



**PKP POLSKIE LINIE KOLEJOWE S.A.**

*Zarządca narodowej sieci linii kolejowych*

# Annual report

## PKP Polskie Linie Kolejowe S.A.

# for 2018



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**Ireneusz Merchel**  
President of the Management Board  
PKP Polskie Linie Kolejowe S.A.

*To whom it may concern,*

*the railway is a constant part of our lives. Each of us comes into contact with it every day or occasionally, commuting to school and work, traveling all over Poland, ordering goods for our company, or passing through level crossings. Every day, PKP Polskie Linie Kolejowe S.A. makes every effort to make the everyday life of Poles more and more comfortable, and travel faster and, above all, safer. Throughout the year, 24 hours a day, we are responsible for the running of trains, we carry out investments, introduce innovations and take care of safety in railway traffic.*

*I would like you to familiarize yourself with our activities and achievements in 2018. I have the pleasure to present to you the Annual Report of PKP Polskie Linie Kolejowe S.A. A document in which you will find information about each area of our activity.*

*The National Railway Programme (KPK) – the largest modernisation programme in the history of Polish railways - has 220 projects and the total length of the tracks covered by the works is 9 000 km. The execution of the KPK, currently worth nearly PLN 76 billion (October 2019), is already greater than the investments in the entire previous European Union financial perspective for 2007-2013. PKP Polskie Linie Kolejowe S.A. has already implemented projects worth nearly PLN 47 billion.*

*The National Railway Programme is a huge challenge, implemented in two tracks, because apart from investments, we also run train traffic. We perform this task with great responsibility for the safety of passengers and contractors of modernisation works. We maintain current cooperation with contractors of these investments. The cooperation tools developed over the last few years provide dialogue and mutual respect for each other, which translates into efficient work. We adhere to the principle that there are no problems that cannot be solved and we solve them together. We are also in continuous dialogue with our customers - carriers and we work together on an ongoing basis to create the best possible network of connections on the unprecedented scale of the undertaking, which is KPK. We want our timetables to be tailored to the needs of passengers - people who count on rail and use it every day.*

*Safety is our top priority. That is why we are taking initiatives to increase the level of security in the area of human resources and technology. Since 2005, we have been continuously implementing the Social campaign "Safe rail-road level crossing". In June 2018, within the framework of the Campaign, we introduced a new tool - the project entitled "#PLKYellowSticker", which the railwaymen have marked all level crossings managed by our company. A special identification number*

placed on the sticker, as well as telephone numbers to company dispatchers of PLK and emergency telephone number 112 facilitate communication in situations of potential threats and makes it possible to maintain safety.

*We're fighting against communication exclusion. We try to make sure that as many towns and cities as possible have access to the railway. That is why we are building new stops in places where there were no stops and we are rebuilding old ones that were previously inaccessible to people with small children, elderly people or people with reduced mobility. In 2018, we built new stops, including Warszawa Koło, Parzniew, Olsztyn Dajtki, Subkowa Centrum, and modernised platforms at the Kalwaria Zebrzydowska Lanckorona, Kaliska Kujawskie and the Rzozów, Starachowice, Rudawa, Opole Chmielowice stops.*

*We believe that there are real benefits for the economy and society behind our projects. We improve rail traffic in agglomerations, improve the standard of travel on regional routes and improve conditions for the transport of goods, in Silesia, in Eastern Poland, in the area of access to Baltic ports.*

*We do not forget about the future either. A great investment programme is underway, but we are already thinking about further investments in line with the new European Union financial perspective for 2021-2027. We are preparing feasibility studies and design documentation for subsequent projects. At the beginning of the new perspective, we will be ready to announce tenders worth over PLN 40 billion. Thanks to this, together with contractors and manufacturers, we will be able to continue the work on creating an increasingly better Polish Railway without any problems.*

*You will read about what we have managed to do and what plans are ahead of us in this Annual Report of PKP Polskie Linie Kolejowe S.A. I wish you a good reading and satisfactory use of the railway, which we are changing for you.*

**Ireneusz Merchel**  
**President of the Management Board**  
PKP Polskie Linie Kolejowe S.A.

## Supervisory Board

- 1. Mariusz Andrzejewski**  
Chairman of the Supervisory Board
- 2. Artur Kawaler**  
Secretary of the Supervisory Board
- 3. Magdalena Błaszczyk**  
Member of the Supervisory Board
- 4. Stanisław Ryszard Kaczoruk**  
Member of the Supervisory Board
- 5. Jakub Kapturzak**  
Member of the Supervisory Board
- 6. Marcin Piwowarski**  
Member of the Supervisory Board
- 7. Jan Piotr Piechel**  
Member of the Supervisory Board
- 8. Wiesław Adam Pełka**  
Member of the Supervisory Board

## Management Board

- 1. Ireneusz Merchel**  
President of the Management Board
- 2. Marek Olkiewicz**  
Vice President of the Management Board –  
Director for Operational Affairs
- 3. Arnold Bresch**  
Member of the Management Board – Director  
for Investment Implementation
- 4. Piotr Majerczak**  
Member of the Management Board – Director  
for Infrastructure Maintenance
- 5. Radosław Celiński**  
Member of the Management Board – Director  
for Financial and Economic Affairs
- 6. Robert Sobczak**  
Member of the Management Board – Director  
for Development Affairs

\* As of 31 October 2019

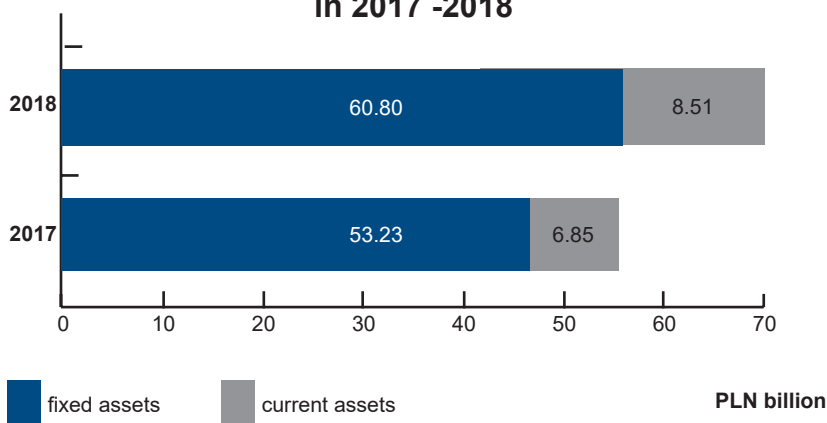
# Financial result

The Company's economic and financial situation was assessed based on financial reports representing the status as of 31 December 2018.

## Company assets

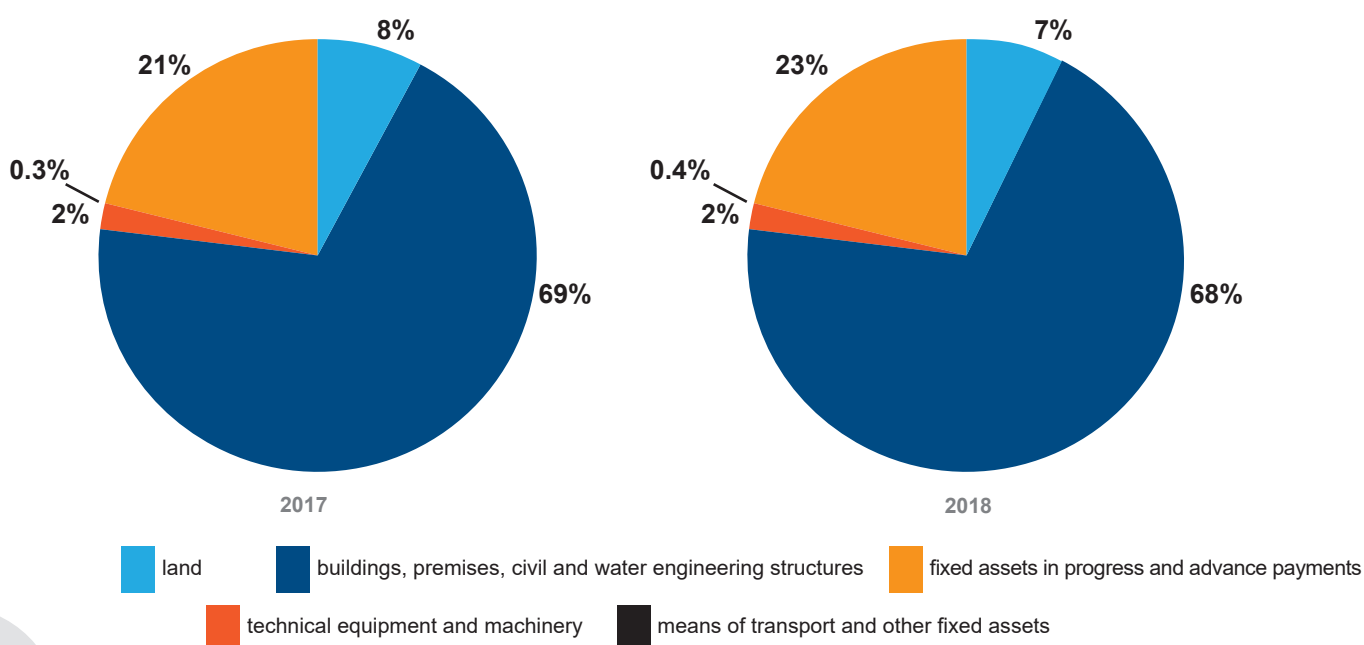
The book value of the assets owned by PKP Polskie Linie Kolejowe S.A. as of 31 December 2018 amounted to PLN 69,309.0 million and was 15.4% higher than in 2017.

**Assets of PKP Polskie Linie Kolejowe S.A. in 2017 -2018**



The structure of what the Company owns is asset-based, which is typical for railway infrastructure managers, which mostly comprises buildings, premises and civil and water engineering structures. In 2018, the Company's fixed assets comprised approximately 88% of its total assets. Over the financial year, fixed assets grew by approx. 14%, mainly due infrastructure modernisation works, i.e. investments that have been completed and commissioned on railway lines.

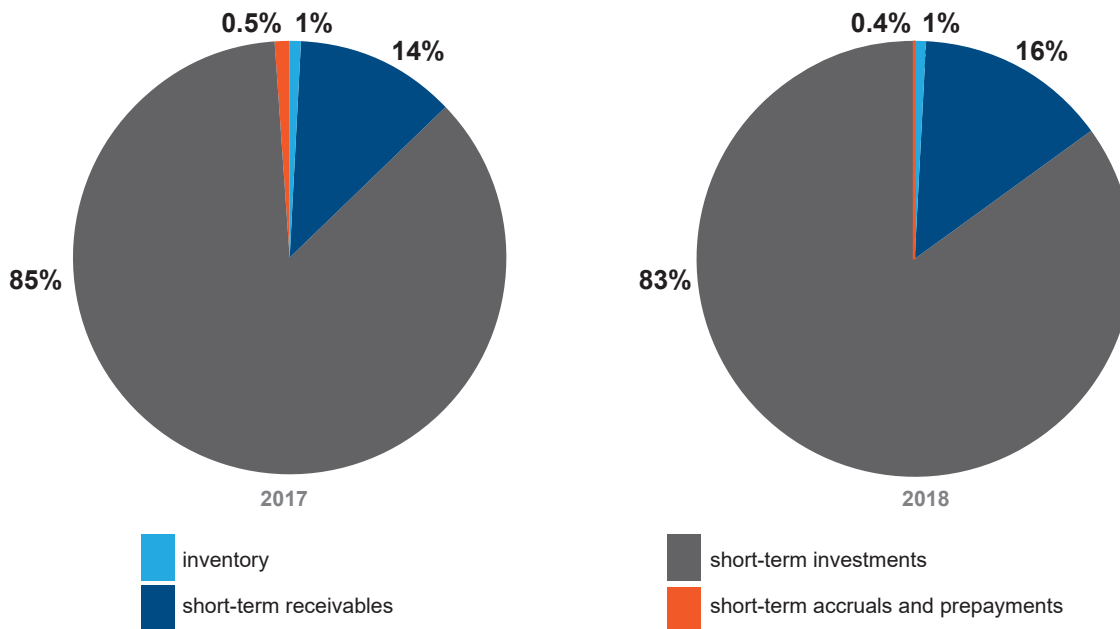
**Structure of intangible fixed assets in 2017-2018**



Current assets of PKP Polskie Linii Kolejowe S.A. in 2018 accounted for over 12.2% of total assets. Their balance value grew by 24.2% when compared to the year 2017. This growth has been primarily the result of an increase in funds and other monetary assets in bank accounts, which consist, among others, of funds obtained from the Railway Fund for current expenses related to the tasks of the infrastructure manager, refunds of funds involved in invest-

ment projects from: Regional Operational Programmes (ROPs), Operational Programme Infrastructure and Environment (OPI&E), "Connecting Europe" Facility (CEF) funding instrument, the state budget, the Cohesion Fund, the Eastern Poland Operational Programme (OPEP), bonds, loans from the European Investment Bank (EIB) and the Company's own resources.

### Structure of current assets in 2017-2018



In 2018, PKP Polskie Linie Kolejowe S.A. held shares reported as long-term investments in the following subsidiaries:

1. Przedsiębiorstwo Napraw i Utrzymania Infrastruktury Kolejowej in Kraków Sp. z o.o. (100% of shares in share capital);
2. Dolnośląskie Przedsiębiorstwo Napraw Infrastruktury Komunikacyjnej DOLKOM Sp. z o.o. in Wrocław (100% of shares in share capital);
3. Zakład Robót Komunikacyjnych – DOM in Poznań Sp. z o.o. (100% of shares in share capital);
4. Pomorskie Przedsiębiorstwo Mechaniczno-Torowe Sp. z o.o. with its registered office in Gdańsk (100% of shares in share capital).

