. The cost of restoring devices responsible for the safe management of rail traffic (interlocking devices, tele-information rail equipment, and electrical energy rail equipment) are estimated by railway infrastructure managers at nearly PLN 14 m.

The above shows that the occurrence of the theft of and damage to railway infrastructure brings serious consequences to

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 play an important role. The majority, if not all, of the elements stolen from railway premises eventually reach scrap yards, where they are sold for cash.

As a follow-up to the activities undertaken in 2012, the President of UTK is participating in the work being part of „The memoran-

dum on cooperation towards counteracting the incidences of infrastructure theft and damage."The Memorandum, launched 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. Theft and property damage prevention measures carried out by the police also support this issue, which contributes to joint activities.

Under the "Steadfast - Infrastructure Protection" Foundation established by the signatories of the Memorandum, 2014 saw work on the creation of an online platform for gathering data on infrastructure theft and damage affecting the respective sectors. The functionality tests of the application are scheduled for 2015 and its full launch, including all functions – for 2016.

In 2014 the Memorandum established cooperation with the Security Partnership Against Metal Theft in Germany (SIPAM), a similar organisation operating in Germany. The partners signed a letter of intent on cross-border cooperation to combat and prevent metal theft, and intensify cooperation in this regard.

Furthermore, it is important to note additional activities carried out by the largest infrastructure manager in the field of preventing theft of and damage to the infrastructure. Due to the large scale of infrastructure element theft, which is evident not only in the country, but also in other EU Member States, international cooperation was established to prevent these dealings. As part of international initiatives, on 21-22 May 2014 anti-theft activities under the 2nd edition of the "European Metal Theft Action Day" were carried out in the field of railways. These activities were the 2nd part of the 2014 Action Plan implemented under the European Multidisciplinary Platform Against Criminal Threats (EMPACT) programme.

On 6-7 November 2014 international operations codenamed "RED GOLD" were conducted. Their aim was to prevent non-ferrous metal, including copper, thefts. These anti-theft actions, organised under Italian Presidency, were conducted simultaneously within the entire European Union, including Poland. The Railroad Guard participated in these activities alongside other services responsible for public safety.

## 9.2. Train robberies and theft of cargo

The second category of problematic events includes train robberies often connected with the theft of cargo from rail wagons. In 2014 a total of 1707 events of this kind were reported countrywide, which accounted for 24.2% of all offences committed by hooligans that were monitored in 2014 at the request of the President of UTK. The number of events of this kind **decreased by 15.9%** in relation to the year before.

This category of acts of hooliganism committed within the railway network includes so-called dumping, which means intentionally opening 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 the cargo from the tracks, and the remains become an easy target for thieves. A train can drive into the remaining cargo, which can lead to an accident.

For instance, in 2014 there were two accidents resulting from collisions with metal elements thrown out of a wagon (Zabrzeg Biskupice station, 29 January 2014, and Bytom Bobrek station, 22 August 2014). As a result, train delays reached 481 minutes (including 46 minutes of passenger trains delays), and were associated with costs higher than PLN 274 thous.

Most cases of train robberies and theft of cargo were recorded in the Śląskie Province – 84.9% of all such events. This might have resulted from the proximity of coal mines, as coal constitutes the most frequent target of the theft of rail wagon cargo. Other goods stolen from trains include coke, scrap, elements of transported cars and even fuel from tankers.

With the aim of supporting the railway protection services supervised by infrastructure managers, railway undertakings often hire property protection agencies, specialising in providing services to the railway sector, to protect specific trains. The employees of these agencies guard the train both while it is moving and when it stops. Such protection covers not only coal and coke trains, but also trains carrying liquid fuels and cars.

Moreover, railway undertakings are attempting 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. RUs operating newer rolling stock have an easier task, as their wagons cannot be unloaded from the side (only from the top), which eliminates the danger of having the side wagon doors opened.

Finally, it is worth stressing that underhand dealings involving the theft of rail wagon cargo sometimes lead to an unhappy ending for the perpetrators themselves. On 19 February 2014, while stealing coke from a train standing at Częstochowa Mirów station, the perpetrator fell from a wagon as the train began to move. He died due to sustained injuries.



### 9.3. Pelting of trains

Another problem related to vandalism on railway lines being monitored by the President of UTK involves the cases of trains being pelted with stones or other objects that are usually thrown off viaducts and footbridges located over the tracks. They constitute a serious problem which diminishes the safety of rail transport. In 2014 the number of such cases amounted to 301, which accounted for nearly 4.3% of total vandalism acts presented in this chapter. When compared to 2013, this was a **22.4% decrease** in the number of cases of pelting of trains (from 388 to 301).

**Pelting of trains can lead to injuring train drivers, who are crucial to assuring the safety of moving trains**

In 2014 most cases of pelting of trains occurred within the Mazowieckie – 70 cases, Śląskie – 51 cases, and Wielkopolskie Provinces – 32 cases, which counted for more than half of all reported cases of pelting of trains. These data are presented in the table below.

**Tab. 30: Pelting of trains in 2014**

no.	province	number of events	percentage share
1.	Mazowieckie	70	23.3%
2.	Śląskie	51	16.9%
3.	Wielkopolskie	32	10.6%
4.	other provinces	148	49.2%
<b>Total</b>		<b>301</b>	<b>100,0%</b>

Source: prepared by UTK on the basis of data provided by infrastructure managers

Pelting of trains is a real threat to train traffic safety. Sometimes pelting of trains can lead to injuring train drivers, who are crucial to assuring the safety of moving trains. One can easily predict the consequences of a train driver being hit with a stone, losing consciousness and control over the train. In 2014 there were 5 cases of glass being broken due to pelting of trains. Luckily no one was injured, yet the costs of such events were estimated at nearly PLN 25 thous.

### 9.4. Obstacles on tracks

The placing of obstacles on railway tracks constitutes another category of vandalism. The total number of cases of intentionally

placing obstacles on railway tracks in 2014 reached 353, which accounted for 5.0% of all acts of hooliganism monitored by the President of UTK. In relation to the year before, there was an **11% increase** in the number of cases of obstacles being placed on railway tracks (from 318 to 353). The most frequent objects placed on railway tracks are stones, branches and logs, but sometimes they also include concrete slabs and other heavy objects.

The events in question took place mainly in the Śląskie – 95 cases, Mazowieckie – 41 cases and Wielkopolskie Provinces – 37 cases, which accounted for more than half of all recorded events associated with the placing of obstacles on tracks.

**Tab. 31: The cases of placing obstacles on tracks in 2014**

no.	province	number of events	percentage share
1.	Śląskie	95	26.9%
2.	Mazowieckie	41	11.6%
3.	Wielkopolskie	37	10.5%
4.	other provinces	180	51.0%
<b>Total</b>		<b>353</b>	<b>100,0%</b>

Source: prepared by UTK on the basis of 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 stopping. 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 in terms of the possibility of the continuation of its journey and the identification of any potential damage, and also can lead to the suspension of rail traffic, depending on the scale of sustained damage. 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.

The financial consequences of such events can also be significant. For instance, the event that occurred on 18 October 2014 on the Jabłonowo Pomorskie – Mełno line, resulting in damage to the railbus which had hit an obstacle consisting of concrete poles, generated losses nearing PLN 70 thous.

Nevertheless, one should note that most situations related to the placement of obstacles on tracks have relatively small

**Each collision with track obstacles creates the need to inspect the train to determine whether the journey can be continued and to identify any potential damage, and also can lead to the suspension of rail traffic**

consequences. Some obstacles are removed by the train staff who manage to stop the train in time before it hits the obstacle. Therefore, it can seem that the issue of obstacles on tracks is currently not crucial to railway safety but the President of UTK has decided that it should be monitored in order to assess 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 the lack of response from the relevant authorities can further encourage potential perpetrators.

It also seems that, similarly to the previously discussed problem of the pelting of trains, the events consisting of placing obstacles on railway tracks might partly stem from the lack of other attractive free-time activities available to teenagers, and from the low awareness of the possible threats. One effective form of preventing such events would, therefore, be to launch social campaigns raising the awareness of the possible dangers stemming from such actions and encouraging the public to intervene when seeing any attempts to commit such offences.

## 9.5. The unauthorised transmission of Radiostop signals

The unauthorised transmission of Radiostop signals through the railway radio communications system, which results in the activation of the Radiostop system, is yet another act of vandalism 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 railway communication device that starts to transmit a special sound signal, following which the self-braking devices are switched on to stop all railway vehicles within reach. This solution is used as a method to stop every train in the vicinity of the signal emitter in cases of emergency.

In 2014 there were 584 recorded cases of the unauthorised transmission of "Radiostop" signals, with most occurring in the Mazowieckie – 128, Małopolskie – 121 and Śląskie Provinces – 63, which accounted for more than 50% of all events of this kind. These data are presented in the table below.

**Tab. 32: The cases of the unauthorised transmission of "Radiostop" signals in 2014**

no.	province	number of events	percentage share
1.	Mazowieckie	128	21.9%
2.	Małopolskie	121	20.7%
3.	Śląskie	63	10.8%
4.	other provinces	272	46.6%
	<b>Total</b>	<b>584</b>	<b>100,0%</b>

*Source: prepared by UTK on the basis of data provided by infrastructure managers*

The transmission of Radiostop signals by unauthorised persons can also lead to a railway event. For instance, on 29 April 2014 an event of sudden train braking took place on the Gliwice Łabędy – Szobieszowice path, which caused losses in rolling stock and infrastructure estimated at more than PLN 40 thous.

**After a "Radiostop" emergency signal is transmitted, all traction vehicles within reach are stopped**





## 10. Dangerous goods transport safety

The transport of dangerous goods is regulated by the “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 stems 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 legislation by the Transportation of Dangerous Goods Act of 19 August 2011.

An 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 activities that prevent personal, property and environmental risks arising from the transport of dangerous goods. The conditions that one must meet 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 their knowledge on the transported cargo. The widest 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 he/she places warning stickers 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 sufficient level of safety of the transported goods. It is necessary to unconditionally enforce the applicable rules and regulations in the transport practice to prevent this growth in the transport of dangerous goods from being associated with a simultaneous increase in danger and probability of event or accident.

The most important tasks of the President of UTK in respect of the transport of dangerous goods by rail include the supervision and control over the observance of obligations by railway undertakings, infrastructure managers and side-track users. The activities of the President of UTK in this field are described in Chapter 13.

### 10.1. Events involving dangerous goods

The system of monitoring the transport of dangerous goods is maintained on the basis of reports prepared by advisers on the safety of 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 Art. 40 (2) of the Transportation of Dangerous Goods Act;

- “A report on events that took place during the transport 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, or rolling-stock or environmental damage, or in the event of an intervention by the authorities. In addition to the aforementioned obligation, there are also additional criteria depending on the transport of specific classes of materials.

In 2014 UTK received seven “Reports on events that took place during the transport of dangerous goods” which informed of events involving dangerous goods, as required by RID or Appendix 2 to SMGS, i.e. two more than in 2013.

Three out of the aforementioned events took place at stations, two in the loading site and two en route. Two cases involved the release of the cargo, three cases – derailment or overturning of a wagon, one – loss (small leakage, in this case attributable to valve leakiness), and one event was qualified as an event of other type (loading of dangerous goods to tanks that did not meet the relevant requirements). The causes of events were usually associated with use (i.e. were caused by inappropriate use of the rolling stock), and only one event was caused by a technical fault. One person got injured in the aforementioned events. There were no deaths.

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 these events were leaking valves, load decompression resulting from overloading and elevated temperature or activities of third parties (track incursions). When compared to 2013, in which information about 20 incidents was collected based on annual reports filed by advisers, the number of 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 a similar level. The causes of the events in question were also similar, as in 2013 the most common causes of malfunctions were leaking valves, load decompression resulting from overloading and elevated temperature or tank damage.

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.

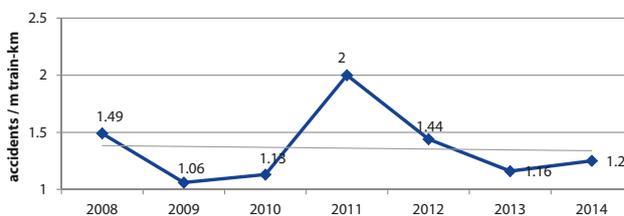
**Tab. 33: The number of events during the transport of dangerous goods in the years 2008-2014**

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	1.25

Source: prepared by UTK on the basis of “Annual reports on activities in the transport of dangerous goods” for 2008-2014

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

**Fig. 101: 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 2008-2014

On the basis of the above-presented data it should be stated that both the volume of the transport of dangerous goods and the number of events remained in 2014 at a level similar to the year before. This resulted in the failure rate in the transport of dangerous goods remaining at a level similar to 2013.