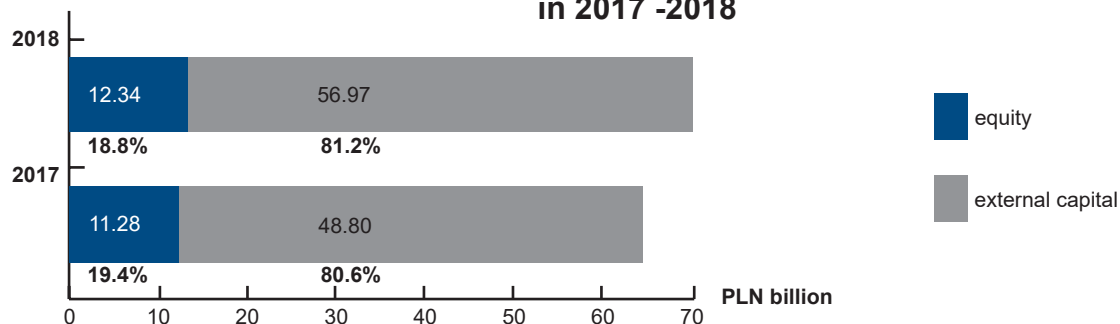
The balance value of the assets in question as of 31 December 2018 was PLN 183.8 million.

The maintenance and repair companies are the necessary potential of PKP Polskie Linie Kolejowe S.A that is used to:

- 1 maintain the required technical parameters of tracks;
- 2 perform modernisation and replacement investments on railway stations and railway routes;
- 3 respond rapidly to the need to carry out construction work in emergency situations.

## Source of assets financing

Sources of financing the assets of PKP Polskie Linii Kolejowe S.A. in 2017 -2018

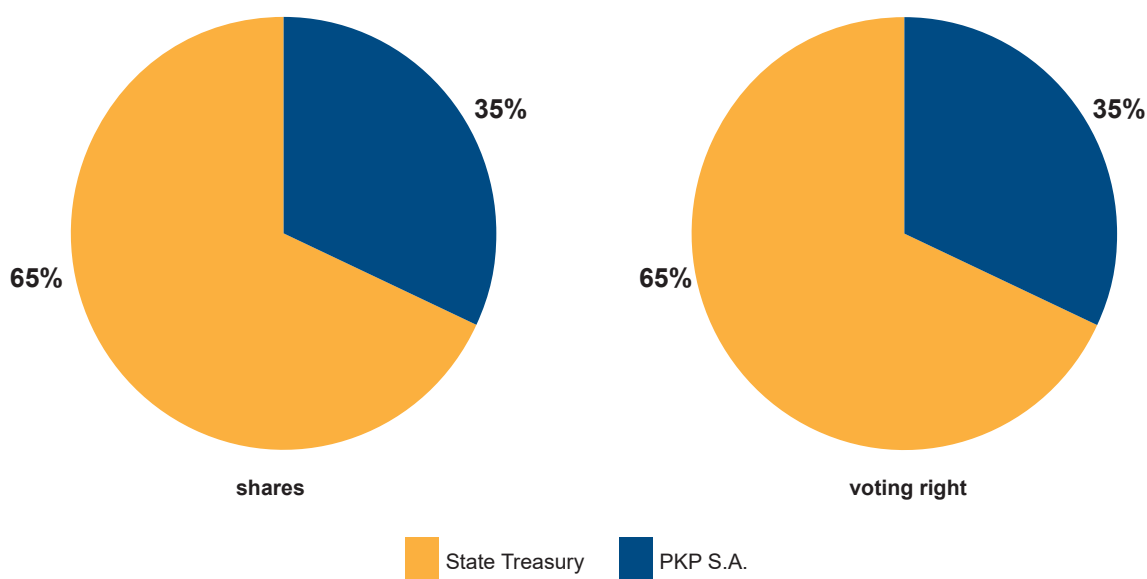


## Equity

In 2018, the Company's equity made up over 18.8% of its assets; in comparison to 2017, it increased by approx. 9.4%, mainly due to the increase of share capital on the liabilities side, in 2018 the Company's share capital increased due to the State Treasury's recapitalisation of

PLN 1,166.5 million for the purpose of performing 2018 investment tasks included in the National Railway Programme (KPK).

Structure of stock ownership of PKP Polskie Linii Kolejowe S.A. as of 31 December 2018



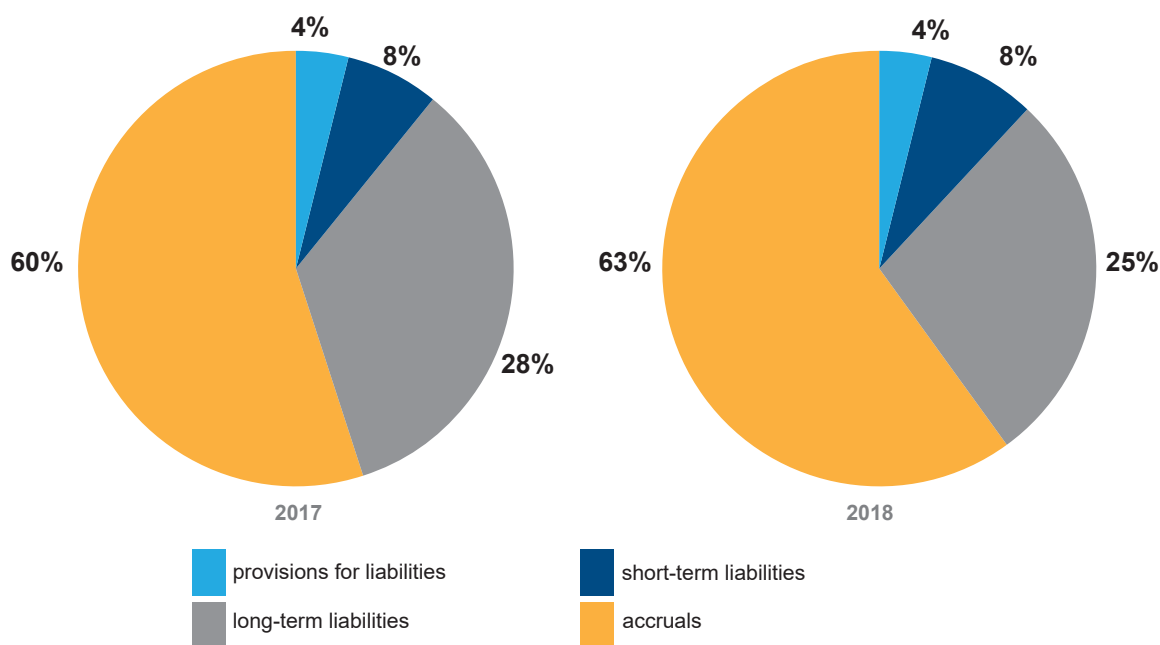
## External capital

In 2018, external capital was the main source of financing assets of PKP Polskie Linie Kolejowe S.A. just like in previous years. As of 31 December 2018, they amounted to PLN 56,971.71 million, covering the Company's assets resources in 81.2%.

The share of external capital in financing the Company's assets increased in 2018 (when compared to 2017) by 0.6 percentage point (p.p.) as a result of an increase in long-term prepayments and accruals for the modernisation of railway infrastructure obtained from budget subsidies, the Railway Fund, the European Union and other public sources.



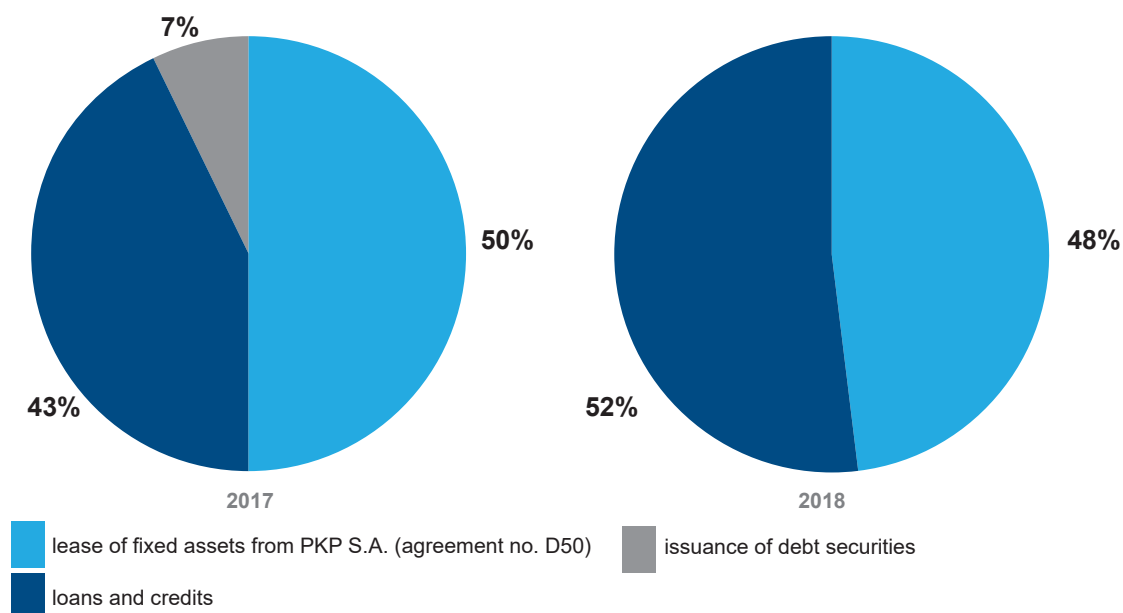
### Structure of external capital in 2017-2018



As of 31 December 2018, long-term liabilities amounted to PLN 14,434.5 million. Loans received from the EBI to co-finance and pre-finance the modernisation of railway lines accounted for 52% of liabilities, while 48% of these liabilities were liabilities arising from the agreement concluded with PKP S.A. in 2001 for handing over the rail-

way lines along with other immovable property required to manage these railway lines for paid use (agreement no. D50-KN-1L/01).

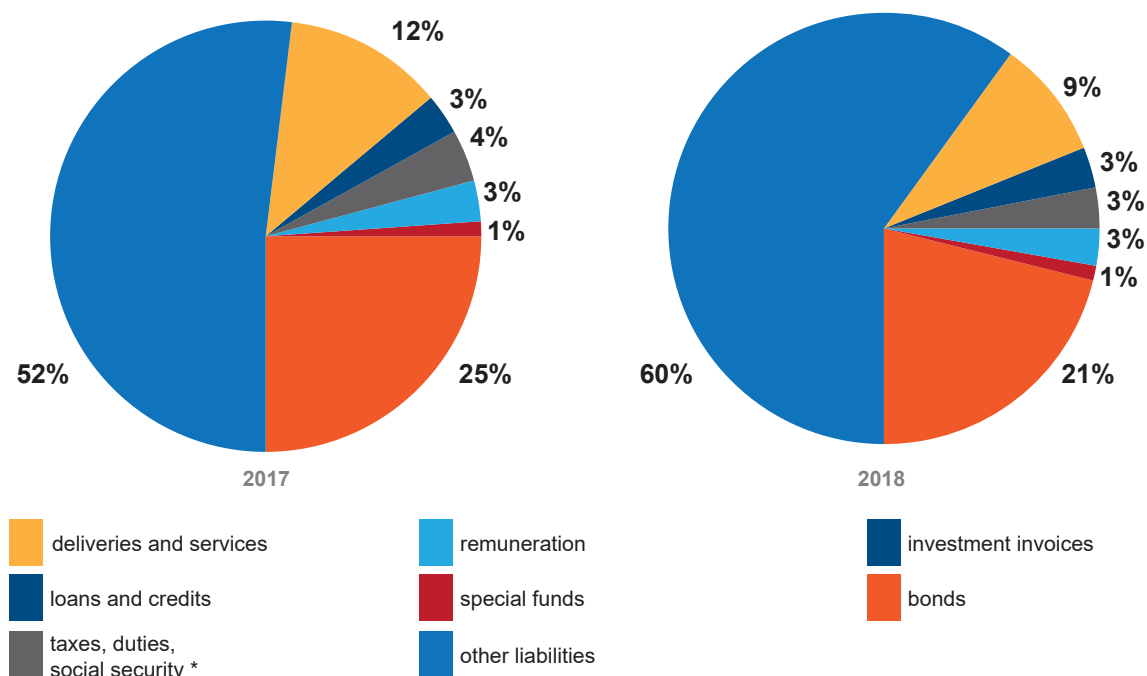
### Structure of long-term liabilities in 2017-2018



Short-term liabilities as at the end of 2018 amounted to PLN 4,586.8 million and were higher than in 2017 by approx. 17%. The recorded increase in short-term liabilities resulted mainly from the invoices for investment works related to the modernisation of railway infrastructure, which are to be covered mainly by EU and state budget funds and from EIB loan instalments disbursed.

The reason for the increase in short-term liabilities was also an increase in other settlements, e.g. tender deposits or guarantee deposits.