In 2013 it amounted to 1.16, while in 2014 it equalled 1.25. Of note is also the fact that last year, similarly to the year before, there were no events that caused deaths or substantial losses. However, it should be highlighted there were two cases of derailment, and such events can have particularly dire consequences. On the other hand, considering the positive aspects of the situations in question, it should be stated that more serious events were prevented owing to the vigilance of the personnel, which proves the high level of their training and responsiveness to issues connected with the transport of dangerous goods.

When it came to the level of safety of the transport of dangerous goods by rail in 2014, taking into account the volume of transport of dangerous goods (approx. 21 m tonnes a year) and the number of accidents (in 2014 only 7 serious events were reported, with only 1 person injured), it can be stated that the safety of the transport of dangerous goods by rail did not deteriorate in relation to the preceding year.

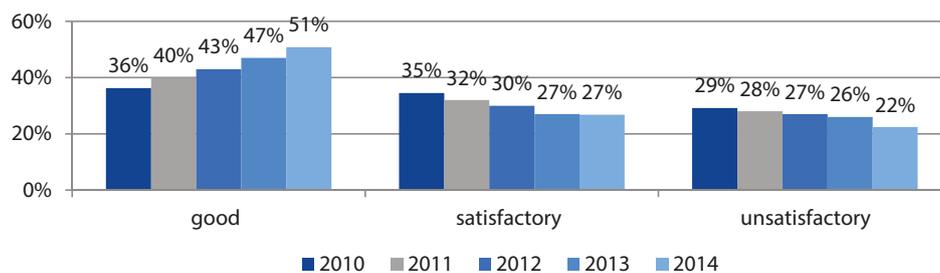


## 11. The assessment of technical state of railway infrastructure

The largest railway infrastructure manager in Poland, PKP PLK S.A., which holds more than 96% of the whole generally accessible railway network, in its "Safety report for 2014" submitted to the President of UTK, assessed that the state of 22% of infrastructure was unsatisfactory (including 3% in bad condition) and 27% was satisfactory. In total, this makes up 48% 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 2014, as at 31 December 2014, a 4% improvement, in relation to the state as at 31 December 2013, was recorded.

**Fig. 102: The assessment of technical state of railway infrastructure of PKP PLK in the years 2010-2014**



Source: prepared by UTK on the basis of data from the 2014 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 in need of replacement, no restrictions;
- Satisfactory – up to 30% of surface elements in need of replacement, reduced maximum time-table speed or speed limits;

- Unsatisfactory – unsatisfactory condition – comprehensive replacement required, maximum time-table speed reduced significantly or numerous speed limits.

Modernization and other activities connected with the improvement of the state of railway lines are one of the most important tasks completed by PKP PLK S.A., which are financed by the company as a national manager both from its own resources and from a State subsidy.

The Company runs a wide-scale programme of modernization and revitalization of railway lines. The scope of individual inve-

stment projects usually includes comprehensive replacement of railway superstructure, railway traffic control devices and (traction and non-traction) electrical energy equipment, as well as modernization of one-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, conducted with the use of modern technology, facilitate substantial improvements in performance parameters of the railway lines (mainly the maximum permissible speed) while at the same time maintaining, but more often improving, the level of railway traffic safety.

It is expected that on the sections of railway lines that underwent modernization or revitalization the risk of events or operational difficulties due to poor technical state of infrastructure and/or infrastructure failures will be significantly 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 2014, PLN 7 145.5 m were spent on investment works conducted on the railway network managed by PKP PLK. As many as 1 393 km of tracks, 1 474 crossovers and 545 level crossings have been upgraded, also 98 two-level crossings were constructed.

As a result of modernization works, the condition of infrastructure is gradually improving, but its quality should still be assessed as falling short of meeting both needs and standards. Due to the technical condition, operational restrictions are being introduced to ensure the safe train traffic. This results in extended travel times, making rail transport less attractive, mainly by maximum timetable speed reductions. A detailed presentation of speed limits by cause is demonstrated in the table below.

**Tab. 34: The selected causes of temporary and permanent train speed limits**

no.	the cause of speed limit introduction	31.12.2013 r.		31.12.2014 r.		difference	
		number [pcs]	over a distance [km]	number [pcs]	over a distance [km]	number [pcs]	over a distance [km]
1.	poor technical condition of the track	3254	2338	1263	1366	-1991	-972
2.	poor technical condition of the facility	475	38	359	36	-116	-2
3.	poor condition of rail traffic control devices	245	65.254	145	28.753	-100	-36.501
4.	on level crossings	1252	150	1108	140	-144	-10
5.	next to works sites	46	57	37	61	-9	4

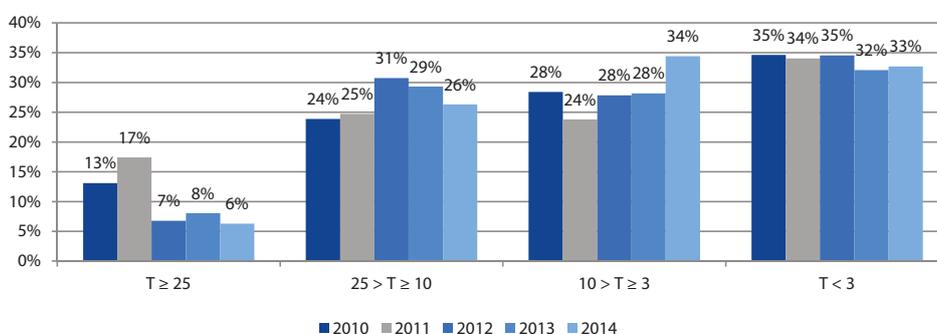
Source: prepared by UTK on the basis of data from the 2014 safety report by PKP PLK S.A.

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 bad technical condition of the track, this difference amounted to more than 60%, and, when it came to bad technical condition of rail traffic control devices, to over 40%. However, despite extensive repair & modernisation works conducted within the railway network and the lower number of speed restrictions, the poor 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 proportion of lines on which annual transport load in 2014 exceeded 25 m tonnes per annum decreased from 8% to 6%. The most numerous group among the operated lines were those on which transport load exceeded 3 m tonnes per annum. This group recorded an increase from 28% to 34%.

**Fig. 103: The share of railway line length by average annual transport load in the years 2010-2014**

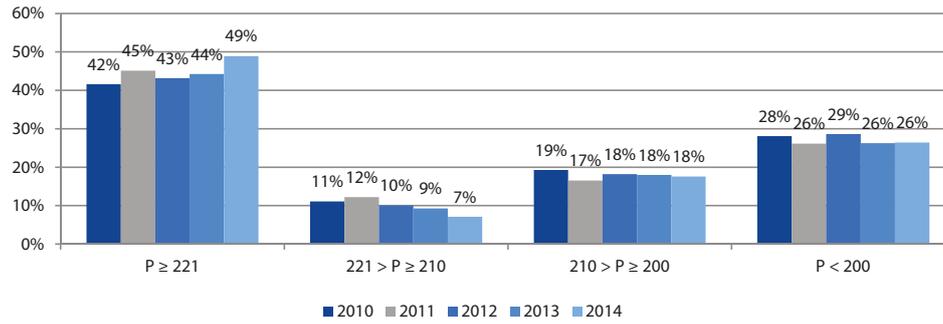


Source: Prepared by UTK

In 2014 the proportion of railway lines with a permissible axle load exceeding 221 kN (kilonewtons) – equal to or greater than 22.5 tonnes per axle – increased from 44% to 49%. The lines

with a permissible load between 210 and 221 kN continued to be in minority, with their proportion dropping from 7% in 2013 to 9% in 2014.

**Fig. 104: The share of railway line length by permissible axle load in the years 2010-2014**

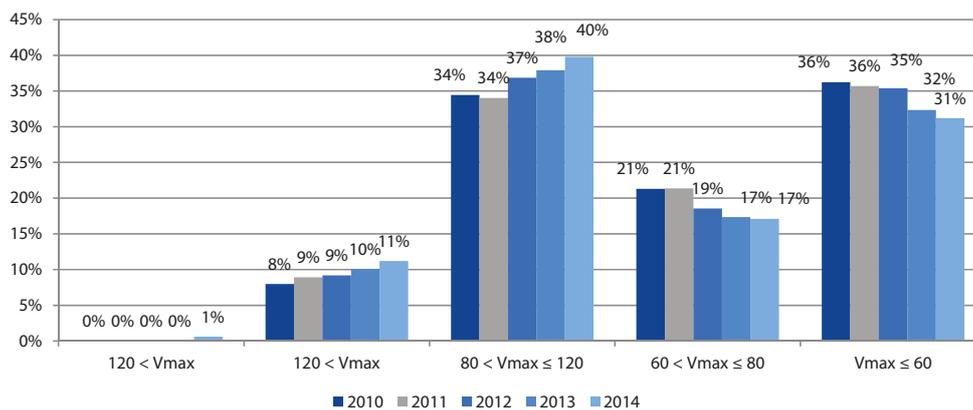


Source: Prepared by UTK

The Polish railway infrastructure still makes it impossible to carry out transport activities at speeds exceeding 160 km/h. Lines facilitating rail traffic at 120-160 km/h make up only 10% of the whole network. Currently, efforts are being made to adjust selected line sections to allow train speed exceeding 160 km/h. As planned by the PKP PLK S.A., the infrastructure

manager, the selected sections of the Central Railway Main Line, and ultimately the whole line, will facilitate rail traffic at a speed up to 200 km/h. This requires the elimination of all level crossings and the implementation of the European Rail Traffic Management System (ERTMS).

**Fig. 105: The share of railway line length by maximum speed in the years 2010-2014**



Source: Prepared by UTK

At the end of 2014, 11% of lines were suitable for speeds exceeding 120 km/h. This percentage has been slowly increasing since 2010. An increase was also observed in the proportion of lines facilitating train speed within the 80-120 km/h range (from 38% to 40%). Similarly to the preceding year, 2014 saw a decrease in the proportion of lines facilitating train speed up to 60 km/h (from 32% to 31%). Lines which allow train traffic at speeds exceeding 160 km/h, whose length is 174 km, currently make up less than 1% of all lines.





## 12. The assessment of 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, which makes the presentation of coherent and reliable information on this issue, within this assessment, a very difficult task.

Data provided by railway undertakings are still characterised by significant discrepancies in the manner of information presentation, despite measures undertaken by the President of UTK to devise a coherent methodology, which can be found in "Guidelines" on the preparation of Safety Reports available on the UTK's website, allowing easy analysis and aggregation of the said information.

In addition, due to very limited time between the statutory deadline for the filing of the annual Safety Report by railway undertakings and infrastructure managers, and the time limit for the handing over of this Assessment, it is impossible to explain in all doubts about the data provided by the aforementioned entities to guarantee their coherence and quality. Only the utilisation of a uniform methodology of describing the technical state of railway vehicles by their owners or keepers will make it possible to aggregate data from various entities, and to draw appropriate conclusions at the sectoral level.

Based on the material collected from annual Reports filed by the entities, it was possible to diagnose specific problems that were identified on the basis of data pertaining to approx. 70-80% of vehicles.

### 12.1. The technical state of rolling stock

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, as well as the shortage of locomotives suitable for high-speed travels. Only a small percentage of passenger rolling stock is designed to carry disabled persons.

When it comes to freight transport, the main problem is the low number of wagons adapted for new transport technologies and the advanced average age of these wagons. As many as 66% of railway undertakings assessed the state of freight wagons as good or very good.

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, electric multiple units (regional trains) and diesel engine vehicles, and also electric railbuses. As many as 55% of railway undertakings assessed the state of passenger wagons as good or very good.

### 12.2. Rolling stock failure rate

When exploring the issue of the technical state of railway vehicles within this chapter, the President of UTK focused on analysing information regarding risks associated with rolling-

-stock operation, as obtained from devices for the 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 both the rolling stock itself and railway infrastructure. Early malfunction detection makes it possible to safely provide transport services, 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 2014 devices for detection of state of emergency in rolling stock (DSAT) installed on railway lines managed by PKP PLK S.A. generated in total 12 189 alarm signals, 8 494 of which constituted cases confirmed by an authorised employee. Unconfirmed information (approx. 20%) was generated due to irregularities in the functioning of DSAT devices.