## Structure of short-term liabilities in 2017-2018



## Economic-financial results

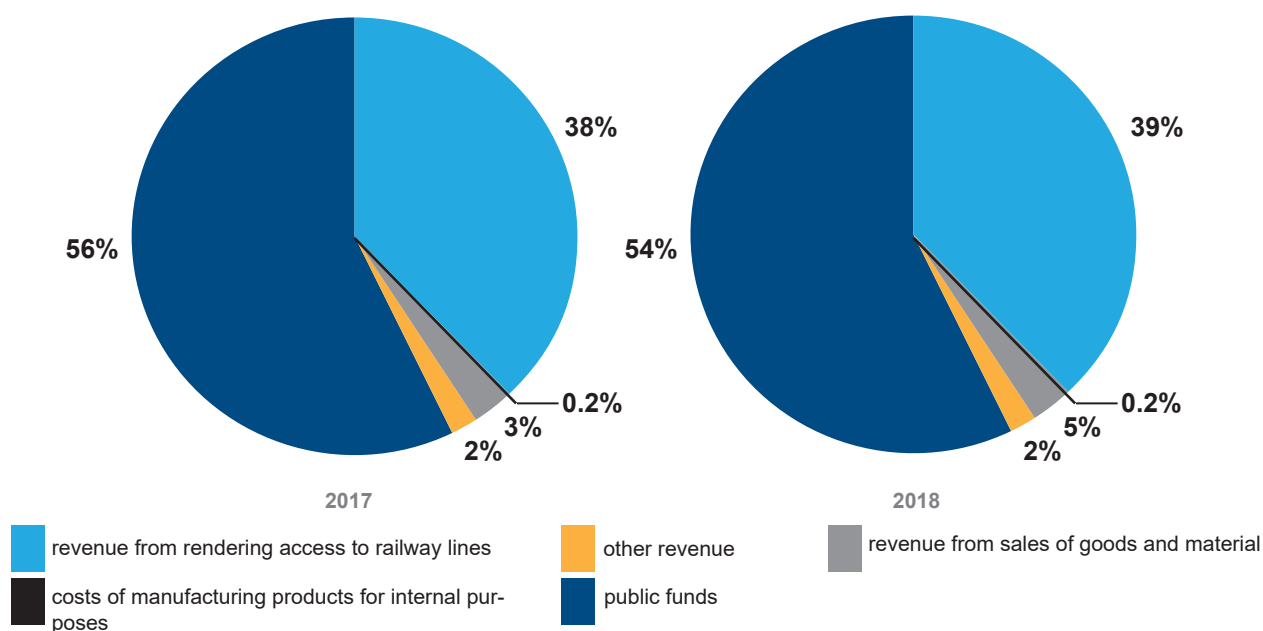
### Financial results of the economic activity of PKP Polskie Linie Kolejowe S.A., in PLN million

No.	Item	2017	2018	Change	
				Value (PLN million)	%
1.	Revenues from sales and equivalent	5,717.6	5,890.1	172.5	3.0
2.	Operating costs	6,530.2	6,551.1	21.0	0.3
3.	Result on sales (1-2)	-812.5	-661.0	151.5	-18.6
4.	Other operating revenue	1,162.4	1,416.8	254.4	21.9
5.	Other operating costs	514.4	672.5	158.2	30.8
6.	Results on other operating activities (4-5)	648.1	744.2	96.2	14.8
7.	Profit (loss) on operations (3+6)	-164.4	83.2	247.7	-150.6
8.	Result on operating activity excluding depreciation and amortisation (EBITA)	1,510.2	1,819.6	309.5	20.5
9.	Financial revenue	278.0	71.7	-206.3	-74.2
10.	Financial costs	69.9	198.9	129.0	184.6
11.	Net profit (loss) on financial transactions (9-10)	208.1	-127.2	-335.3	-161.1
12.	Gross profit (7+11)	43.7	-43.9	-87.6	-200.5
13.	Income tax	28.6	62.5	33.9	118.8
14.	Net result (12-13)	15.1	-106.4	-121.6	-803.1
15.	Net result excluding depreciation and amortisation	1,689.8	1,630.0	-59.8	-3.5

The financial result achieved in 2018 in the amount of PLN 106.4 million was lower than that achieved in 2017 by PLN 121.6 million (in 2017 the Company recorded a positive result). The decrease in the financial result was mainly due to a loss on financial activities (a decrease by PLN 335.3 million as compared to 2017, resulting from unplanned negative foreign exchange differences resulting from a decrease in the PLN/EUR exchange rate, i.e. the currency in which PKP Polskie Linie Kolejowe S.A. has loans from the EIB, as well as higher valuation of loans at adjusted purchase

price, which led to an excessive increase in financial costs), and also the payment of 118.8% higher income tax as compared to 2017 (by PLN 33.9 million). In 2018, total revenue increased by approximately 3%, while business expenses increased by approximately 4.3% compared to 2017. The sales result improved due to an increase in revenues (by 3.0% as compared to 2017) and a slight increase in operating expenses (by 0.3% as compared to 2017).

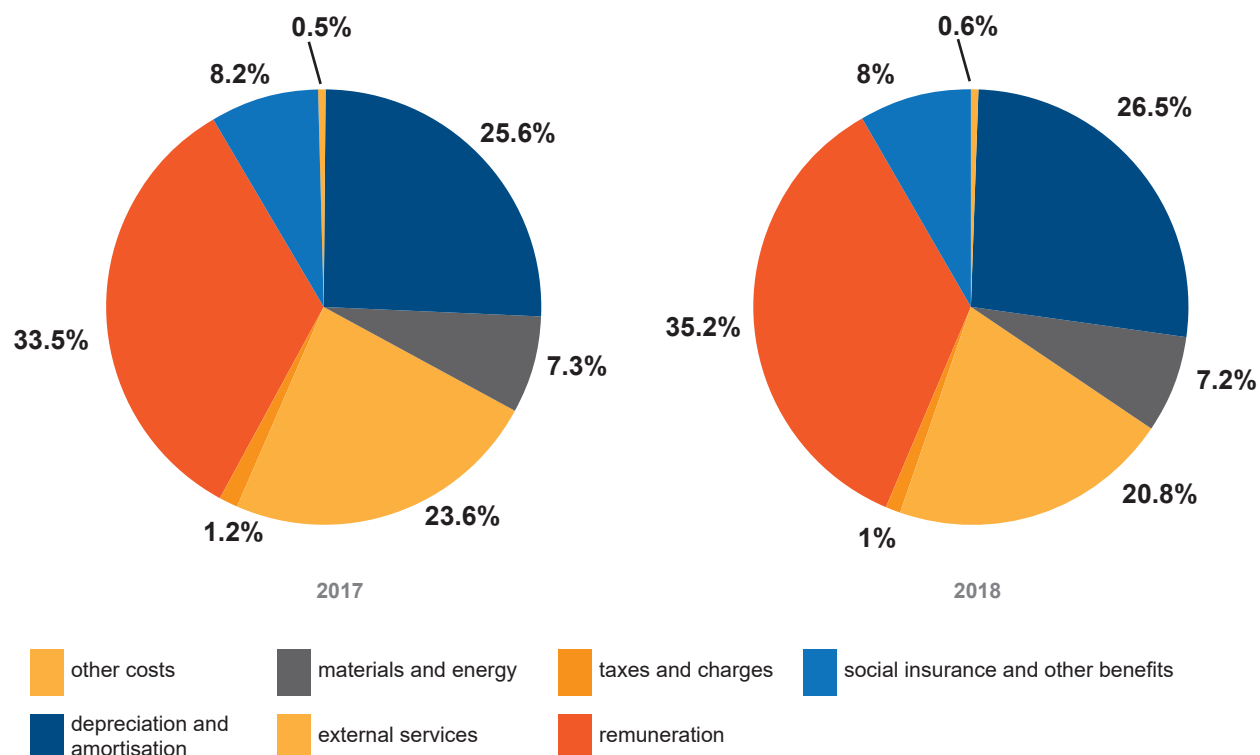
### Sales revenue and equivalent in 2017-2018



The revenues obtained in 2018 from the provision of railway lines amounted to PLN 2,300,884 thousand and were higher by PLN 99.9 million as compared to 2017, mainly due to the increase in revenues from freight carriers as a result of 10% higher operational work caused by the acquisition of new transports. Higher revenues from the sale of other services in 2018 in relation to 2017 are the effect of, among others:

1. increased demand for rental of equipment for track, investment and maintenance works;
2. making vehicles available to the Diagnostics Centre for certification and line acceptance of ETCS (European Train Control System) systems;
3. increased sales of services to foreign investors carrying out works on railway facilities (including, among others, providing land, issuing documentation, permits, establishing commissions, supervision, etc.);
4. the emergence of new revenues resulting from agreements concluded by the Infrastructure Repair Company, a new organizational unit of the Company incorporated into the structures of the Company in 2018.

## Cost structure by type in 2017-2018



Significant increase in operating costs in 2018, as compared to 2017, can be observed for such items as:

1. labour costs, i.e. costs of pays, social security and other benefits (43.7%).

Compared to 2017, the share of labour costs in the generic structure of total costs increased by 1.7 p.p., which was mainly due to the 2018 increase in pay, the change in the minimum pay being the basis for the payment of functional allowance for night work and work in dangerous, arduous and harmful conditions, the change in the rules for the payment of bonuses to remuneration for not giving a day off in exchange for work on a Sunday or a holiday, as well as due to the recognition of 12 November 2018 as a public holiday and due to higher social security contributions resulting from higher pay rates;

2. depreciation and amortisation costs (26.5%) - in this item, there was an increase by 0.9 p.p. as a result of higher depreciation and amortisation write-offs than fixed asset expenditures accounted for in 2018;
3. costs of external services (20.8%) - there was a decrease by 2.9 p.p. in total, due to lower performance of maintenance and repair tasks.

Other cost categories, i.e. materials and energy (7.2%), taxes and charges (1.2%) and other costs by type (0.6%) had a less significant share in total costs.

In 2018, in comparison to 2017, the following improved: the margin on sales and EBITDA margin (relation of profit on operating activity increased by depreciation and amortization to net sales revenues), thanks to obtaining higher revenues from provision of access to railway lines as a result of the increase in operating work carried out by freight carriers, revenues from scrap metal sales due to the increased amount of recoveries from investments carried out and the favourable situation on the scrap trade market, as well as from the release of provisions created in previous years for the needs of claims of contractors performing investment tasks. The following factors contributed to the worsening of the Company's operating efficiency, including the use of assets and capital employed: net loss incurred in 2018 as a consequence of negative exchange rate differences resulting from an increase in the PLN/EUR exchange rate - the currency in which the Company has loans from the EIB and payment of a higher income tax. The Company's financial liquidity remained unchanged as compared to 2017 (the Company has retained its ability to meet its short-term liabilities). Workforce productivity also increased – the revenues from sales amounted to PLN 151.7 thousand per one employee employed in the Company, which is by PLN 6.6 thousand more than in 2017.

# Train path sales

## Rendering access to railway infrastructure

PKP Polskie Linie Kolejowe S.A. is the manager of the national railway infrastructure to which it renders access on equal terms. In 2018, access was provided in accordance with the principles set out in the Act on Rail Transport and the Regulation of the Minister competent for infrastructure of 7 April 2017 on access to railway infrastructure. The amended Act on Rail Transport, which came into force on 30 December 2016, significantly influenced the conditions of access to railway infrastructure starting from the timetable in force since 10 December 2017. The Act expanded the group of entities entitled to order throughput by introducing the notion of "applicant", which may be, as in the past, a railway operator, but also an international economic interest grouping including rail carriers or another entity interested in obtaining throughput, in particular an organiser of public rail transport, forwarder, freight forwarder or a combined transport operator. The use of railway infrastructure continues to be available only to railway operators. An applicant who is not an operator must indicate an operator who will carry out the train ride. As a consequence, the manager rendering access to infrastructure shall enter into a throughput allocation agreement with the applicant and a throughput utilisation agreement with the operator.

In 2018, on the basis of train timetable provided to railway applicants, a total of 2,589,444 train rides were performed, including on the basis of:

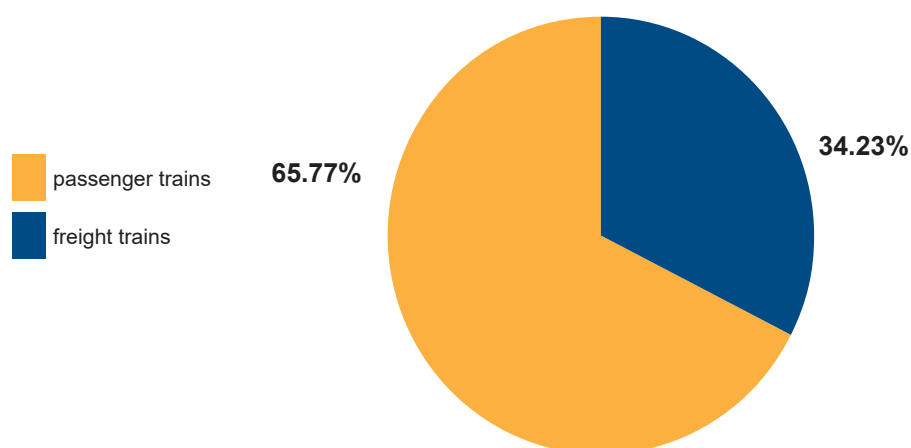
1. The Annual Timetable prepared on the basis of applications made by applicants. It was updated during its validity period on pre-arranged dates – 1,737,501 train rides;
2. The Individual Timetable developed by PKP Polskie Linie Kolejowe S.A. when there is some throughput available, upon request made by individual applicant for train routes allocation – 851,943 train rides.

In 2018, the Company made its railway lines available to 91 operators, including 17 lines for passenger services (11 lines for regular passenger services), 70 lines for freight services and 4 for passenger and freight services. 5 new clients launched their business activity on the network managed by PKP Polskie Linie Kolejowe S.A.

The basic reference value in terms of measuring access to railway lines is operational performance expressed in train-kilometres [train-km]. In 2018, 246.68 million train-km were achieved, including: 162.24 million train-km in passenger services and 84.44 million train-km in freight services.

In 2018, PKP Polskie Linie Kolejowe S.A. noted a 4.89% increase in total operating performance of its clients as compared to 2017 (passenger service segment witnessed an increase of 2.34%, while the freight service segment – an increase of 10.17%).

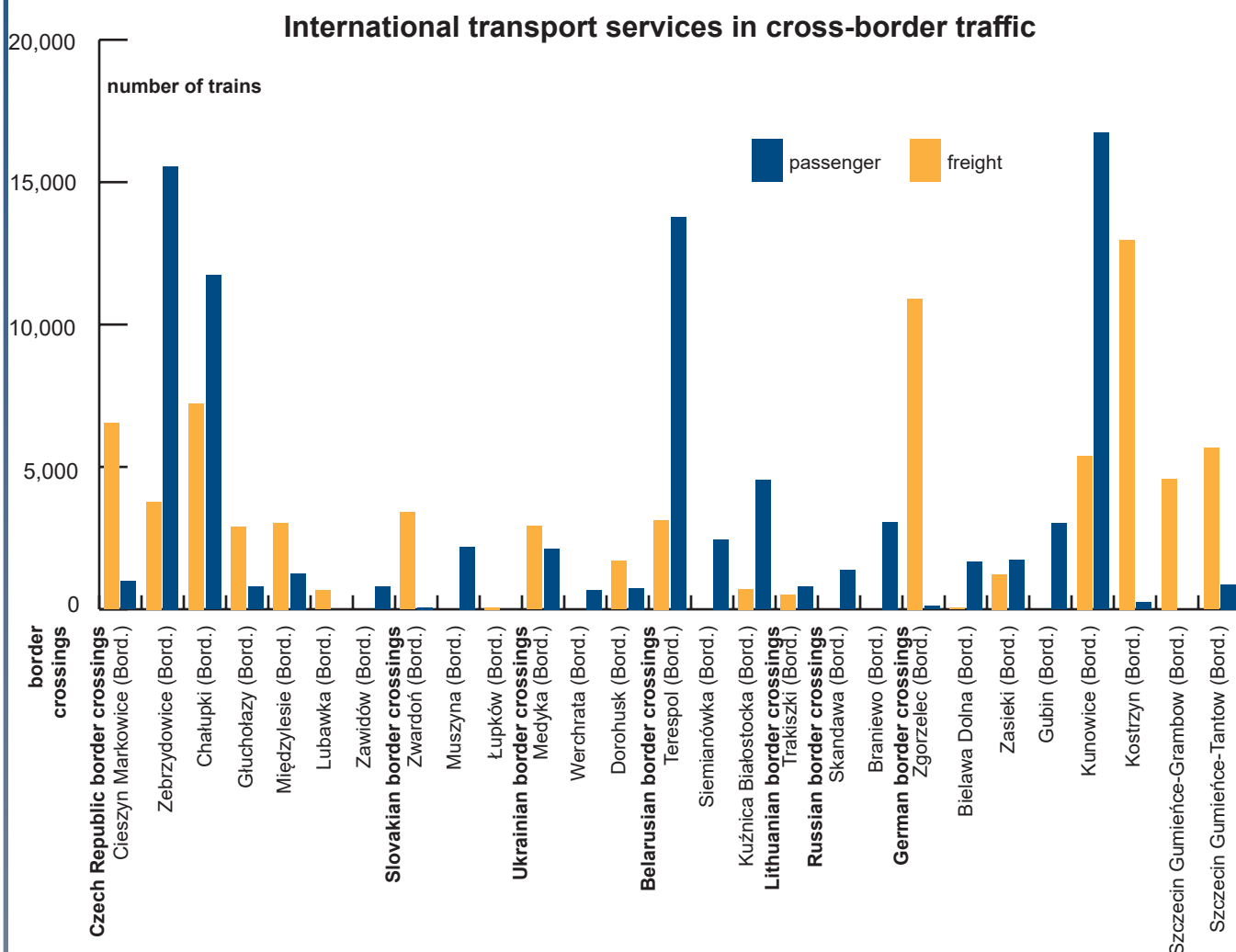
### Structure of operational performance per train types in 2018



# Data concerning completed international carriages

International transport services in cross-border traffic in 2018 were performed by 59 operators, who in most cases used the following border crossings:

1. for passenger traffic: Kostrzyn (Poland – Germany), Zgorzelec (Poland – Germany), Markowice (Poland – Czech Republic) and Cieszyn Chałupki (Poland – Czech Republic);
2. for freight traffic: Kunowice (Poland – Germany), Zebrzydowice (Poland – Czech Republic), Terespol (Poland – Belarus) and Chałupki (Poland – Czech Republic).



In 2018, 164,970 rides of international trains were organised, of which 77,523 for passenger traffic and 87,447 for freight traffic. Rides across Polish-German border accounted for 40% (65,249) of international rides, the Polish-Czech border – 34% (55,328), Polish-Belarusian border – 15% (24,654), Polish-Ukrainian border – 5% (8,207), Polish-Slovak border – 3% (5,744), Polish-Russian border – 3% (4,463) and Polish-Lithuanian border – 1% (1,325).

In 2018, within 24 hours, PKP Polskie Linie Kolejowe S.A. performed on average 452 rides of international trains as part of Individual Timetable and Annual Timetable.

In order to facilitate the use of international train paths by railway undertakings, the One Stop Shop (OSS) unit of PKP Polskie Linie Kolejowe S.A.,

which is a part of the international OSS network of the Association of European Railway Infrastructure Managers RailNetEurope (RNE), provides comprehensive information on the conditions that must be met in order for RNE members to gain access to the infrastructure and the products and services they offer. A client who is interested in an international train ride may turn to one of the OSS, which will then take over the process of allocation along the entire train route.

PKP Polskie Linie Kolejowe S.A. cooperates with neighbouring railway infrastructure managers in terms of annual and individual timetables in both passenger and freight traffic. Cooperation with RŽD (Russia), LG (Lithuania), BC (Belarus) and UZ (Ukraine) railways is based on bilateral agreements, while with DB Netz (Germany), SŽDC

(the Czech Republic) and ŽSR (Slovakia) – under bilateral agreements as well as regulations of international organisations.

Trains rides under Individual Timetables are arranged in a separate way:

1. between PKP Polskie Linie Kolejowe S.A. and DB Netz, SŽDC and ŽSR – they are based on a common procedure (24h/day, through

- the Railway Traffic Management Centre branches being coordinated in Warsaw);
2. for the remaining neighbouring infrastructure managers – by the OSS unit at the Railway Traffic Management Centre in Warsaw.

## Operating systems

The primary system used at the Railway Traffic Management Centre is the Operating Performance Registration System (SEPE). It cooperates with approx. 30 systems used by PKP Polskie Linie Kolejowe S.A. and systems owned by railway operators and neighbouring infrastructure managers.

The information included in the SEPE system come from the following sources:

1. The Train Dispatcher Support System (SWDR), in which train dispatchers record times at which trains pass through their posts within an average time of approx. 3 minutes after the train has passed through;
2. GPS transmitters installed on traction vehicles of railway operators;
3. data from Local Control Command and Signalling Centres (LCS, the so-called “track signal”);
4. data registered in SEPE by line dispatchers based on information from train dispatchers.

Apart from data on the current location of trains, SEPE also registers data on reasons for delays along with an indication of the entity responsible for the delay, events occurring on the network managed by the Company, planned and emergency track closures.

Information on the current location of trains, delays and reasons for such delays as well as events occurring on the railway network are presented in the Crisis Management Centre Map (CZK Map) application constituting the primary tool in crisis situations. The CZK Map is also used in the exploitation process on an ongoing basis.

At the request of railway undertakings, a dedicated version of the application CZK-P map was developed, which enables presenting information about the current location of a train of a given undertaking, which uses the application, and other railway undertakings, which agreed to have access to data about their trains. The described functionality of the application CZK-P map is used by passenger carriers, and since 2018 also freight carriers.

The application used to monitor international train traffic is the Train Information System (TIS) which collects and presents data on trains running on the railway networks in most EU Member States.

Applications described above (apart from TIS) have been developed by PKP Polskie Linie Kolejowe S.A. using own means, which significantly facilitated the software development and implementation process.

Implementation work is being carried out for project entitled: “Development of a design, performance and implementation of an IT solution titled SEPE II – Operating Performance Registration System v. II” has been continued; the new system is planned to replace the SEPE system currently in use. Dispatcher application modules and functionalities dedicated for railway undertakings are being implemented.

# Infrastructure

## Rail roads

In 2018, the length of railway lines in use changed. In the year under review, the length of the line increased by over 23 km compared to 2017. The modification was a result of the need to adapt infrastructure to the changing transport needs.

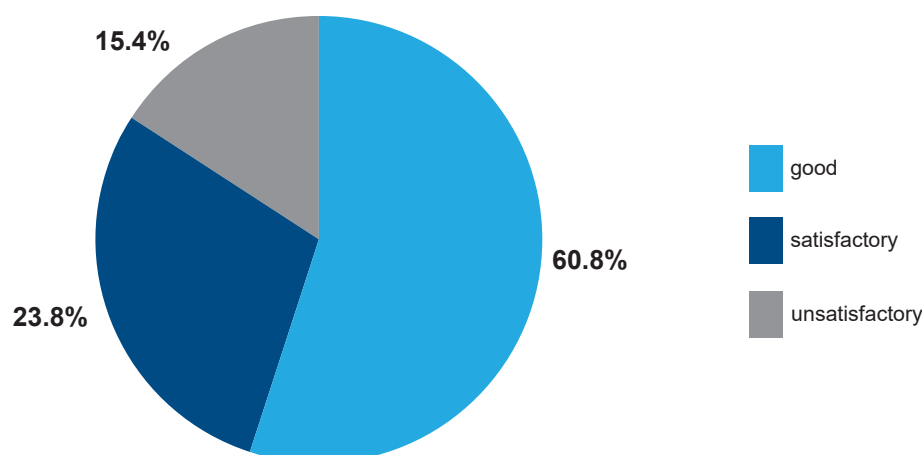
List of railway infrastructure in use, managed by PKP Polskie Linie Kolejowe S.A. (as at 31 December 2018):

- 18,536 km of railway lines (35,863 km of tracks), including:
  - 27,154 km of route tracks and main principal tracks at stations;
  - 8,709 km of station tracks.
- 38,815 turnouts, including:
  - 17,822 turnouts in route tracks and main principal tracks;
  - 20,993 turnouts in station tracks;
- 14 173 crossings in the rail level, including operated lines:  
in total 12 259, including rail-road crossings of the following categories:
  - A – 2,337 items;
  - B – 1,255 items;
  - C – 1,415 items;
  - D – 6,200 items;
  - F – 584 items;
  - pedestrian crossings of cat. E – 468 items.
- 25,152 engineering structures; including 6,388 bridges and viaducts;
- 5,764 buildings;
- 14,487 structures.

### Road infrastructure technical condition

As a result of the maintenance and repair work as well as investment tasks performed in 2018, the length of railway line tracks graded as good in terms of technical condition (as at 31 December 2018) represent-

ed 60.44% of the total track length, which is a 1.54% increase in comparison to the status from 31 December 2017, 58.9% of tracks were good.



The diagram above was developed based on the following criteria:

- good – railway lines operated in line with the assumed parameters, only maintenance work is required;
- satisfactory – railway lines with lower operation parameters (reduced top timetable speed, local speed limits); to restore the maximum operational parameters, in addition to maintenance work, ongoing repairs are required comprising replacement of faulty track elements;

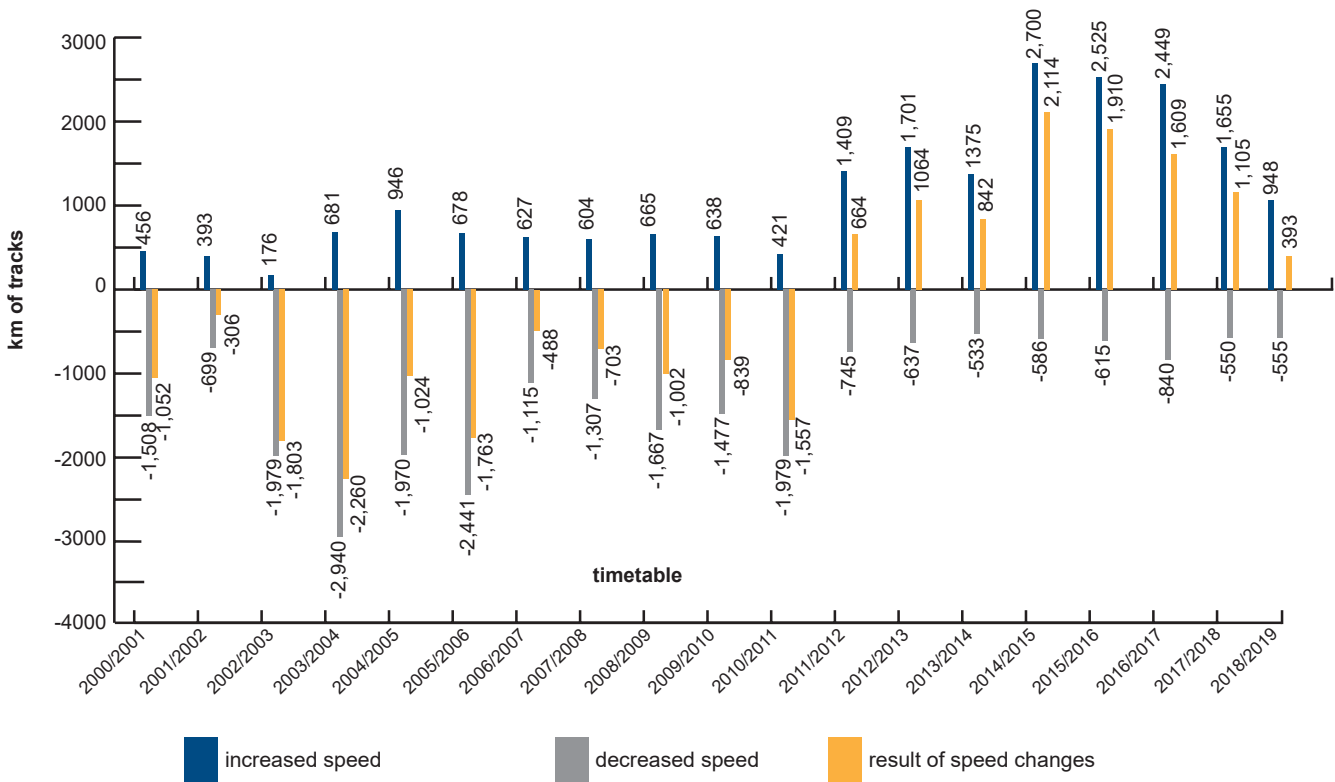


3. unsatisfactory – railway lines of significantly lower operation parameters (low timetable speed, large number of local speed limits, lower permissible loads), which qualify railway tracks for comprehensive replacement.