These devices detected 918 cases of overheated axle-boxes in vehicles (692 alarms and 226 warnings), including 624 cases confirmed by an authorised employee of the railway undertaking, each of which should be treated as a potential derailment due to axle damage.

Most state-of-emergency cases in rolling stock detected by DSAT devices – 3 994 – concerned overheated brakes (614 alarms and 3 380 warnings), including 2 201 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, consequently, a railway accident.

The next group – 3 625 cases – concerned excessive dynamic loads – abnormal blows in the railroad bed, which was also important in respect of infrastructure operation. Detecting such a state of emergency results in a withdrawal of a locomotive or wagon from operation.

As many as 2 668 cases concerned wheel-ring deformations (1 265 alarms and 1 403 warnings), only 1 060 of which were confirmed cases. Wheel-ring deformations cause faster infrastructure wear, which is important from the point of view of infrastructure use.

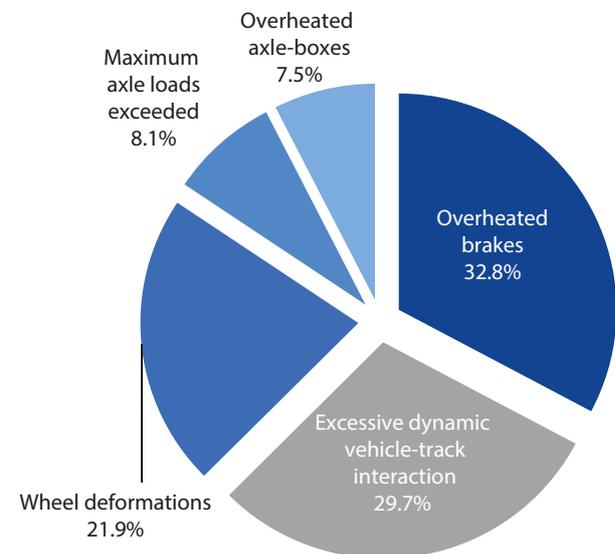
Furthermore, DSAT devices detected 984 cases of exceeding standard axle loads, associated with wagon overloading.

**Tab. 35: Alarm signals generated by DSAT devices**

no.	states of emergency detected	number of states of emergency	share [%]
1.	overheated brakes	3 994	32.8%
2.	excessive dynamic vehicle-track interaction	3 625	29.7%
3.	wheel deformations	2 668	21.9%
4.	maximum axle loads exceeded	984	8.1%
5.	overheated axle-boxes	918	7.5%
6.	<b>total</b>	<b>12 189</b>	<b>100,0%</b>

Source: prepared by UTK on the basis of data from the 2014 safety report by PKP PLK S.A.

**Fig. 106: The structure of alarm signals generated by DSAT devices in 2014**



Source: prepared by UTK on the basis of data from the 2014 safety report by PKP PLK S.A.

The proportion of respective states of emergency in rolling stock, as detected by DSAT devices installed in railway lines managed by PKP PLK S.A., is presented in the table above and the accompanying chart.

In 2014, as part of the development of DSAT devices, the infrastructure manager took measures to centralise services in respect of maintaining devices for the detection of state of emergency in rolling stock, continuing the installation of new devices in modernised railway lines, and to amend "The technical and operating guidelines for devices for detection of state of emergency in le-3 rolling stock" in view of fast technological, operational and technical changes recorded since the adoption of these guidelines.

Furthermore, "The guidelines on the drawing up of regulations for use of terminals for devices for detection of state of emergency in running le-3 rolling stock" that regulate and clarify issues connected with the use of terminals for DSAT devices,

Rolling stock failure rate

and govern cooperation between railway undertakings and infrastructure managers, were devised. This will greatly contribute to the improvement of rail traffic safety.

Under the Infrastructure and Environment Operational Programme, DSAT devices were continued to be implemented as part of railway line modernisation:

- within IEOP 7.1-1.4 project “Modernisation of the E 65/C-E 65 railway line, Warsaw–Gdynia section (upper-level equipment for local control centres, ERTMS/ETCS/GSM-R, DSAT and power supply for traction equipment)”, 9 DSAT devices were replaced with new ones in the Warsaw–Gdynia section, track Nos.1 and 2;
- within IEOP 7.1-30 project “Modernisation of the E 30/C-E 30 railway line, Kraków–Rzeszów section”, 4 DSAT devices

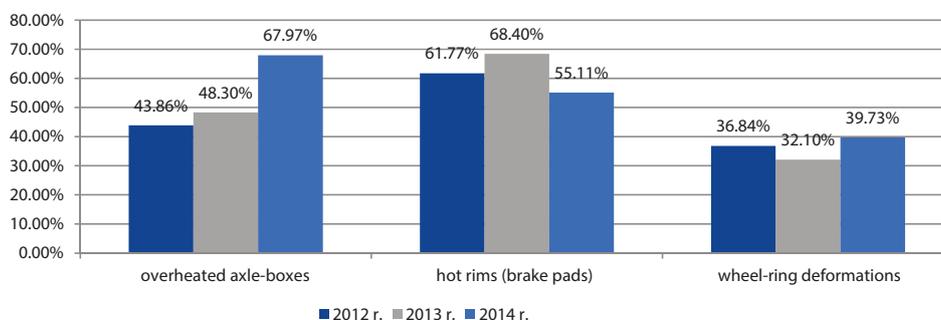
were replaced with new ones in the Kraków–Rzeszów section, track Nos. 1 and 2;

- within IEOP 7.1-1.4 project “Modernisation of the E 59 railway line, Wrocław–Poznań, Stage II section Wrocław – Dolnośląskie Voivodeship border” 1 device was replaced in 2013.

The implementation of modernisation-oriented projects will make it possible to detect and eliminate defective rolling stock that causes faster railway wear (rail and crossover cracks) and poses a risk to rail traffic safety. The new devices conform with basic railway interoperability requirements included within TSIs.

The chart below presents the percentage share of actual states of emergency identified by DSAT devices.

**Fig. 107: The confirmability ratio of states of emergency indicated by DSAT devices in PKP PLK S.A. in the years 2012-2014**



Source: the 2014 safety report by PKP PLK S.A.





## 13. Supervision over rail market entities

Supervision over rail traffic safety is carried out on the basis of the supervision strategy and plan of the President of UTK. The main objective behind the preparation of the annual supervision plan of the President of UTK is to specify priority measures for a given year (these priorities are defined on the basis of the analyses conducted, concerning, among other things, the frequency of accident occurrences, operational performance, the validity dates of certificates, the impact of operational difficulties, and the degree of deterioration of the railway infrastructure), as well as to coordinate deadlines and rules for nationwide measures. Only by strategic measures and consequent execution of plans will it be possible to diagnose and resolve basic problems on the railway market.

The supervision priorities adopted by the President of UTK for 2014:

1. Supervision of entities holding safety certificates, authorisations and attestations.
2. Supervision of entities holding safety certificates, authorisations and attestations in the course of the re-certification process.
3. Supervision of certificates issued to entities in charge of the maintenance of railway vehicles, and certificates regarding maintenance functions.
4. Supervision of the validity of using auxiliary signals.
5. Supervision of the infrastructure condition and maintenance process.
6. Supervision of the safety of rail traffic in the course of investment work within the railway infrastructure.
7. Supervision of the technical condition, maintenance process and classification of intersections of railway lines with public roads.
8. Supervision of the training centres entered in the list of entities authorised to conduct training and examination of train driver's licence and certificate candidates, and the operational mode of examination boards established within those centres.
9. Supervision of the compliance with working time regulations and qualification of persons occupying the positions directly connected with railway traffic control and safety, and drivers of specific types of railway vehicles and underground vehicles.
10. Supervision of the diagnostics of the state of emergency of the rolling stock.
11. Supervision of the maintenance and operation of rail vehicles.
12. Supervision of rail traffic control systems.

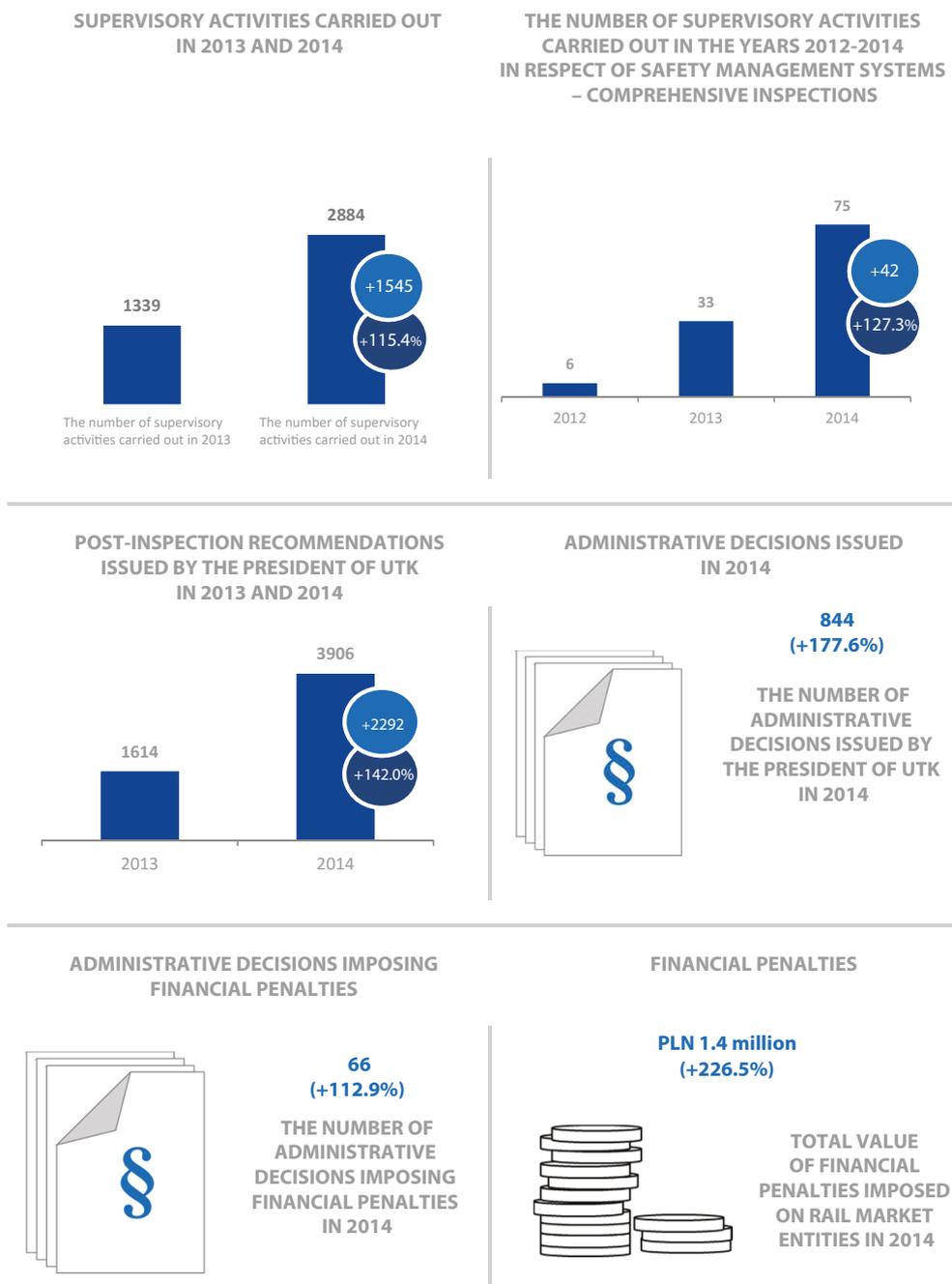
**The main objective behind the preparation of the annual supervision plan of the President of UTK is to specify priority measures for a given year as well as to coordinate deadlines and rules for nationwide measures**

### 13.1. Supervisory activities carried out by the President of UTK in 2014

The supervision of entities whose activities influence rail traffic safety and railway operation is carried out by the performance of tasks specified in the annual control plan of the President of UTK or as ad hoc activities – measures taken outside the plan

include primarily activities resulting from reports filed with the Office. It should be also highlighted that while all supervisory activities conducted by the President of UTK are aimed at guaranteeing the correct functioning of the rail market, ad hoc activities require immediate intervention due to the high probability of a risk in rail traffic safety, which makes them impossible to plan.

**Fig. 108: General information on supervisory activities carried out by the President of UTK in 2014**



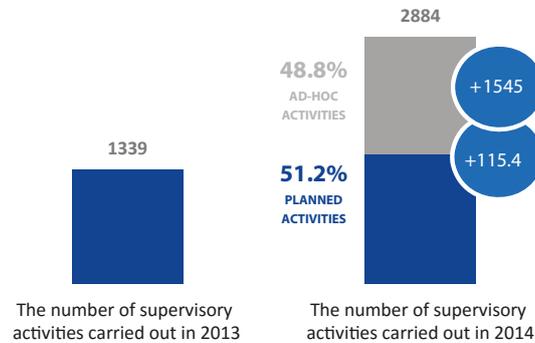
Source: prepared by UTK

## Supervisory activities carried out by the President of UTK in 2014

In 2014 the President of UTK conducted in total 2 884 supervisory activities (an increase by more than 115% when compared to 2013), including activities in respect of transport safety, which comprised more than 75% of all activities, and concerned mainly railway infrastructure managers, passenger and freight transport railway undertakings and side-track users. Furthermore,

inspection of railway products, notified bodies and laboratories were also conducted. Also activities related to the observance of passenger rights and rail transport licensing were carried out. It should be added that all these activities were indirectly connected with rail traffic safety.

**Fig. 109: The number of supervisory activities carried out in 2013 and 2014**

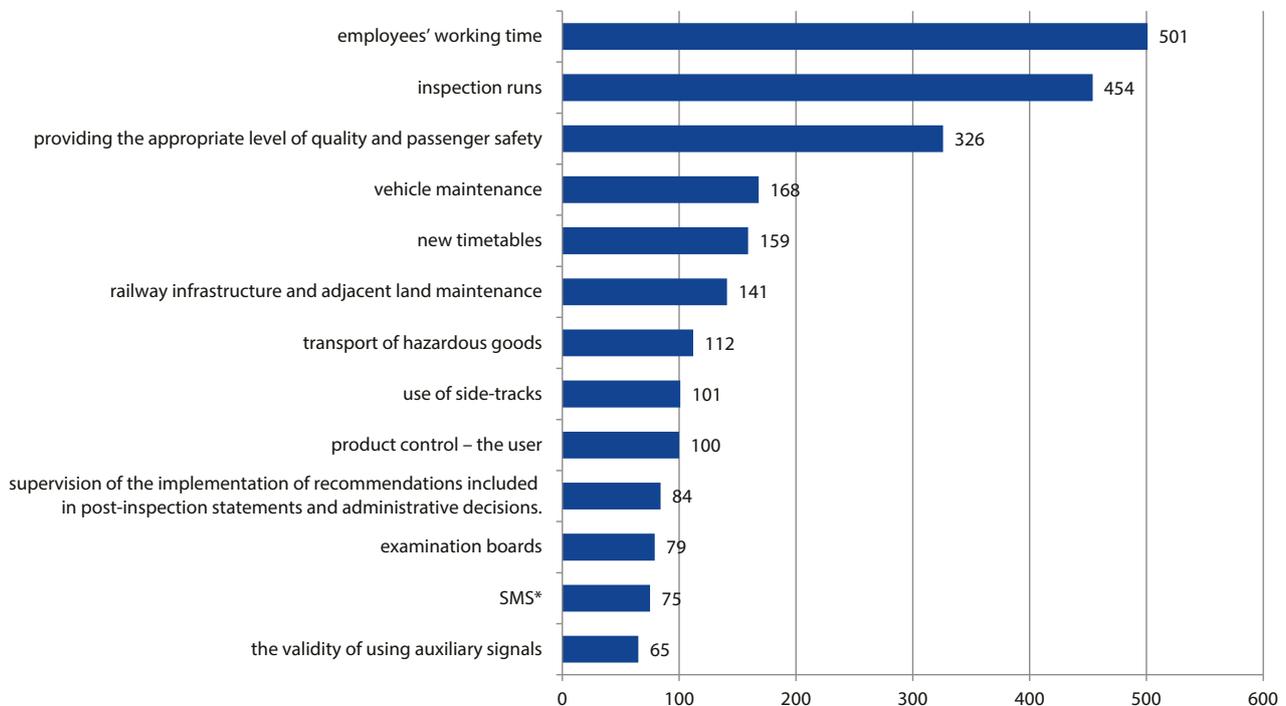


Source: prepared by UTK

Taking into account the detailed scope of activities carried out by the President of UTK it should be stated that activities in respect of working time of employees (17%) and inspection runs, as well as activities connected with the provision of the appropriate level of quality and passenger safety constituted

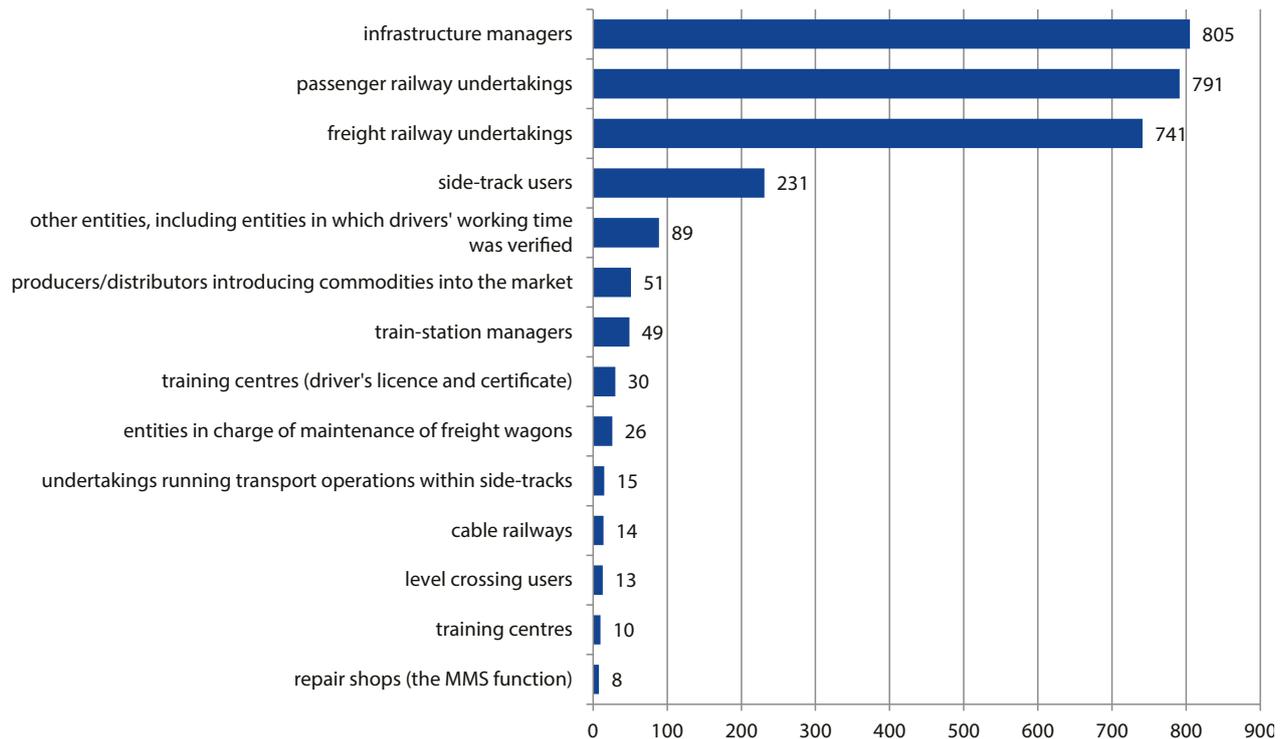
the largest percentage of all activities. In addition, a number of activities associated with vehicle and railway infrastructure maintenance, the transportation of dangerous goods and use of side-tracks were also conducted.

**Fig. 110: The number of specific supervisory activities conducted by the President of UTK in 2014 – including only those activities whose total exceeded 60**



Source: prepared by UTK

**Fig. 111: Specific supervisory activities conducted by the President of UTK in 2014, broken down by supervised entities – including only those activities whose total exceeded 5**

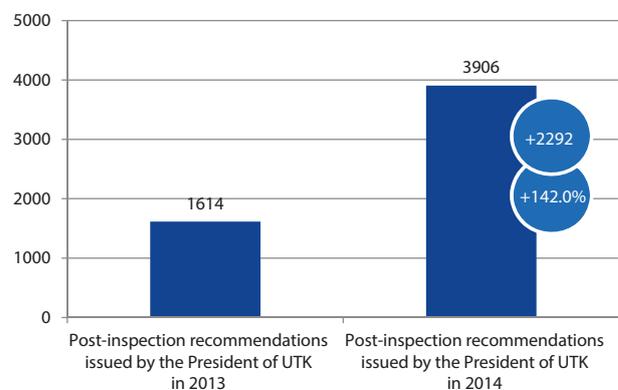


Source: prepared by UTK

It should be highlighted that 2014 saw a significant increase in the number of conducted supervisory activities that were associated with rail traffic safety – this number more than doubled the total for 2013 (supervisory activities should be understood as actions varying in respect of their labour intensity and time consumption, e.g. an inspection run in a railway vehicle vs. a multidimensional control of the implementation of a Safety Management System).

Another important aspect of the supervisory activities of the President of UTK are the controls of the technical state of railway infrastructure and of the process and quality of its maintenance by infrastructure managers. In 2014 several hundred cases of irregularities requiring immediate addressing by railway undertakings were identified. Owing to those activities by the President of UTK not only potential risks to traffic safety were eliminated, but also the managers were obliged to restore the original technical parameters of the lines, which, in turn, improved the quality of services provided by railway undertakings.

**Fig. 112: Post-inspection recommendations issued by the President of UTK in 2013 and 2014**



Source: prepared by UTK

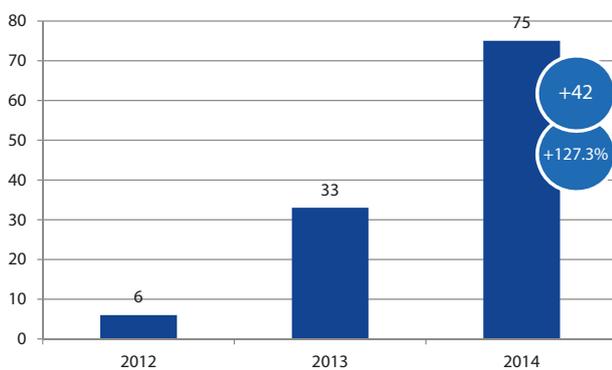
From January 2014 to 31 December 2014 the President of UTK conducted in total 2 884 supervisory activities. Based on the results of the carried out activities the President of UTK issued in 2014 in total 3 906 post-inspection recommendations (a 142% increase when compared to 2013), which in relation to the number of conducted supervisory activities gives an average of 1.4.

## 13.2. The supervision of the Safety Management Systems in rail transport

Over the last few years the President of UTK has intensified its supervisory activities in respect of rail traffic safety in Poland, which has been evidenced by, among other things, an increase in the number of inspections carried out in relation to Safety Management Systems (SMS). In 2012 the number of such inspections amounted to 6, in 2013 to 33 (a 450% increase), and in 2014 to 75 (a 127.3% increase when compared to 2013).

It should be also added that all inspections planned for 2015 (totaling 84) as part of the supervision of Safety Management Systems will be conducted in a comprehensive manner. Furthermore it is worth highlighting that other supervisory activities carried out in respect of railway undertakings and infrastructure managers will refer to Safety Management Systems, including a detailed analysis of the particular processes and procedures in SMS; e.g. the maintenance of railway vehicles, employees' qualifications, and the reporting and analysis of railway events, events that might lead to potential accidents, and other dangerous events.

**Fig. 113: The number of inspections carried out by the President of UTK in respect of Safety Management Systems in the years 2012-2014**



Source: prepared by UTK

As a result of SMS inspections, a number of irregularities were identified. In the case of first inspections, these concerned primarily the adequacy of documentation and the degree of its observance. This encouraged improvement in terms of the observance of safety rules on the rail market. The detailed conclusions drawn from these inspections are presented further in this report.