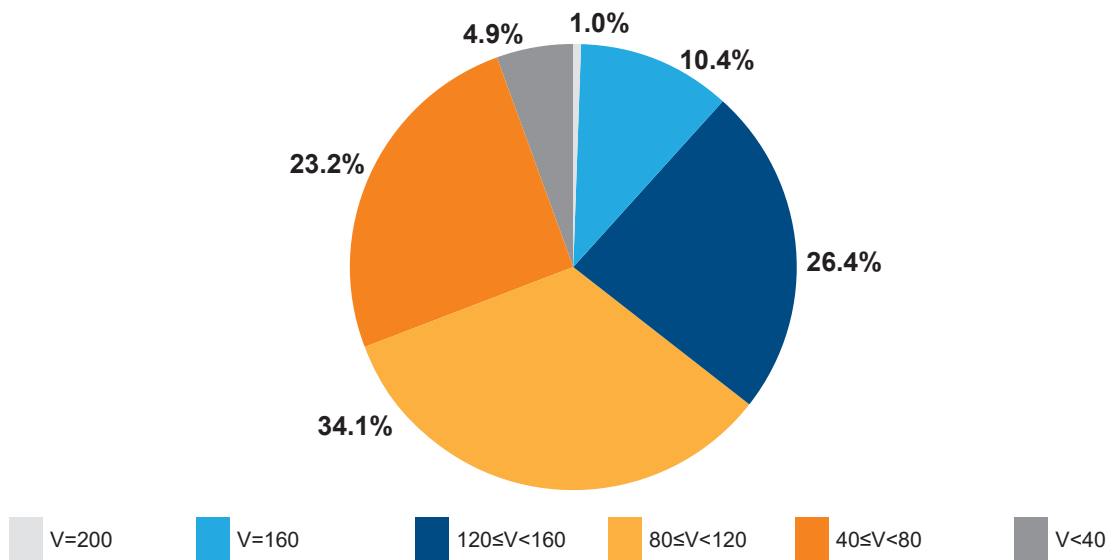
2018/19 for passenger trains on 948 km of tracks, and decreased speed on 555 km of tracks.

The effect of improved technical condition of tracks was the higher top timetable speed in the Train Timetable

### The length of operated railway line tracks managed by PKP Polskie Linie Kolejowe S.A. where top timetable speeds were changed (as at day when the Train Timetable became effective 2017/2018)



### Percentage structure of maximum distribution speeds as of the day implementation of the Train Timetable for 2017/2018



The Company's successes also include the stable growth in the length of tracks with a top timetable speed of  $V_{max} \geq 120$  km/h.

As at the end of 2018, the length of such tracks amounted to 10,278 km, compared to 10,244 km as at the end of 2017, and at the end of 2014 - 7,818 km.

## Automatics and Telecommunication

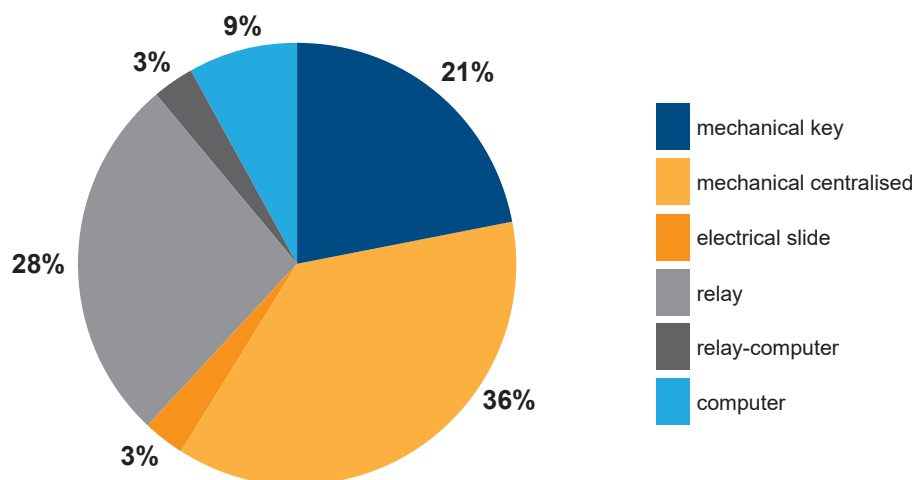
Control command and signalling (CCS) systems can be divided into three basic functional groups:

1. station equipment installed at operating control points;
2. wayside equipment controlling train traffic on railway routes;
3. traffic safety equipment at level crossings.

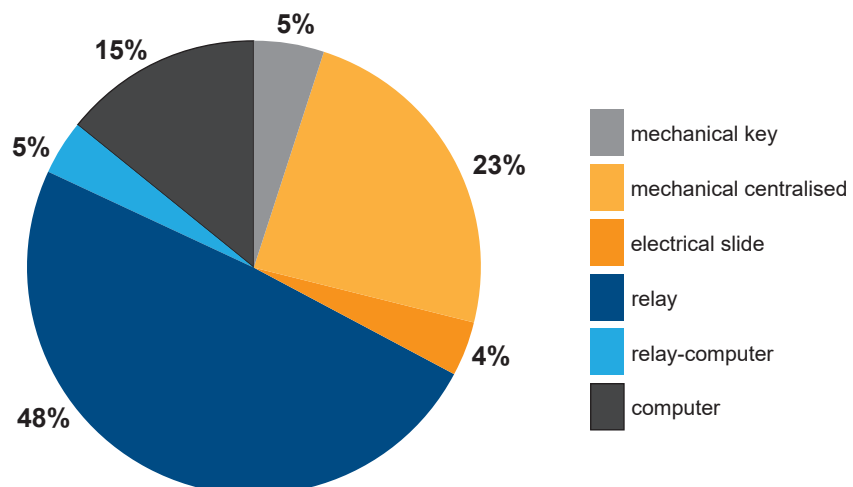
The above-mentioned systems still predominantly use relay and mechanical equipment. However, the dynamic development of IT technology has resulted in its vast application in CCS and automatic control systems. The latest generation of CCS equipment comprises comput-

er systems and relay computer (hybrid) systems which combine cutting-edge features, reliability and extended functionality in addition to ensuring a high level of traffic safety. According to the status of 31 December 2018, 35 Local Traffic Control Centres (LCS) with the CCS system were in operation as well as 5 LCS with the CCS system dedicated to low-traffic lines and 29 sections of lines on which remote control takes place. In total, the remote control unit comprises 208 switch circles, controlling a total number of 4,321 conversion points and 5,431 signalling devices.

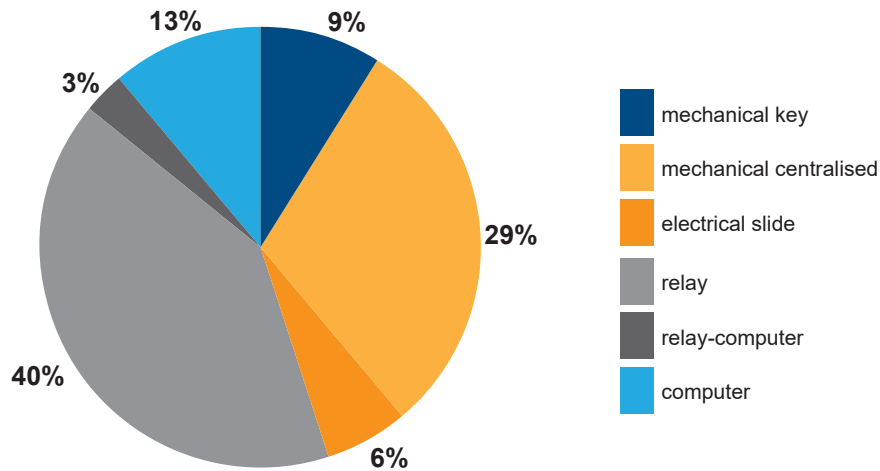
### The signal box control areas in various types of station traffic CCS equipment



### Light signals in various types of station traffic control devices



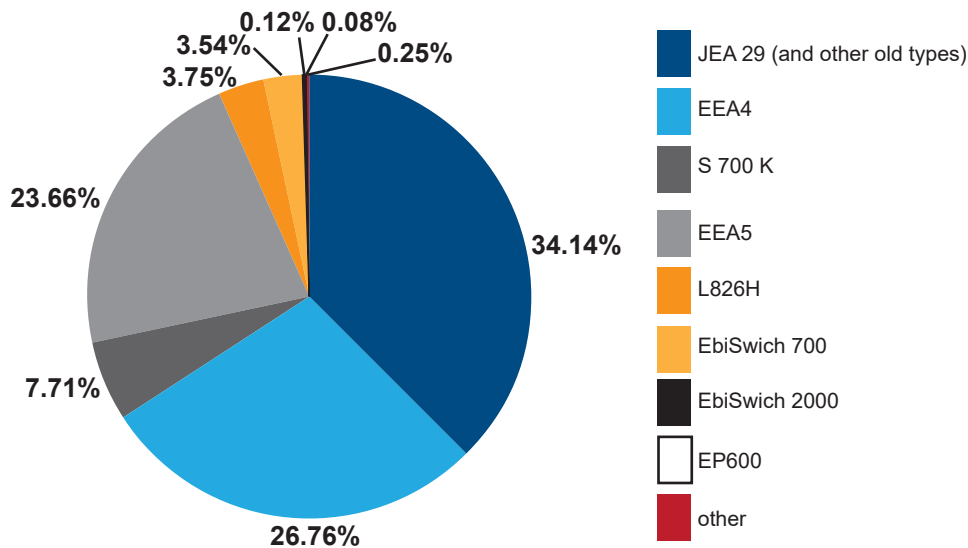
### Switches in various types of station CCS equipment



Point machines play an important role in safe and efficient rail traffic management. In 2018, as a result of modernisation works and purchase carried out as part of maintenance works on the PKP Polskie Linie Kolejowe S.A. network 865 new points machines were introduced. As at 31 December 2018, a total of 38,809 mechanical and electrical point machines (of which 77.5% represents electrical point machines and 22.5% represents mechanical

point machines) have been used on the railway line network managed by PKP Polskie Linie Kolejowe S.A. The share of individual types of electrical point machines in the total number of point machines has been presented in the chart below.

### Type of point machines used



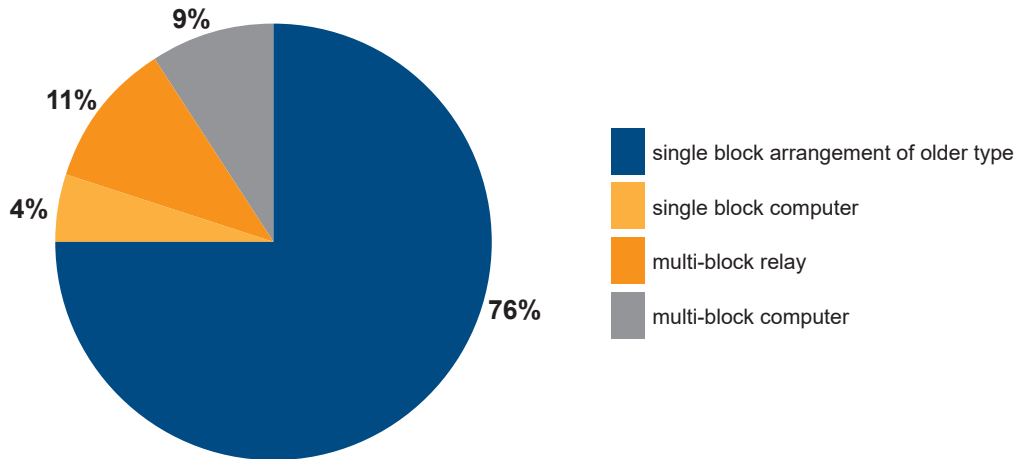
### Groups of railway traffic control devices in numbers

station equipment	As at 31/12/2018		
	signalling centre control area	switch conversion	signalling device
mechanical key	610	3,932	2,090
mechanical centralised	1,018	13,274	10,803
electrical slide	86	2,830	1,908
relay	784	18,363	22,405
relay-computer	96	1,470	2,088
computer	268	5,845	7,175
<b>In total</b>	<b>2,862</b>	<b>45,714</b>	<b>46,469</b>

The safety of train rides between operating control points is ensured by block signalling systems – single block and multi block – which have been installed on 16,105 km of railway lines. Single-block systems on railway lines managed by PKP Polskie Linie Kolejowe S.A. – 12,819 km of railway lines have them, while 674 km have systems utilising latest computer-controlled tech-

nologies. Multi-block systems have been installed on 3,286 km of railway lines, of which 1,503 km are computer-based blocks, featuring integrated remote diagnosis systems, controlling and recording technical and operational parameters of the system.