**Tab. 36: An overview of irregularities identified during the inspections of the Safety Management Systems (SMS) – prepared on the basis of data for 2014, including those whose share exceeded 1%**

no.	scope of violation	share of individual violations
1	Annex II point B – Commission Regulation (EU) No. 1158/2010 Vehicle maintenance	13.9%
2	Annex II point A – Commission Regulation (EU) No. 1158/2010 Risk management	11.7%
3	Annex II point C – Commission Regulation (EU) No. 1158/2010 Supplier management	7.1%
4	Annex II point L – Commission Regulation (EU) No. 1158/2010 The meeting of standards and conditions	6.0%
5	Annex II point S – Commission Regulation (EU) No. 1158/2010 Audits	5.0%
6	Annex II point P – Commission Regulation (EU) No. 1158/2010 Documentation management	4.8%
7	Annex II point Q – Commission Regulation (EU) No. 1158/2010 Railway events	4.7%
8	Annex II point R – Commission Regulation (EU) No. 1158/2010 Crisis situations	4.6%
9	Annex II point F – Commission Regulation (EU) No. 1158/2010 Distribution of responsibilities	4.1%
10	Annex II point M – Commission Regulation (EU) No. 1158/2010 Change management	4.0%
11	Annex II point G – Commission Regulation (EU) No. 1158/2010 Control by the management	3.9%
12	Annex II point N – Commission Regulation (EU) No. 1158/2010 Staff competence management	3.8%
13	Annex II point K – Commission Regulation (EU) No. 1158/2010 Targets of the organisation	2.1%
14	The Rail Transport Act of 28 March 2003	1.9%
15	Annex II point E – Commission Regulation (EU) No. 1158/2010 A model of documentation	1.8%
16	Annex II point O – Commission Regulation (EU) No. 1158/2010 Information	1.8%
17	Annex II point I – Commission Regulation (EU) No. 1158/2010 Continuous improvement	1.8%
18	The Regulation of the Minister of Infrastructure on the general technical conditions for railway vehicle operation	1.7%
19	Annex II point H – Commission Regulation (EU) No. 1158/2010 Staff involvement	1.4%
20	Annex II point A – Commission Regulation (EU) No. 1169/2010 Risk management	1.2%
21	The Regulation of the Minister of Transport, Construction and Maritime Economy of 3.01.2013 on the manner of maintaining the register and the method of marking railway vehicles	1.2%

Source: prepared by UTK

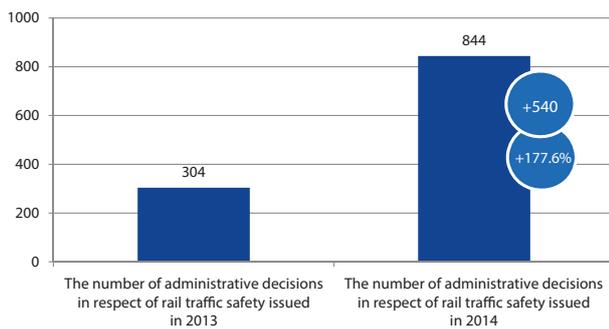
#### The main problems associated with Safety Management Systems identified on the market:

- The lack of understanding of the pro-active safety management approach (instead of which the reactive approach-based reasoning is employed, which entails drawing conclusions on the basis of the (expected) results without taking into consideration the possible threats);
- The “safeguarding” of operational employees against certain SMS elements (e.g. access to procedures and referring to internal regulations);
- The inconsistent treatment of documents falling within the SMS scope (the management and supervision are based on decisions, resolutions and internal regulations, rather than on procedures);
- The incomplete supervision of SMS – no management reviews or audits;
- The conducting of risk assessment to rationalise the violation of binding provisions;
- Failure to monitor the efficiency of risk control mechanisms;

- The risk assessment inconsistent with the actual values represented by individual parameters applied in the organisation (e.g. the probability rate of threat occurrence in relation to the actual cases reported);
- Failure to draw conclusions from all events to improve the SMS.

### 13.3. Administrative decisions issued by the President of UTK in 2014

As a result of the conducted supervisory activities, the President of UTK, after the conclusion of ex officio proceedings, issued 844 administrative decisions concerning rail traffic safety. In 2013 the number of issued decisions amounted to 304 (an increase by 177% in 2014). The administrative decisions issued concerned, among other things, the violations of technical and organisational conditions that guaranteed safe rail traffic, running business without required documents, violations in respect of the Safety Management System, as well as the operation of railway vehicles being suspended or restricted.

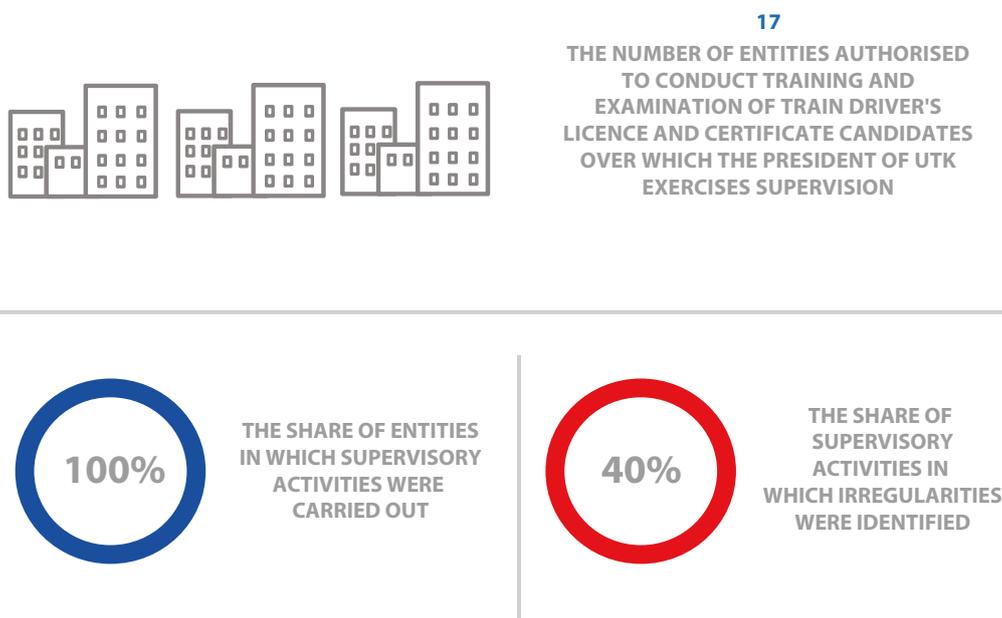
**Fig. 114: The number of administrative decisions issued in connection with rail traffic safety**

Source: prepared by UTK

In order to provide the maximum possible rail traffic safety most administrative decisions and post-inspection recommendations issued by the President of UTK were to be implemented immediately.

### 13.3.1. Supervision of the qualifications of railway staff

In 2014 the President of UTK included in his supervisory activities all entities authorised to conduct training and examination of train driver's licence and certificate candidates, especially as regarded office conditions, teaching staff and the plan and course of training.

**Fig. 115: Supervisory activities in respect of staff qualifications**

Source: prepared by UTK

Furthermore, the President of UTK also supervises the work of the examination board certifying qualifications of persons occupying the positions directly connected with railway traffic control and safety. Activities carried out in this regard are desi-

gned to eliminate potential threats associated with employing under-qualified staff, increase rail traffic safety and improve the awareness of participants in the rail market in the field of rail traffic safety.

**Fig. 116: Supervisory activities connected with the work of examination boards**

Source: prepared by UTK

The main irregularities identified in the work of the examination board certifying qualifications of persons occupying the positions directly connected with railway traffic control and safety:

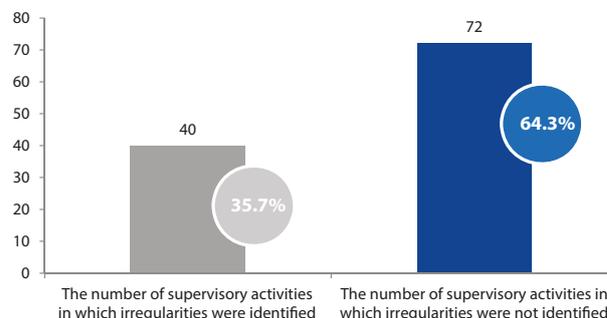
- conducting qualification and verification exams whose practical parts were inconsistent with the scope specified in the Regulation,
- failing to prepare a report on the course of a practical exam after conducting a practical exam,
- conducting supervised trial classes, which are part of the vocational training of the qualification exam candidates, after a passed qualification exam,
- planning the exam and informing the Office of Rail Transport about the exam before applications for the conducting of the exam are filed, and notifying persons admitted to the exam of its date before the conclusion of vocational training,
- failing to confirm the fact that the candidate has been admitted to the exam at least 7 days before the date of the exam,
- conducting the theoretical part of qualifying exams before the practical part.

### 13.4. The control of the transport of dangerous goods by rail

In 2014 the President of UTK conducted in total 112 supervisory activities in respect of the rail transport of dangerous goods and pressure equipment – nearly 9% more than in 2013. The highest number of activities were conducted in relation to side-track users and licensed freight railway undertakings – 42 (37.5%) each, and railway infrastructure managers – 23 (20.5%). The rest of activities were conducted in relation to other participants in transport, including unloaders of dangerous goods

and undertakings running transport operations within side-tracks or at stations.

**Fig. 117: The results of supervisory activities conducted in 2014 in respect of dangerous goods**

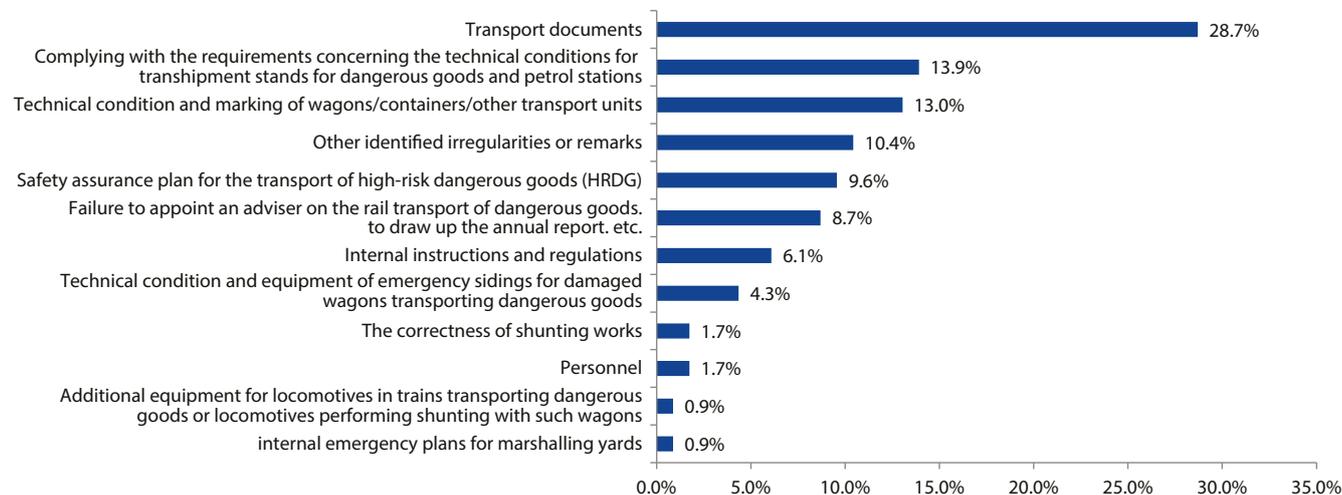


Source: prepared by UTK

In connection with the conducted supervisory activities, irregularities were identified in 40 cases (which constituted 36% of all the conducted activities), including irregularities associated with the transport of dangerous goods, inappropriately maintained documentation, inappropriate marking of railway vehicles and the lack of an adviser on the transport of dangerous goods by rail. Other activities (64%) were concluded with a positive result, i.e. with no irregularities and non-conformities identified. By way of comparison, in 2013 more than half of the activities in respect of the transport of dangerous goods by rail resulted in the identification of some irregularities.

Taking into account the number of irregularities found in relation to the number of conducted activities, it should be stated that the highest ratio was observed in relation to freight railway undertakings – on average 1.4 irregularities per each activity. An equally high ratio was recorded in respect of railway infrastructure managers – on average 1 irregularity per activity. This generally proves a poor safety culture, which manifests itself in the non-observance of entities' own safety regulations (Safety Management Systems, internal regulations, etc.).