### Types of signalling block systems

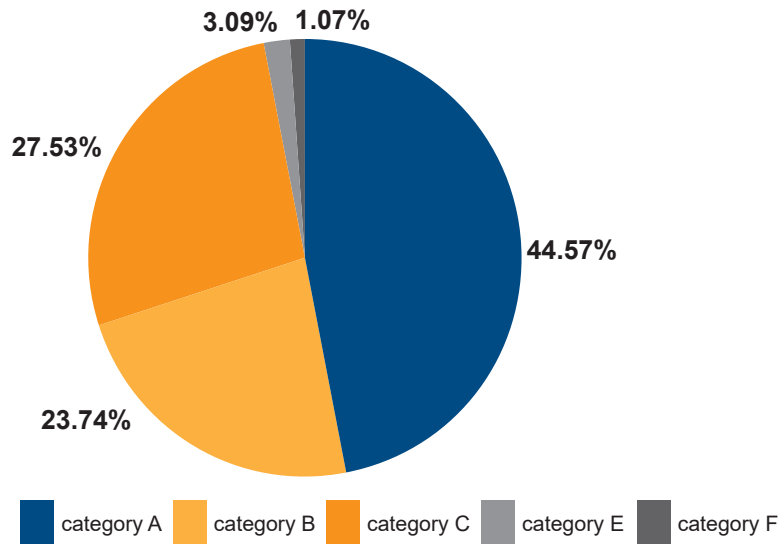


The railway line network managed by PKP Polskie Linie Kolejowe S.A. features 12,259 level crossings, with 5,315 crossings equipped in traffic safety equipment, which represents 43.5% of all level crossings.

The intersections of railway lines managed by PKP Polskie Linie Kolejowe S.A. and public roads are equipped with 1,788 sets of such modern technical solutions, installed on category A, B, C and E crossings, which represents 31,6 % of all types of crossing equipment used.

The computer technology is also used in traffic safety equipment installed on level crossings. Equipment used at crossings features auto-diagnostic systems, systems that register all operation events as well as solutions controlling the operation of the entire system.

### Division of road/railway level crossings equipped with traffic protection devices into categories

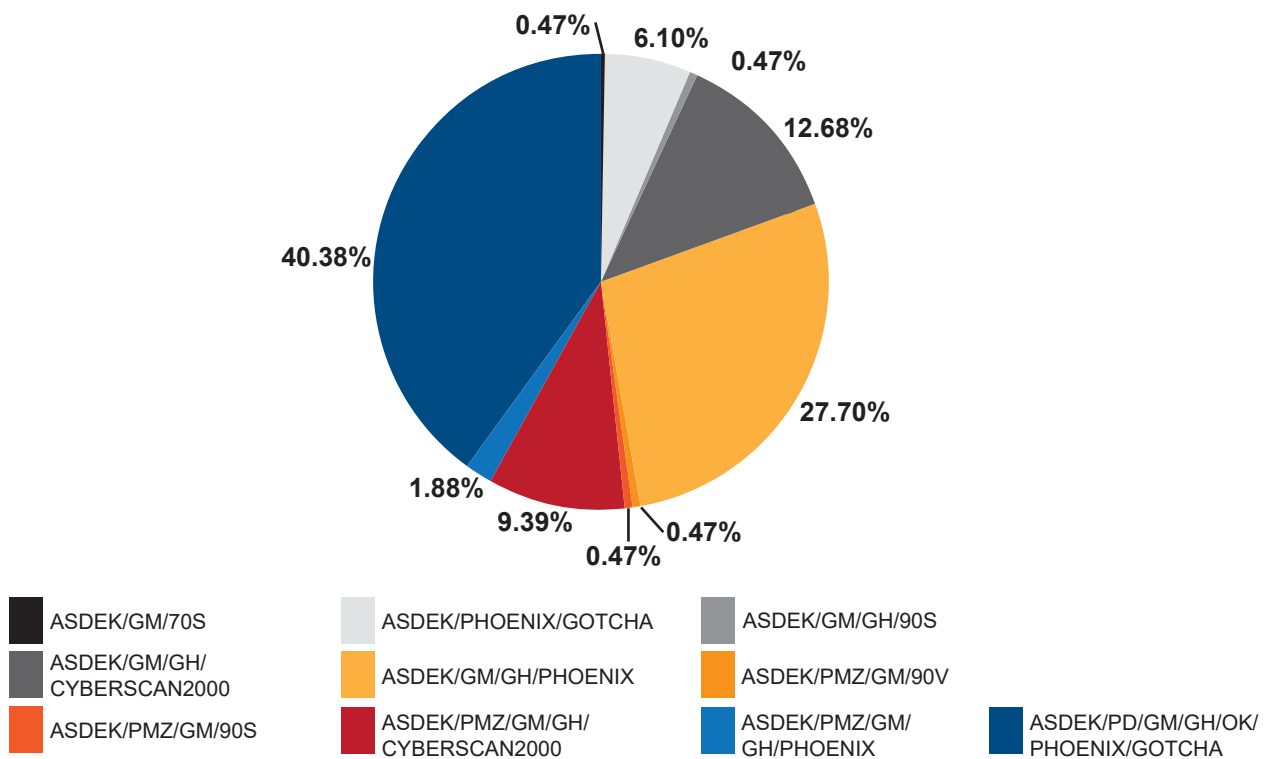


In order to ensure a constant and high level of operating safety, the modernised railway lines were equipped with defect detectors (dSAT). Currently, dSAT devices are installed in 213 locations on the premises of 22 Railway Lines District Units. These systems, depending on their diagnostic configuration, can detect remotely (while the train is in motion) the following emergency conditions:

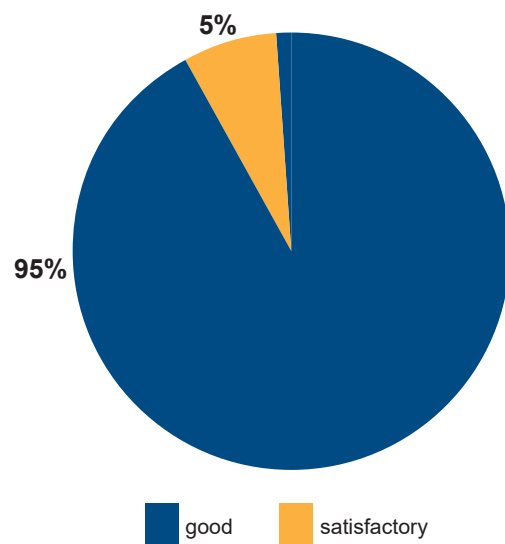
- failure of axle bearings (GM function);
- failure of block and disc brakes (GH function);
- deformation of wheel rims (PM function);
- dynamic overload (PD function);
- excessive axle and line loads (OK function).

In 2018, in connection with the Company's efforts to systematically replace old-generation equipment with technically and IT-advanced devices of the latest generation, a decision was taken on the need to harmonise the "Technical and operational guidelines for le-3 rolling stock emergency detection equipment" with other standards binding in the Company and improving the operation processes.

### Percentage share of types of defect detectors used



### Technical conditions of defect detectors used



In 2018, a permit was obtained for the ERTMS/ETCS Level 2 system, built on the Legnica - Wrocław - Opole section of the E30 line, to be put into service as part of the project "Modernisation of the E30 railway line, Stage II. Deployment of ERTMS/ETCS and ERTMS/GSM-R in Poland on the Legnica - Wrocław - Opole section" were continued.

Moreover, the works on the implementation of the ERTMS/ETCS Level 2 system on the lines:

- E 65 ("Design and installation of ERTMS/ETCS Level 2 and ERTMS/GSM-R system with control-command and signalling devices of the superior layer for 8 LCS on the railway line E-65 Warsaw – Gdynia");
- 1 and 17 ("Design and construction of LCS Skiernewice and ERTMS/ETCS Level 2/GSM-R on the Warszawa Zachodnia – Koluszki section from km 3,900 - 104,918 of line no. 1 and Koluszki – Łódź Widzew from km 26,400 - 7,200 of line no. 17") were carried out.

The works within the multi-branch projects covering the development of the ERTMS/ETCS Level 2 system "Works on the railway line no. 7 Warszawa Wschodnia Osobowa – Dorohusk on the Warszawa – Otwock - Dęblin – Lublin section, stage II" and "Restoration of traffic in the Łódź Railway Junction (TEN-T), stage II, the Łódź Fabryczna – Łódź Kaliska/Łódź Żabieniec section", were continued.

Contracts were also signed with contractors for the construction of the ERTMS/ETCS Level 2 system within the following tasks:

- "Construction of ERTMS/ETCS Level 2 system on line E30, Podłęże – Rzeszów",
- "Installation of ERTMS/ETCS system on line 278 Węgliniec – Zgorzelec",
- Installation of ERTMS/ETCS Level 2 system on line E59 on the Wrocław – Poznań section";
- "Development of the ERTMS/ETCS Level 2 system on the line E20 Kunowice – Terespol (excluding the Warsaw junction)".

Tender procedures were initiated for the task "Design and development of the ERTMS/ETCS system on line E75 on the Warsaw Rembertów – Białystok section" within CEF I projects (CEF "Connecting Europe" Facility funding instrument) "Work on line E75 between Sadowne and Czyżew together with the remaining work on the Warsaw Rembertów – Sadowne section" and CEF II "Work on the E75 line between Czyżew and Białystok", as well as for a multi-branch project covering the scope of development of the ERTMS/ETCS Level 2 system, entitled "Construction work on line 227/249 and the Gdańsk Zaspas Towarowa station and line 722" as part of the project "Improvement of the railway infrastructure of access to the port of Gdańsk".

Important achievements in the field of research and technological development:

1. the process of exploitation tests and certification of the DGT 3490 RPD Radio Dispatch Console by DGT Sp. z o.o. was completed with a positive result. The system has been granted an indefinite approval for operation issued by the Office of Rail Transport (UTK);
2. the SIM-B closed-circuit television system of Krakowskie Zakłady Automatyki S.A. was allowed to be used in accordance with the procedure of the Security Management System SMS PW-17;
3. supervision over the implementation of testing plots was carried out in order to conduct operational tests for the purpose of obtaining the certificates of approval for operation issued by the Office of Rail Transport for:
  - PEBL semi-automatic line block system by KZA Lublin Sp. z o.o.;
  - Eap-2000 semi-automatic line block system by PPHU Maciej Grot Sp. z o.o.;
  - the hydraulic drive system smartDrive (Hy-Drive) by Alstom Konstal S.A.;
  - ESA 44-PL computerized station system of railway traffic control by AŽD PRAHA s.r.o.;
  - P-80 points machine by Alstom Konstal S.A.;
  - ECOSTAR 4 points machine by voestalpine SIGNALING Sopot sp. z o.o.;
  - LED signal lanterns type TLT-8/K by Telkol sp. z o.o.
4. a two-year project entitled: "Replacement of course deceleration systems in order to adapt the Company's railway network to trains with a wheelbase of up to 20 m". Therefore, there is no longer any need to apply operating restrictions on the network of railway lines managed by PKP Polskie Linie Kolejowe S.A. in the form of special consignments for trains with a wheelbase of over 17 m.

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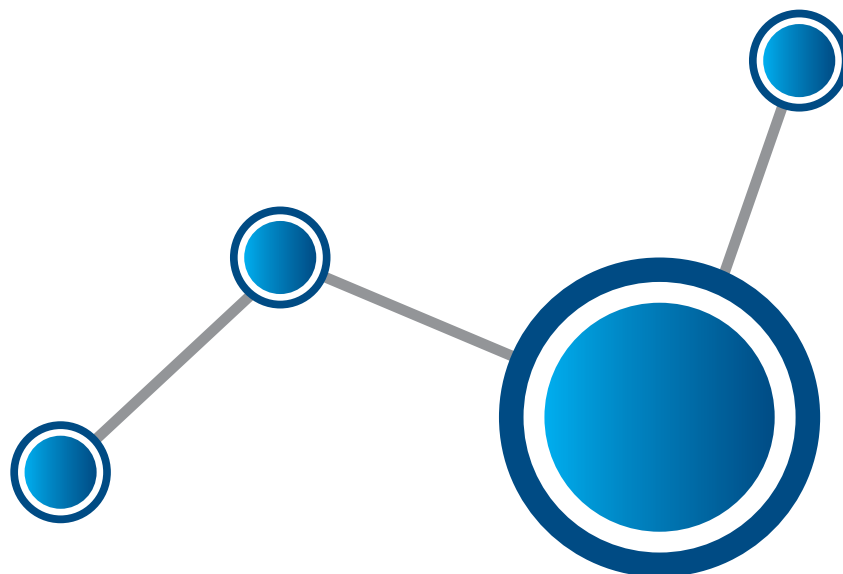
ERTMS - European Rail Traffic Management System,  
 ETCS - European Train Control System,  
 GSM-R - Global System for Rail Mobile Radiocommunications

# Electrical power devices

## Material situation

Electrical power devices managed by PKP Polskie Linie Kolejowe S.A. in 2018 as compared to 2017

Item	Unit of measure	Year	
		2018	2017
<b>Traction network devices:</b>			
length of electrified railway lines	km	11,862	11,816
length of traction network	tkm	24,783	24,697
traction network disconnectors	items	20,371	20,151
including controlled	items	13,669	13,354
<b>3 kV direct-current devices (leased by PKP Energetyka S.A.):</b>			
traction substations/sectional cabins	items	11	11
modernised traction substations /sectional cabins	items	26	26
<b>Devices for electric heating of turnouts (eor):</b>			
single conversion turnouts regulation closures	items	33,630	32,299
<b>External lighting and power systems in buildings:</b>			
points of external lighting	items	205,157	203,065
installation points and internal lighting	items	192,530	193,560
<b>MV distribution lines:</b>			
non-traction lines (NTL)	km	751	749
<b>Electric power delivery points:</b>			
number of electric power delivery points	items	16,342	16,178
contracted capacity	kW	363,382	363,839



# Traction network

## Technical condition of the traction network devices

The criteria for assessing the traction network devices are based on a mathematical algorithm. Adopted scale of assessment of the technical condition of the traction network devices:

- a) good condition – modernised equipment with acceptable degree of wear and tear; their technical condition enables further safe operation;
- b) sufficient condition – equipment requiring minor and point repairs; their technical condition enables further safe operation;
- c) unsatisfactory – equipment eligible for renovation/modernisation; the technical condition of the equipment enables their further operation with increased diagnostic supervision;
- d) inadequate condition – which due to poor technical condition should be subjected to a complete renovation (modernisation). They can be operated with increased diagnostic supervision and more intensive maintenance activities.