**Fig. 118: An overview of irregularities identified during supervisory activities – a general scope**



Source: prepared by UTK

Most irregularities were identified in respect of the inappropriate preparation or the lack of transport documents – nearly 29%. An equally high percentage was associated with irregularities in respect of technical conditions for transshipment stands for dangerous goods and petrol stations – 13.9% as well as the marking and technical state of railway vehicles – 13.0%

In terms of their distribution, the highest number of irregularities were identified among side-track users – 53.9%.

### 13.5. The supervision of the working time of drivers employed by several entities

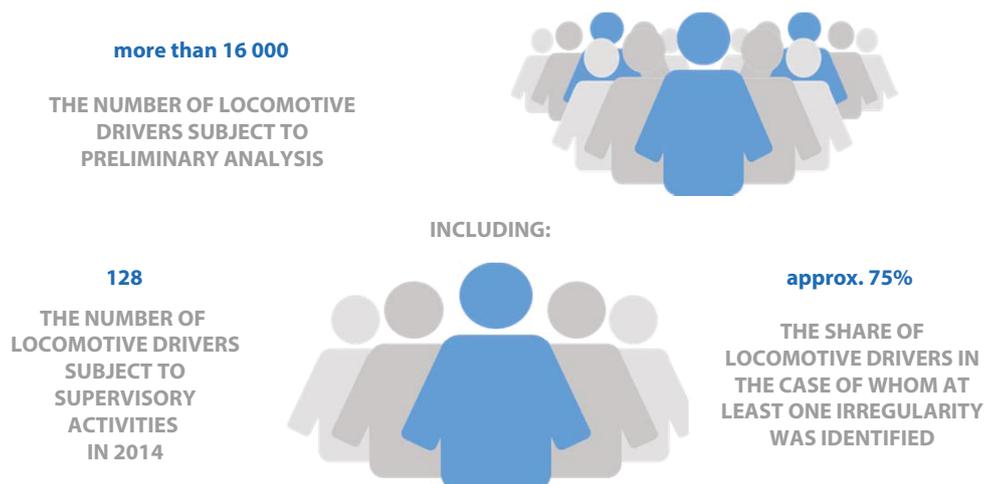
Under the implementation of its tasks under Art. 13 (1)(6), (1a) (6c), (1a)(7) and (9), (7a) and Art. 22ca (1-5) of the Rail Transport Act of 28 March 2003 (consolidated text: Dz. U. (Journal of Laws) of 2013, item 1594, as amended), including the control over the compliance with their obligations by managers, railway under-

takings and side-track users in the field of rail traffic safety, and especially requirements to be met by locomotive drivers and persons occupying the positions directly connected with railway traffic control and safety, and drivers of specific types of railway vehicles, the President of UTK devised a tool – The Register of Locomotive Drivers – which facilitates the observance of the provisions of the Act.

That way railway undertakings, railway infrastructure managers, side-track users and enterprises employing people driving railway vehicles were obliged to regularly provide data on people authorised to drive railway vehicles.

The data acquired through the application in question are subject to periodic analysis. The obtained results are used to draw conclusions and to specify areas requiring detailed verification. It should be also added that supervisory activities are being conducted in respect of locomotive drivers, in the case of which irregularities or risks of irregularities were the highest. That way it was possible to identify the first group of locomotive drivers who were subject to detailed verification in 2014.

**Fig. 119: The supervision of the working time of drivers employed by several entities**



Source: prepared by UTK

Irregularities were identified in 3/4 out of 128 persons who formed the sample group that was subject to control activities. These irregularities were:

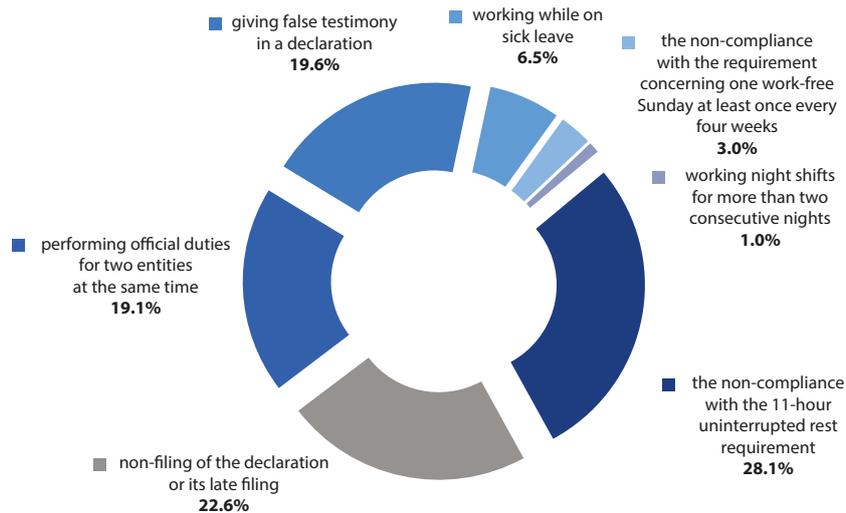
- failing to comply with the 11-hour uninterrupted rest requirement,
- failing to comply with the requirement concerning one work-free Sunday at least once every four weeks,
- working night shifts more than two consecutive nights,
- working while on sick leave,
- giving false testimony in a declaration,
- non-filing of the declaration or late filing,

- performing official duties for two entities at the same time.

The aforementioned irregularities stemmed mostly from people driving railway vehicles working for or providing services to more than one entity. Such a situation on many occasions leads to the non-compliance with rest requirements between shifts in different employers. Among these irregularities there were also cases of driving railway vehicles without any rest whatsoever.

#### EXAMPLE:

From 18:00 on 30.03.2014 to 6:00 on 31.03.2014 a worker provided services to company X, and directly after his duty in this company, he/she started working for company Y at 6:00 on 31.03.2014, and finished at 18:00 the same day.

**Fig. 120: The share of specific types of irregularities in the total number of recorded irregularities**

Source: prepared by UTK

It is disturbing that at least one irregularity was identified in the case of 75% of inspected individuals. When it came to the aforementioned issues, in total 199 irregularities were identified. As many as 30% of these involved the non-compliance with rest period requirements. The conducted procedures identified the violation of the following rules and regulations:

- The Labour Code of 26 June 1974,
- The Rail Transport Act of 28 March 2003.

At the end of 2014 the first court orders to punish these locomotive drivers were issued. All the issued court orders substantially agreed with the charges brought by the President of UTK, and new orders are being regularly received by the Office of Rail Transport. As at 29 June 2015 the total number of petitions filed to the court (in 2014 and 2015) against locomotive drivers amounted to 97. Furthermore, as a result of the notification of irregularities found, the Social Insurance Institution (ZUS) and Chief Labour Inspectorate took further actions in the cases of locomotive drivers violating the law.

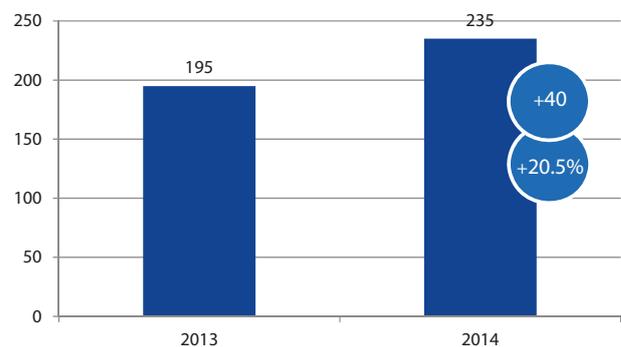
### 13.6. Supervisory activities conducted on level crossings

The supervision of the technical condition, maintenance process and classification of road-railway level crossings was one of the priorities of the President of UTK within the supervision plan for 2014.

In the period in question, i.e. from January to December 2014, more than 50 supervisory activities were conducted in this regard.

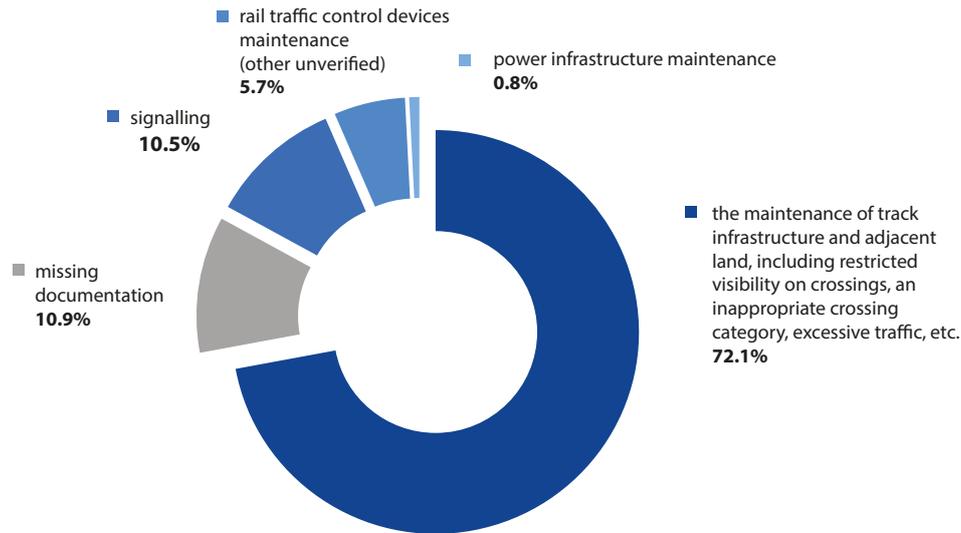
Most irregularities were identified in respect of the maintenance of railway infrastructure and adjacent land, and concerned limited visibility on level crossings, incorrect road marking, poor technical condition of the crossings, including damaged crossing

surface and excessive traffic factors. As part of the conducted activities on average 4 irregularities were identified per activity.

**Fig. 121: The number of level crossings subject to supervisory activities in 2013 and 2014**

Source: prepared by UTK

Due to the fact that the supervision of the technical condition, maintenance and classification of road-railway level crossings was one of the priorities of the President of UTK, the number of supervised crossings has been steadily increasing.

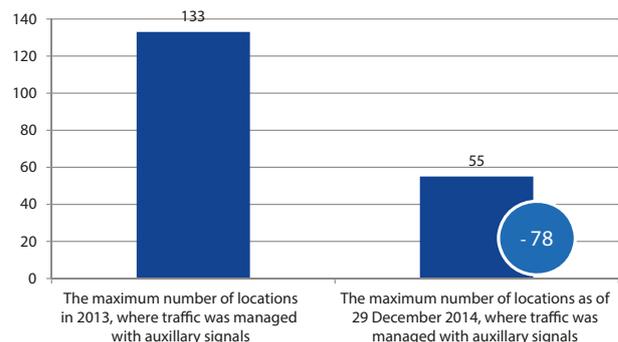
**Fig. 122: The types of irregularities found**

Source: prepared by UTK

In addition to standard supervisory activities, the President of UTK, in collaboration with the Railroad Guard, ran in 2014 an informational campaign aiming at improving safety on selected road-railway level crossings. As part of the conducted activities, in addition to measures aimed at improving the drivers' awareness of existing threats, the staff of the Office of Rail Transport carried out general examinations of railway vehicles.

### 13.7. Inspections regarding the causes of using 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 argues that the prolonged use of auxiliary signals or written orders in rail traffic is unacceptable. In consequence, supervisory actions were taken in respect of infrastructure managers, including especially PKP Polskie Linie Kolejowe S.A., as regards "the reasons for using auxiliary signals and the procedures related to such use".