## Technical condition of traction network devices (percentage)

Item	Technical condition	2018	2017	2018 vs. 2017
		%	%	%
Traction network	Good	24.2	23.2	+ 1.0
	Satisfactory	47.7	48.6	- 0.9
	Unsatisfactory	25.7	25.1	+ 0.6
	Inadequate	2.4	3.1	- 0.7

## Technical condition of the traction network devices (quantitative)

Traction network	Technical condition			
	Good	Satisfactory	Unsatisfactory	Inadequate
Number of tkm	5,997	11,822	6,369	595

## Traction networks broken down by speed

The breakdown of the traction network based on operating speed is related to the intensity with which traction network infrastructure is used. Higher speed railway lines

are made available for more trains, which can achieve higher speeds, thus placing a dynamic load on the traction network.

## Traction networks broken down by maximum speed

Traction network	160 <V≤200 km/h	120 <V ≤160 km/h	V ≤120 km/h
Number of tkm	3,717	7,435	13,631
Share expressed in %	15	30	55

## External lighting devices

The criteria for assessing the external lighting devices are based on a mathematical algorithm. Adopted scale of assessment of the technical condition of the devices:

- 1. good condition – modernised equipment with acceptable degree of wear and tear; their technical condition enables further safe operation;
- 2. sufficient condition – equipment requiring minor and point repairs; their technical condition enables further safe operation;
- 3. unsatisfactory – equipment eligible for renovation/modernisation; the technical condition of the equipment enables their further operation with increased diagnostic supervision;
- 4. inadequate condition – which due to poor technical condition should be subjected to a complete renovation (modernisation). They can be operated with increased diagnostic supervision and more intensive maintenance activities.



## Technical condition of the external lighting devices

Item	Technical condition	2018	2017	2018 vs. 2017
		%	%	%
External lighting devices	Good	31.2	30.2	+ 1.0
	Satisfactory	27.1	28.3	- 1.2
	Unsatisfactory	18.1	18.0	+ 0.1
	Inadequate	23.6	23.5	+ 0.1

The year 2018 witnessed the continuation of the programme consisting in the replacement of external lighting fixtures and poles. As part of renovation work and the programme aimed to improve energy efficiency, 2,402 fixtures

were replaced with power efficient units along with 526 light poles. These measures ensure proper lighting of railway areas as well as help reduce power consumption.

## Electric heating of turnouts (eor)

Evaluation of the technical condition of eor devices uses a methodology, which to a great extent consists of the subjective assessment of the diagnostician or inspector diagnostician who conducts the assessment. Adopted scale of assessment of technical condition of eor devices:

1. good condition – this grade is given to equipment that meets the following criteria:
  - current period for which equipment has been in operation does not exceed 50% of the anticipated operation period;
  - equipment that has the technical and operational parameters that are complaint with the standards and requirements established for such equipment;
  - equipment that does not require renovation, with the exception of renovation resulting from normal operational wear and tear.
2. satisfactory condition – this grade is given to equipment that meets the following criteria:
  - current period for which equipment has been in operation is between 50% and 100% of the anticipated operation period;
3. unsatisfactory condition – this grade is given to equipment that meets the following criteria:
  - the anticipated operation period has been exceeded;
  - the technical condition of equipment permits its safe operation;
  - equipment requires comprehensive modernisation or renovation work.
4. inadequate condition – this grade is given to equipment that meets the following criteria:
  - given the degree of its use, equipment fails to meet the required technical and operational parameters;
  - due to the risk of breakdown and safety risk, equipment should be put out of service.

## Technical condition of the electrical heating of turnouts (eor)

Item	Technical condition	2018	2017	2018 vs. 2017
		%	%	%
Electrical heating of turnouts	Good	50.4	49.3	+ 1.1
	Satisfactory	47.0	49.5	- 2.5
	Unsatisfactory	1.2	0.6	+ 0.6
	Inadequate	1.4	0.6	+ 0.8

The increase in the number of equipment classified according to its technical condition as equipment of unsatisfactory and inadequate condition as compared to 2017 results from the assessment of the condition of such equipment on the grounds and the time of its operation, which resulted in its transfer to the group of equipment operated for many years.

Electrical heating of turnouts (eor) is being systematical-

ly equipped with weather stations, which streamline their proper utilisation. This results in significant reduction of energy consumption. At present, 69% of electrical heating of turnouts (eor) is controlled automatically, whereas the rest is controlled manually.

Another way to raise the efficiency and reliability of electrical heating of turnouts (eor) is to replace old transformer boxes which, due to the high rate of sep-

arating transformer thefts had to be regenerated or welded on multiple occasions. However, redevelopment does not fully restore their tightness and durability,

## Power consumption and energy costs

As part of its core activities, ensuring the proper functioning of railway infrastructure, the Company purchases energy throughout the entire country. In 2018, the purchase of electric power has been carried out through 16,342 items electrical power delivery points for which 363,382 kW of electric power has been ordered (see table below). Compared to 2017, the number of delivery points increased by 164, while the installed capacity increased by 457 kW. Such a slight increase in the installed capacity is a result of the optimisation measures taken to reduce the contractual capacity of the operated connections by 23,444.0 kW on a scale of the entire Company. The second factor influencing the reduction of energy costs due to the characteristics of power connections was the change of the tariff group for approx. 600 connections in 2018. The modernisation of railway infrastructure contributes to the extension of the catalogue and the number of installed devices. It should be noted, however, that despite the use of power efficient devices, their number and power contribute to the increase in consumption and, thus, to the increase in energy costs at the Company. Forecasts for power consumption assume a further increase in this indicator and, thus, in energy costs, due to ongoing modernisation works of the railway infrastructure.

therefore they have to be replaced with new, sealed boxes made from composite and equipped with an installation that signals when the cover is opened.

## Equipment lease

In 2018, an agreement was in force between PKP Polskie Linie Kolejowe S.A. and PKP Energetyka S.A. which regulates issues related to the use by PKP Energetyka S.A. of supporting structures of the traction network belonging to the Company. In 2018, the revenue from the agreement was PLN 2,901,290.04 net for the material scope of 68,947 items support structures.

In 2018, the Company leased power processing equipment to PKP Energetyka S.A. Under the agreement, PKP Energetyka S.A. 885 assets was leased in the form of power processing and distribution equipment. Under the lease agreement, in 2018 the Company's revenue amounted to PLN 12,865,712.64 net.

Moreover, in 2018 PKP Polskie Linie Kolejowe S.A. leased a part of rooms in the managed buildings for USB2 control cabinets used to control local disconnectors of the traction network. In 2018 the agreement covered 850 facilities with 2 004 USB2 cabinets installed on them. The Company obtained the net amount of PLN 365,048.64 for the performance of the aforementioned agreement.

## Characteristics of electrical connections in the Company – as of 31 December 2018

No.	Tariff group	Data of electrical connections in the Company	
		Number	Power
		[pcs]	[kW]
	1.	2.	3.
1.	C11	1,304	14,557
2.	C12a	11,520	155,498
3.	C12b	1,370	14,216
4.	C12w	14	133
5.	C21	680	51,605
6.	C22a	1013	81,609
7.	C22b	291	25,125
8.	B11	49	479
9.	B21	12	2,919
10.	B22	9	4,816
11.	B23	16	12,159
12.	G11	1	4
13.	Lump sum	1	20
	<b>In total</b>	<b>16,342</b>	<b>363,382</b>

## Important achievements in the field of standardisation, research and technical development

### 1. Research and Development in Railway Infrastructure (BRIK) - a joint initiative of the National Centre for Research and Development (NCBiR) and PKP Polskie Linie Kolejowe S.A.

Within the framework of the initiative implemented jointly with NCBiR, which aims at increasing the competitiveness of railway transport through the implementation of modern technical solutions improving the functioning and ensuring continuous development of the industry in the area of power engineering, the following undertakings are being carried out:

- a) development of an innovative system for controlling the lighting infrastructure in the form of an innovative system for controlling the lighting infrastructure in the form of a network managed by the Company;
- b) the introduction of self-cleaning efficient photovoltaic panels on a flexible substructure integrated with an acoustic screen and smart monitoring system;
- c) development and implementation of the anti-theft system of the road network in rail transport.

### 2. Experimental testing ground "Overvoltage protection system for lineside equipment within the 3 kV DC traction network operation area"

In 2018, PKP Polskie Linie Kolejowe S.A. launched an experimental testing ground within which observations are carried out on the failure rate of the traction network and track-side equipment in relation to the neighbouring sections of other railway lines on which no protective equipment will be installed. The summary report prepared within the agreement regulating the functioning of the experimental testing ground should confirm the effectiveness of the applied solutions. This will allow for the implementation of additional regulations concerning protection against electric shock, overvoltages and lightning discharges in the DC 3 kV traction network impact zone. The implementation of the above mentioned regulation to be applied within the investment works will certainly have

an impact on the increase of the level of electrotechnical safety on railway lines managed by PKP Polskie Linie Kolejowe S.A.

### 3. New requirements for overhead contact line design

In 2018, the Company introduced changes to the investment base documents on the basis of which tender documentation is prepared. They concern the design of the overhead contact line in terms of increasing the strength, tearing and twisting of the cable insulators and installing additional insulators in the horn lightning arrester assembly to maintain the electrical connection between the lightning arrester and the messenger wire and to prevent, in case of damage or before this element falls on the contact wires of the overhead contact line. The above changes will increase the strength of the overhead contact line.

### 4. Improvement of traction power supply

In 2018, the Company signed an agreement with the Railway Institute / Infra - Centrum Doradztwa sp. z o.o. for the implementation of the task under the name: Preparation of a Feasibility Study for the OPI&E project "Improvement of Traction Power Supply". The objective of this project is to meet the requirements of Commission Regulation (EU) No 1301/2014 of 18 November 2014 on the technical specifications for interoperability relating to the energy subsystem of the rail system in the Union, thereby improving the quality and safety of the overhead contact line supply. The implementation of the project will result in particular in

- obtaining European standards on lines covered by trans-European transport corridors crossing the territory of Poland;
- ensuring interoperativeness of the railway and providing access to the Polish railway infrastructure to operators from other countries;
- improving the parameters of the overhead contact line power supply.

## Other important events having a significant impact on the Company's operations that occurred in the financial year or are anticipated in the following years

1. Continuation of the programme regarding the replacement of traction network for composite insulators of traction network;
2. Continuation of the programme of exchange of lighting poles and fittings (especially for fittings in LED technology);
3. Continuation of the programme for the replacement of load anchors with load-free tensioning devices for the traction network;
4. Continuation of activities aiming at the maintenance services for non-traction power equipment;
5. Successive elimination of "old" types of traction network. This will result in standardisation and operation of 5-7 types of traction network through the unification of used traction networks. In the tracks and main stations there will be built a network of a section of at least 420 mm<sup>2</sup>-450 mm<sup>2</sup> (contact wire material made of copper-silver alloy (CuAg) or copper-magnesium alloy (CuMg));
6. Preparation of the Terms of Reference (OPL) for the construction and implementation of the Electrical Power Management System (SZE) - an application

supporting the management of electrical power infrastructure. At the beginning of 2019, it is expected that a contract will be signed with a contractor responsible for the implementation of the application, and by the end of 2019, the entire task will be completed;

7. As part of the adopted Energy Efficiency Improvement Programme, energy efficiency improvement measures are being implemented in all possible areas of activity, in terms of power consumption and energy costs. In 2018, a total of PLN 1 966.5 thousand was earmarked for activities under the programme implementation. Examples implemented under the action programme in 2018 concerned:
  - a) thermal upgrading of buildings;
  - b) changing the building heating system;
  - c) replacement/optimisation of the power supply system of non-traction electrical power devices, i.e. outdoor lighting, devices for electric heating of turnouts (eor);
  - d) purchase of equipment used on the supervised operation ground (towers and lighting fixtures);
  - e) replacement of outdoor lighting fixtures.
8. As of 31 December 2018, PKP Polskie Linie Kolejowe S.A. operated 23 photovoltaic systems (i.e. 11 more photovoltaic systems compared to 2017) with a total installed capacity of 245 kW. In 2018, eleven sources were commissioned on the premises of three Railway Lines District Units in Lublin, Szczecin and Rzeszów. Gross electricity production in 2018 amounted to 210.952 MWh, while consumption for own needs amounted to 130.162 MWh. Thus, electricity production increased by 126.4 MWh compared to 2017.
9. Modernisation of the Power Equipment Monitoring System (SMUE), launched in 2011 by implementing the DIVIS 3 environment, allowing for a significant extension of the system functionality by the following elements:
  - a) visualisation and monitoring of the current status of the equipment;
  - b) failure diagnosis;
  - c) regulation of equipment parameters.
10. Development of the Electricity Consumption Point Management System (SZPPEE), in operation since 2017, in accordance with the Company's needs in this area. The scope of system development covers the implementation of new functionalities, including, but not limited to:
  - a) extension of the functionality for receiving, converting and handling electronic invoices from energy suppliers and sellers;
  - b) development of integration interfaces that streamline and automate business processes supported by the SZPPEE system, including the SAP CO system;
  - c) extension of the reporting module to include further additional reports;
  - d) optimising the system performance.