**Fig. 123: The number of locations within the PKP Polskie Linie Kolejowe S.A. network, in which traffic was managed with auxiliary signals for extended periods of time**

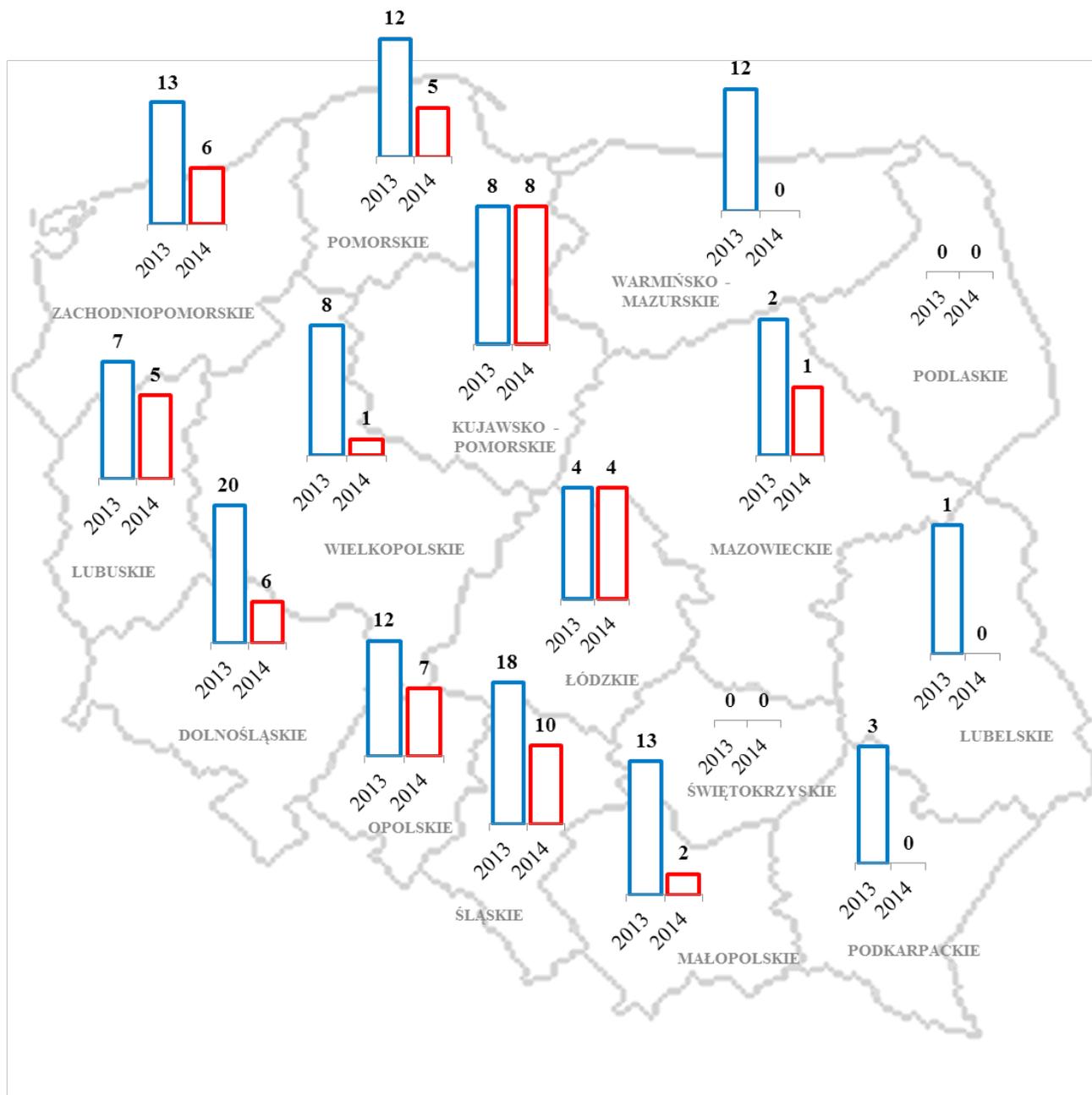
Source: prepared by UTK

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, and accounted for 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 should be also highlighted that in the Kujawsko-Pomorskie and Łódzkie Provinces the number of locations in which traffic was managed using auxiliary signals did not change due to modernisation and revitalisation works conducted in these regions.

It should be also added that owing to such measures, it will be possible to eliminate unnecessary management of rail traffic for extended periods of time on the basis of auxiliary signals.



**Fig. 124: The number of locations within the PKP Polskie Linie Kolejowe S.A. network, in which traffic was managed with auxiliary signals for extended periods of time – by province**



Source: prepared by UTK

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.

Comparing the data for 2013 and 2014, it can be inferred that 12 provinces recorded a drop in the number of locations in which traffic was controlled through auxiliary signals. The irregularities occurring at Kołobrzeg Station, where the use of auxiliary signals had begun in 1990, were also removed.

In 2014 the President of UTK issued in total 13 administrative decisions regarding "the reasons for using auxiliary signals and the procedures related to such use". It should be underlined that such measures were included in the list of priorities of the President of UTK both in 2013 and 2014 and are being continued in 2015.

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

In 2014 the number of supervisory activities in respect of railway infrastructure and adjacent land maintenance amounted to 141, 90% of which included activities conducted on the PKP Polskie Linie Kolejowe S.A. network. A series of irregularities was identified over the course of conducted activities. The most prevalent ones included:

- the inappropriate condition of road surface on crossings, access roads and walkways,
- the non-performance of post-inspection recommendations following from road-surface inspections, 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 the unsatisfactory frequency of measurements as regards railway infrastructure maintenance,

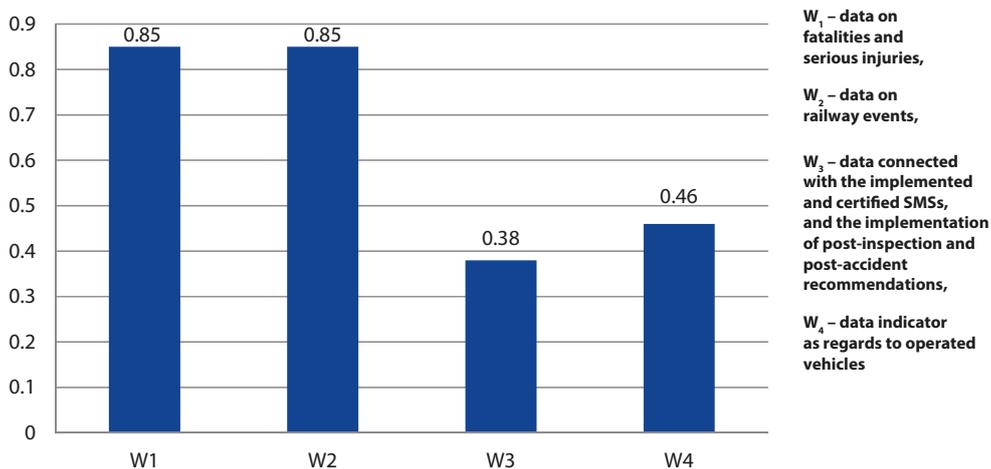
- the non-performance of repair works on surfaces, resulting from technical examinations, track and junction measurements, and also in respect of the maintenance of rail traffic control devices,
- the use of worn-out wooden or damaged rail track sleepers, inappropriate maintenance of fastening and coupling connections, soiled crushed-stone ballast,
- irregularities in the operation of railway junctions,
- deficiencies in documentation on level crossings, incomplete marking.

As a result of the conducted supervisory activities, the President of UTK initiated administrative proceedings which ended with the issuance of 43 administrative decisions on the irregularities in respect of railway infrastructure maintenance.

### 13.9. The Register of Entity-Specific Risk Parameters

The Register of Entity-Specific Risk Parameters (RESRP) is an online platform with reporting and analytical functions, based on data sent by rail market entities. As part of the proposed model, the safety level indicators were developed for both individual entities and railway market sectors. The established model consists of 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:

**Fig. 125: The average value of individual safety-level indicators in Q4 2014**



Source: prepared by UTK

Results obtained from the RESRP 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. Owing to this, it is possible to determine the scope of risk associated with business activities of every entity individually.

These indicators allow the periodic assessments of entities to be conducted on a specific scale, and thereby rank all participants in the rail market in respect of their safety levels.

Ultimately, the analysis of the values of constitutive indicators translates into the determination of the direction of future supervisory activities. Especially evident is the need for the intensification of activities within the supervision of Security Management Systems – 84 inspections were planned in 2015, also in respect of railway vehicle maintenance, due to the average W3 and W4 indicators being the lowest in these fields.

## 13.10. Reporting irregularities in rail traffic safety

In order to meet the expectations of the society and 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 suggestions connected with rail traffic safety. In addition to the aforementioned form of communication, issues can be reported using a contact form on the website of the Office of Rail Transport, as well as by e-mail and by post.

**Fig. 126: Available forms of reporting cases connected with safety**

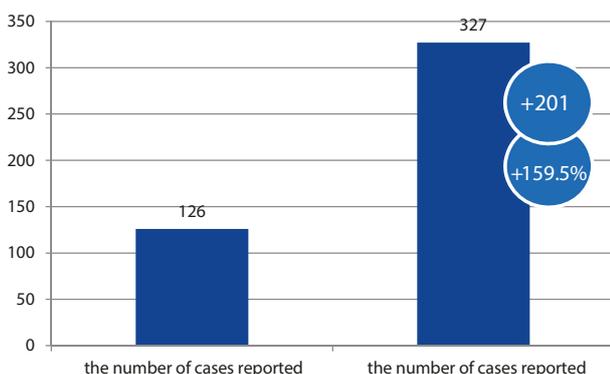


Source: prepared by UTK

In 2014 only, as many as 327 cases connected with rail traffic safety were reported using the hotline and other dedicated means of contact (a nearly 160% increase from 126 cases reported in 2013). Immediate supervisory and control measures were taken in all cases. Most of these activities confirmed the presence of irregularities in the operation of rail market entities. Swift reactions by the President of UTK contributed in many cases to the elimination of potential rail traffic safety hazards.

All supervisory activities undertaken by the President of UTK are aimed at improving the level of railway safety by supervising the observance of rail transport rules and regulations, maintaining supervision over entities and the resulting increase in the quality of services provided by such entities. The implementation of the adopted supervisory priorities in 2014 made it possible to significantly alleviate or eliminate some problems that, in the opinion of the President of UTK, constituted a potential threat to rail traffic safety and the security of participants in the transport process, including the passengers.

**Fig. 127: The number of reported cases of irregularities in rail traffic safety**



Source: prepared by UTK

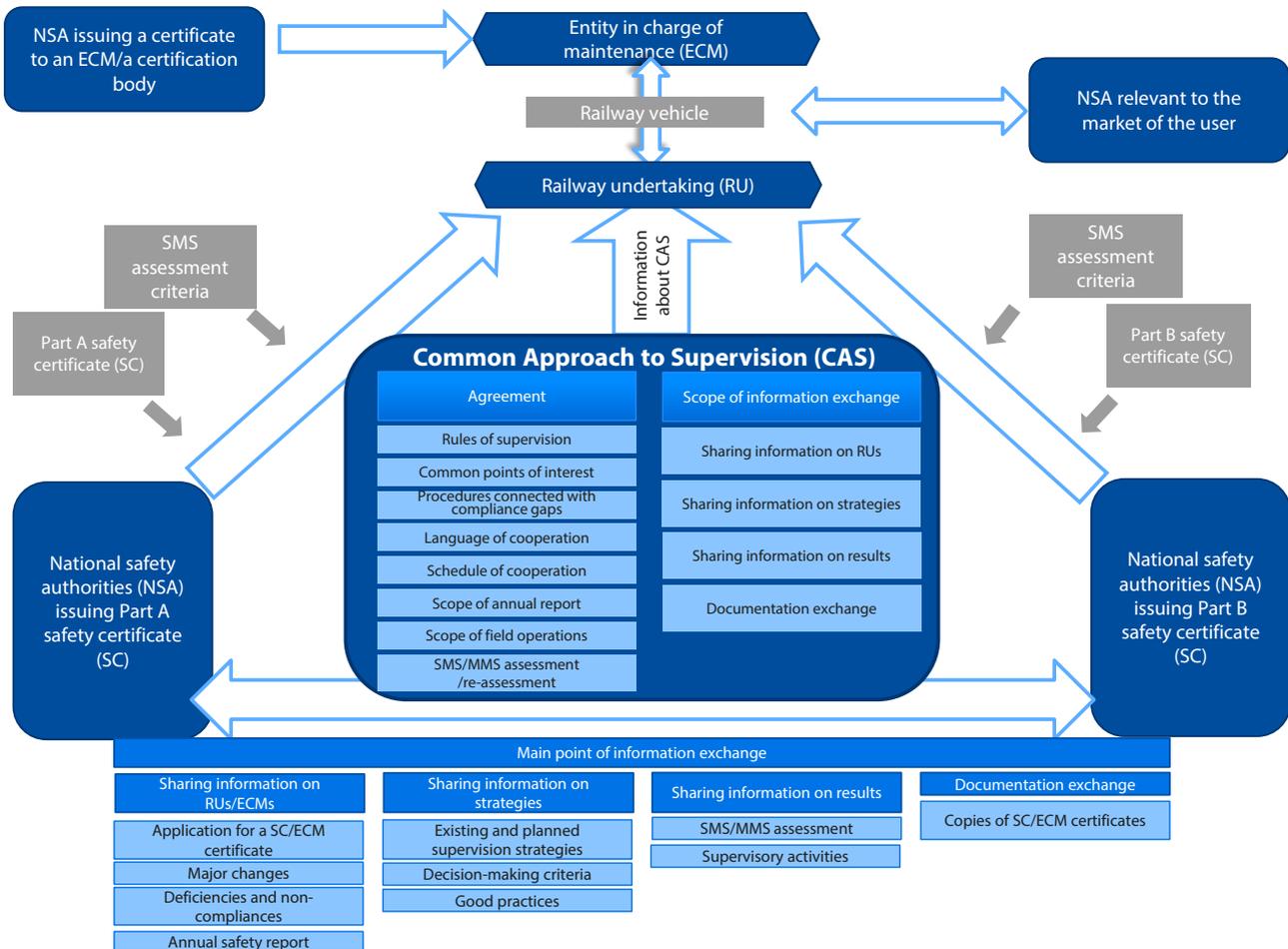
## 13.11. Cooperation with national safety authorities from other Member States

In 2014 an initiative was launched to establish cooperation with national safety authorities from other Member States in the field of supervision. It gave rise to activities aimed at designing a draft "Common Approach to Supervision (CAS)."

The methodology of the Common Approach to Supervision over railway undertakings is a proposal of a common approach to issues associated with the supervision of safety in entities operating in more than one Member State, and is based on the

model of Common Approach to Supervision – CAS. The CAS model presenting the general rules governing cooperation with other safety authorities is illustrated in the chart below.

**Fig. 128: The model of the Common Approach to Supervision – CAS**



Source: prepared by UTK

The model of the Common Approach to Supervision includes cooperation between national safety authorities issuing Part A safety certificates and national safety authorities issuing Part B safety certificates in the field of supervisory activities of railway undertakings operating in respective Member States. The Common Approach to Supervision is based on the following two pillars:

- agreement – specifies the rules of cooperation in the form of a written document; the agreement regulates: the rules of supervision, common points of interest, the procedures for deficiencies in legally binding provisions (legal gaps) between the cooperating Member States, the language of prepared documentation, the schedule of cooperation, the scope of the annual report and study visits, and cooperation in respect of re-evaluating the Safety Management System (SMS),
- the scope of information exchange – this part includes mutual exchange of information on entities operating in Member States, existing supervision strategies and

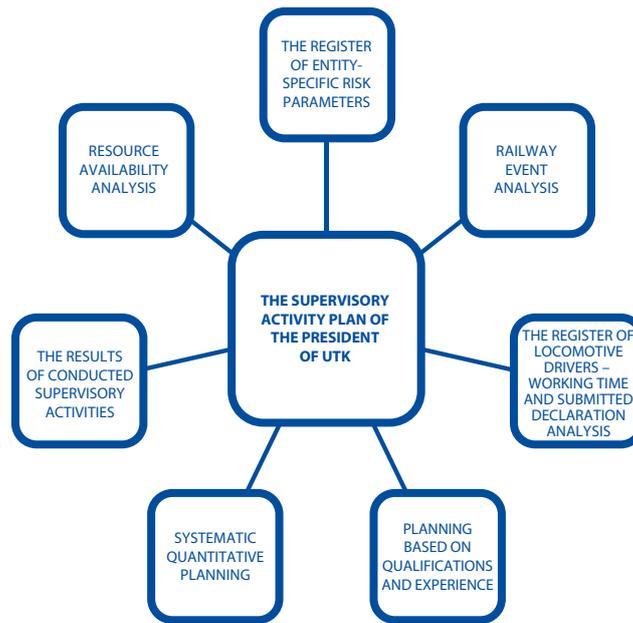
plans followed by a given safety authority, the results of Safety Management System assessments and other supervisory activities, and also the exchange of appropriate documents.

When cooperation is established, appropriate safety authorities are obliged to notify the supervised entity of the measures being undertaken in the field of Common Approach to Supervision.

### 13.12. The priorities of the President of UTK for 2015 – the supervision plan

The priorities to be supervised in 2015, were defined primarily on the basis of the conducted analyses, concerning, among other things, the frequency of accident occurrences, operational performance, the validity dates of certificates, the impact of operational difficulties, and the degree of deterioration of the railway infrastructure.

**Fig. 129: The planning process is carried out in the following manner**



Source: prepared by UTK



**Tab. 37: The supervision priorities adopted by the President of UTK for 2015**

no.	the thematic scope of supervisory activities
1	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 actual condition, with special regard to crossings on which railway events took place.
2	supervision of the preparation and implementation of the transport process, with some elements of infrastructure maintenance
3	the supervision of the working time of drivers employed by several entities at the same time.
4	supervision of entities holding safety authorisations and certificates in the course of the re-certification process, including the selected criteria of the Safety Management Systems.
5	supervision of the safety of use of side-tracks.
6	supervision of the infrastructure condition and maintenance process in respect of the Safety Management Systems.
7	supervision of the transport of dangerous goods by rail.
8	supervision of the strategic elements of the linear and nodal infrastructure used in the transport of dangerous goods.
9	supervision of the work of examination boards.
10	supervision of the preparation and implementation of the transport process, including the observance of passenger rights (providing the appropriate level of quality and passenger safety).
11	supervision of the technical condition of railway vehicles (technical inspections).
12	supervision of products used in railway engineering.
13	supervision of the certificates issued to entities in charge of the maintenance of railway vehicles, and certificates regarding maintenance functions.
14	supervision of the safety of rail traffic in the course of investment work carried out within the railway infrastructure.
15	supervision of compliance with the conditions for issuing licences.
16	supervision of the implementation of recommendations included in post-inspection statements and administrative decisions.
17	supervision of the validity of using auxiliary signals and written orders.
18	supervision of the operation of devices for detection of state of emergency while in motion (asdek) and their response to information.
19	supervision of the technical state and maintenance of the power-supply system for rail traffic control devices.
20	supervision of the technical state and maintenance of rail traffic control devices.
21	supervision of the training centres entered in the list of entities authorised to conduct training and examination of train driver's licence and certificate candidates, and the operational mode of examination boards established within those centres.
22	supervision of the process of international transport (including at border stations).
23	supervision of the technical state and maintenance of the traction network.
24	supervision of the maintenance of railway vehicles in respect of the Safety Management Systems.
25	supervision of the implementation of recommendations and instructions of the National Railway Accident Investigation Committee.
26	control of the efficiency of heating, ventilation, air conditioning – HVAC.
27	supervision of products used in railway engineering (in respect of railway interoperability).
28	supervision of the degree preparation to operate in winter conditions in respect of the Safety Management Systems.
29	supervision of compliance with the conditions for issuing licences for the provision of traction services.
30	the operation of the passenger information system (selected railway stations).
31	the accessibility and reliability of the current (posted) timetable on selected passenger platforms.
32	announcements in international trains – in line with the requirements of Annex 2 part 2 to Regulation 1371/2007.
33	supervision of notified bodies.
34	supervision of pressure equipment.
35	supervision of compliance with basic requirements by railway lines.
36	supervision of entities authorised to conduct medical and psychological examinations.
37	supervision of the causes of SPADs (signal passed at danger).
38	supervision of the functioning of technical rescue services of infrastructure managers in respect of the Safety Management Systems.
39	supervision of underground transport safety.

Source: prepared by UTK



## 14. Summary and conclusions

### The presented information proves that rail traffic safety in Poland continued to improve in 2014.

The number of railway accidents is steadily decreasing: from over 700 accidents in 2012-2013 to 671 in 2014. 2014 was also another year in which a decrease in the number of casualties in railway accidents was recorded. When compared with 2013, the number of deaths dropped in 2014 from 228 to 208, and the number of serious injuries from 103 to 95. Also the accident index, i.e. the comparison of the number of accidents and the operational performance, also improved. While in 2013 the index equalled 3.33, in 2014 it amounted to 3.19. Also the failure rate as regards the transport of dangerous goods was at a level similar to the preceding years. In 2014 this rate amounted to 1.25, while in the preceding years it equalled 1.16 and 1.44.

The steady improvement in rail safety in 2014 was facilitated by positive legal changes that took place in the year in question. These changes simplified and improved the effectiveness of procedures conducted by the President of UTK. The efficiency of the activities of the President of UTK aimed at guaranteeing rail traffic safety was improved also by many regulations of secondary legislation to the Rail Transport Act.

The reasons for this improvement in rail traffic safety are attributable not only to the implementation of the executive competences of the President of UTK, but also to his initiatives aimed at the popularisation of knowledge and solutions in the field of ensuring the safety of entities operating on the rail market. This primarily means the operations 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 preventing theft and devastation of infrastructure.

The improvement of safety in rail traffic would not be possible without effective market monitoring tools, i.e. without the registers maintained by the President of UTK and reporting obligations of entities in the rail sector. An ongoing analysis of the sources of information available to the President of UTK makes it possible to identify negative phenomena from the point of view of rail traffic safety, and to take immediate countermeasures.

It is without any doubt that 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 with 2013, the number of supervisory activities increased by 115.4% (from 1339 to 2884). Furthermore, the President of UTK issued 2292 more post-inspection recommendations than in 2013 (1614 post-inspection recommendations). The total value of financial penalties imposed on rail-market entities in 2014 amounted to PLN 1.4 m and was 226.5% higher than the year before.

The quality and technological condition of railway infrastructure unquestionably influence rail traffic safety. According to the President of UTK, the condition of infrastructure requires a radical improvement; however, 2014 could see some signs of progress in this regard. 2014 was another year in which lines were being adjusted to high-speed transport. In the period in question the main infrastructure manager in Poland, PKP PLK S.A., modernised 1393 km of railway lines, 1474 junctions and 545 level crossings. The collected data also demonstrated a decrease in the number of operational restrictions introduced due to the poor technical conditions of tracks (a 60% decrease when compared to the year before) or due to the poor condition of rail traffic control devices (a 40% decrease when compared to the preceding year). Unfortunately, national rail traffic infrastructure still does not facilitate transport at a speed greater than 160 km/h, and only 11% of lines allow travel at a speed exceeding 120 km/h.

When presenting 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 level crossings and individuals purposely doing harm to the rail system, still remains a problem. The percentage of accidents involving third parties remained very high in 2014, and was similar to the one recorded in 2013, i.e. more than 70% (72.4% in 2014 and 73.9% in 2013). 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 upcoming years the President of UTK will continue his efforts focusing on the popularisation of knowledge and good practices to restrict 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 following conclusions made in "An Assessment of Rail Market Operations and Rail Traffic Safety in 2013", remain valid:

- 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 adequate devices facilitating their use;
- the need for amending the Polish legal system, which places the entire responsibility for level crossing maintenance on the managers of railway infrastructure.

In 2014 the President of UTK continued his analysis of statistical data on vandalism, to increase the efficiency of preventive measures.

An alarming phenomenon observed in 2014, which should not be overlooked, was a significant increase in the number of C54 railway events, i.e. events caused by damage to or poor technical condition of a wagon (an increase from 50 in 2013, to 126 in 2014). This is even more disturbing given that 2014 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 increase.

Also events in the B04 and C44 categories, consisting in 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 the train, require special attention. The number of these events in 2014 increased, when compared to 2013, from 35 to 64. The causes of the aforementioned events are usually attributable to the so-called human error, for example, non 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 in the wrong direction against the order of the traffic controller, 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 can be significantly reduced by the utilisation of technical safeguards installed in vehicles and railway infrastructure.

Furthermore, based on the conclusions drawn from the conducted supervisory activities, it should be stated that the potential to improve rail transport safety lies within the Safety Management Systems of railway undertakings and infrastructure managers. The arrangement made by the President of UTK in 2013 in this respect is still valid. According to this arrangement, the basic task of all parties involved in the safety of the national rail system should be the responsible conclusion of the process of transition from a system in which safety is mainly based on rigid rules stipulated by the State administration, to a system in which complete corporate responsibility of undertakings operating on the basis of available uniform tools for the management of safety of business plays the leading role. This applies especially to the system of managing the competences of rail staff, which is currently in the transition period, and connected with a change in regulations, as the key element of ensuring rail traffic safety.

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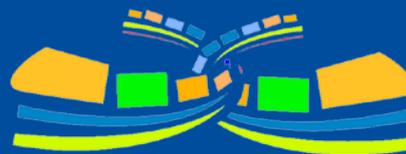
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**Opracowanie layoutu, skład i łamanie**

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