## Track Machinery Plant

### Operation of high-performance track machinery, restoration of rails and machine repairs

The Track Machinery Plant in Kraków is a specialised organisational unit of PKP Polskie Linie Kolejowych S.A. which carries out tasks comprising ongoing repairs, maintenance of railway lines and engineering structures as well as investments.

The plant has specialist machinery and equipment as well as process lines for restoring and welding rails. The maintenance of railway lines and engineering structures along with investment tasks are implemented using high performance specialist machinery for track and track bed work. What is crucial in the case of machinery groups is that repairs are carried out in a single take, without the need to disassemble the railway track, this significantly reduces the repair time and helps maintain uniformly high railway track parameters. This is especially important in the context of environmental protection and impact on areas adjacent to railway lines: there is no need to disturb the structure of the areas adjacent to the section under repair, to destroy access roads or to establish haul roads for transporting materials and spoil.

Rails are restored at a specialist unit – the Rail Welding Section in Bydgoszcz. In this process, the correct profile of the rail head is restored and the rails are then welded into a 210 m long rail. Thanks to the modernisation of the Rail Welding Section in Kędzierzyn Koźle, carried out in 2018, it is also possible to weld rails up to a maximum length of 240 m.

Workshops of the Track Machinery Plant in Kraków perform repairs of the P2, P3 level of railway vehicles and the planned repairs of machines and track laying machines. Track machines and welding machines are operated by a highly experienced and qualified team of workers which ensures that the quality of performed work meets the most stringent expectations of clients. To confirm the quality of services provided, the Plant has obtained the ISO 9001:2015 certificate.

## Operation of track machines from the Track Machinery Plant in Kraków in 2018

Machine	Quantity	Unit of measure
AHM 800 R	29,088	mb
P-93 i P-95	213,895	mb
OT-800 i RM 80	134,326	mb
CSM 09	294,654	mb
ZTU 300	309,664	mb
DGS 62 N	294,308	mb
UNIMAT [j.r.]	1,012	j.r.
UNIMAT [m.b.]	70,662	mb
USP [m.b.]	530,599	mb

## Diagnostics

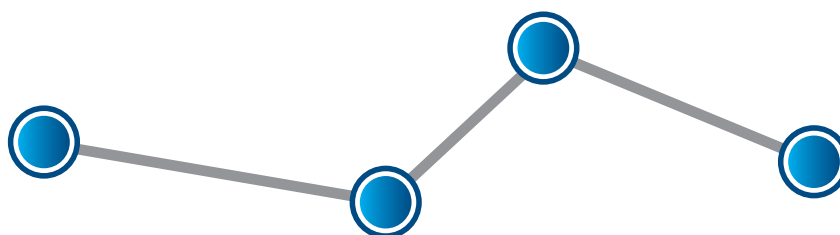
Railway infrastructure is an engineering structure characterised by three characteristics: complexity, diversity and variability. From the point of view of diagnostics, the most important is the parameter of infrastructure variability, meaning its high sensitivity to external conditions or the progress of degradation of individual elements. This feature and the direct dependence of rail traffic safety on the condition of the railway infrastructure make the assessment of the necessity, extent and urgency of infrastructure repairs an important decision-making process. The development of measurement technology, including self-propelled vehicles and measuring wagons, hand tools, and in particular IT enabling mass measurements, allows PKP Polskie Linie Kolejowe S.A. to move away from planned and preventive repairs performed independently of the condition at regular intervals and to use diagnostics as a basic pillar of infrastructure maintenance management.

The Diagnostic Centre, being a unit within the Company structures, specialising in the diagnostics of railway infrastructure, takes care of the safety of railway traffic, performing measurements and analysing the technical condition of infrastructure in the following areas:

1. track geometry and rail road infrastructure components (clearance outline), measurements of longitudinal and vertical rail profiles (the so-called waviness) and other specialist measurements, e.g. coarseness or rigidity;
2. defect detection in steel elements of railway track (looking for and revealing surface and internal

flaws and defects in rails, elements of turnouts and in rail joints);

3. functional diagnostics of defect detectors by simulating rolling stock emergency conditions using special apparatus installed on the track geometry car;
4. welding of rails and turnouts – supervision, control and assessment of performed rail joints as well as field and lab tests of the quality of joints;
5. acceptance of railway track elements of required quality to be used in railway infrastructure;
6. relay maintenance (RM) for relays used in train signalling and control systems.



**In 2018, the Diagnostics Centre performed – as part of their primary business – among others:**

No.	Task	Quantity	Unit of measure	
1.	Measurement of horizontal and longitudinal track geometry in plan and profile, using two EM120 measuring vehicles and the UPS-80 special vehicle	42,769	km of tracks	
2.	Inspection of internal rail structure in a track using a track defect detection wagon	12,213	km of tracks	
3.	Inspection of internal rail structure in a track using a track defect detection bogie	41,622	km of tracks	
4.	Defectoscopic examination of railway surface elements	Welds	1,903	items
		Padding welds	92	items
		Turnouts crossings	971	items
	Specialist examination of railway surface elements	Longitudinal rail profile	138,462	items
		Transverse rail profile	1,136	items
		Running surface coarseness	626	items
		Measurement of straightness of rail connectors	1,808	items
	Eddy current testing of rails	16,553	metres	
5.	Control of operation of axle welding sensors using defect detection wagon (DSAT) which simulates an axle-box breakdown	321	devices	
6.	Participation in bridge structure inspections using a specialist vehicle Volvo – SRS Svabo vehicle, for the purposes of inspectors from Railway Lines District Units	255	structures	
7.	Lab tests of rail welding joints	36	reports	
8.	Field tests of rail welding joints	18	reports	
9.	Investigations of welding joints on open testing grounds experimental welded and welded joints (2 tests per year)	22	reports	
10.	Training and courses in rail welding and welding supervision	87	persons	
		17	courses	
11.	Periodic and certification exams in rail welding	214	persons	
12.	Instruction and issuing of competence certificates, identification cards for welding supervision	200	items	
13.	Calibration	of track recording trolleys	944	pcs.
		rods	106	pcs.
14.	Technical acceptance of railway track elements	Turnouts	818	sets
		Various components for production of turnouts	182	pcs.
15.	Technical acceptance of railway track elements in the field (e.g. with a digital rod)	1,410	items	
16.	Relay maintenance	Own units	49,634	items
		External units	26,460	items

The values listed in the above table are planned annually on the basis of obligatory regulations and the demand from the Company's maintenance units. Additionally, the Diagnostics Centre performs inspections

of diagnostic instruments (track recording trolleys, rectifiers, rods) for the needs of other organisational units of the Company. The Centre also conducts trainings within the framework of courses improving personnel dealing with ultrasound tests and welding courses in welding, surfac-

ing and thermite welding, as well as welding supervision, training about 80 people per year (employees of Polish and foreign companies).

In addition, the Diagnostic Centre, with a view to modernising the diagnostic process and developing the unit in new areas, initiates and continues a number of projects and processes. The most important of these in 2018 were:

1. acceptance of a multifunctional, self-propelled, track-side measuring vehicle for measuring track geometry, rails, traction network, track-side inspection and track-side equipment. Supervised operation of the vehicle is in progress;
2. public procurement procedure for the construction and supply of a two-way vehicle for the inspection of civil engineering structures;
3. works in the field of recognition of the possibility of using two-way vehicles as carriers for devices of railway infrastructure diagnostic systems;
4. preliminary works on the development of the Diagnostic Database - an IT system for collecting and analysing information describing the technical condition of a railway track;

5. notification, within the cooperation between PKP Polskie Linie Kolejowe S.A. and the National Centre for Research and Development (NCBiR) in the project Research and Development in Railway Infrastructure (BRiK), of two issues concerning defectoscopy of rails and monitoring the technical condition of rails in contactless tracks. The first issue will allow for the ultrasonic examination of a larger area of the rail section during routine tests, and the second will be the task of automatic and autonomous monitoring of the temperature of the built-up rail in the contactless track and other parameters associated with it.

After the call for proposals procedure was resolved, the above mentioned tasks were directed to implementation. Consistent activities in the form of continuous monitoring, inspection and commissioning of works in railway infrastructure and the diagnosis of its condition, increase the quality of the works performed, and thus, raise the level of train traffic safety and increase the comfort of the passengers of railway journeys.

## Passenger Service Facilities

Within the scope of activities aimed at ensuring the comfort of using platforms and their access roads, PKP Polskie Linie Kolejowe S.A. undertakes a number of initiatives related, but not limited to: maintaining cleanliness, equipping passenger stations with elements nec-

essary for comfortable waiting for a train, providing clear station signs, providing access to information on train traffic and adapting stations to the needs of persons with reduced mobility.

### Passenger information

By Resolution No. 6/2018 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 2 January 2018, the instruction "Guidelines on static information on passenger train timetable at Ipi-7 passenger stations" was introduced. The guidelines constitute a rulebook for the presentation of information on passenger train schedules.

By means of the Resolution No. 870/2018 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 30 October 2018, a new version of the above-mentioned guidelines was introduced, in which some provisions were detailed and new rules regarding the poster train timetables were added.

PKP Polskie Linie Kolejowe S.A. defined the principles of presenting information on train timetable in the guidelines in question, in particular:

1. types of poster timetables;
2. acceptable poster formats;

3. graphic form and content of poster timetables;
4. principles of presentation of information on the introduction and operation of alternative bus transport (ZKA);
5. the rules for placing posters on platforms and along access roads to platforms;
6. ways of placing and attaching posters in passenger information carriers (display cases and information frames);
7. general principles of cooperation with other operators of passenger stations, i.e. railway station managers or platforms in terms of providing them with poster timetables;
8. rules for publishing, in the form of announcements in passenger stations, information on ad hoc changes in train traffic.

More than 800 information boards have been purchased and installed at approx. 600 locations, in order to ensure the best possible availability of information about train timetables.

Dynamic passenger information service is provided at 1,344 passenger stations throughout the country. In 917 locations, this is direct voice information provided by the operator - an on-call operator or a megaphone operator. The Automatic Announcement System (SAZ) using a local server responsible for generating message content using the TTS (Text-to-Speech) speech synthesizer is installed in 293 locations.

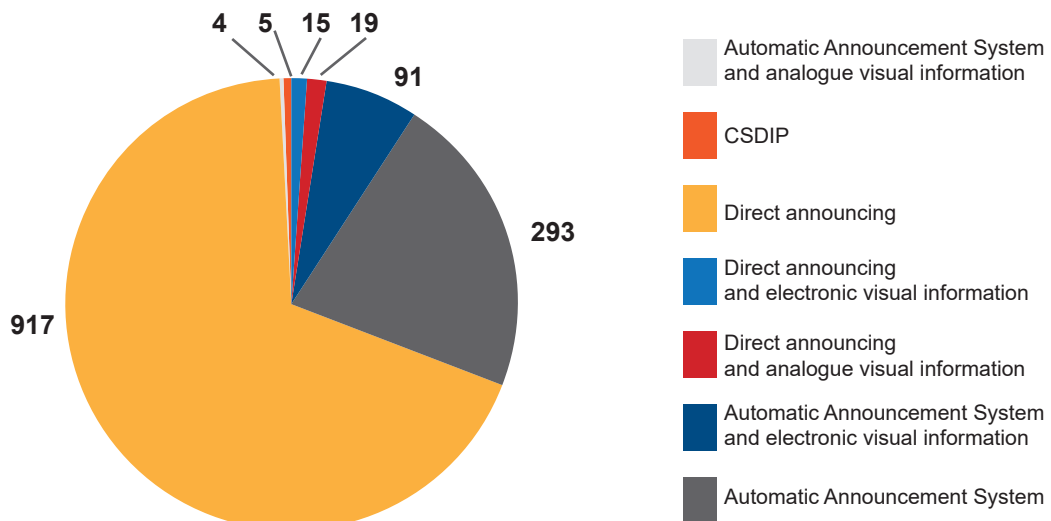
Additionally, at 129 passenger stations, voice information is accompanied by visual information, of which 106 locations are electronic systems with LCD liquid crystal displays. Analogue visual information devices are installed in 23 locations.

PKP Polskie Linie Kolejowe S.A. is gradually introducing the construction of executive elements of the Central Dynamic Passenger Information System (CSDIP) at passenger stations. The CSDIP consists of a central data server, a central system of automatic voice announcements (TTS synthesizer, owned by the Company), Central Application of the Dynamic Passenger Information System (CASDIP), which cooperates with dependent devices (displays, audio decoders, amplifiers and train presence sensors) based on communication interfaces, which are also owned by the Company. The CASDIP cooperates with the central database (collecting information about the timetable) and TTS synthesizer and controls dependent devices. Control of dependent devices is also possible by means of computerized operator service stations dedicated to particular locations, i.e. passenger stations.

In 2016-2017, the first CSDIP projects were piloted at the Zielona Góra and Jelenia Góra stations. In 2018, the pas-

senger stations Warszawa Wola, Warszawa Młynów and Warszawa Koło located on the railway line no. 20 were also connected. The CASDIP application is still being developed in order to optimize the CSDIP system, which in the future will be built on the next passenger stations. In 2019, it is planned to connect 10 more locations to the CSDIP, which will allow to service 15 centralized locations.

### Dynamic passenger information of PKP Polskie Linie Kolejowe S.A.





PKP Polskie Linie Kolejowe S.A. also undertakes activities aimed at modernisation of local SDIP (Dynamic Passenger Information System) systems. In 2018, the Company carried out modernisation works at 95 passenger stations located on the premises of 12 Railway Lines District Units. At 71 passenger stations, local applications that control public address and visual information systems have been implemented or updated.

These applications are linked to the PDP Web Service (Passenger Portal), which enables the updating of schedule data in these systems, which improves their operation and the quality of the data entered into the travel information systems. At 24 consecutive passenger stations, SDIP equipment was retrofitted or replaced.

## Video monitoring

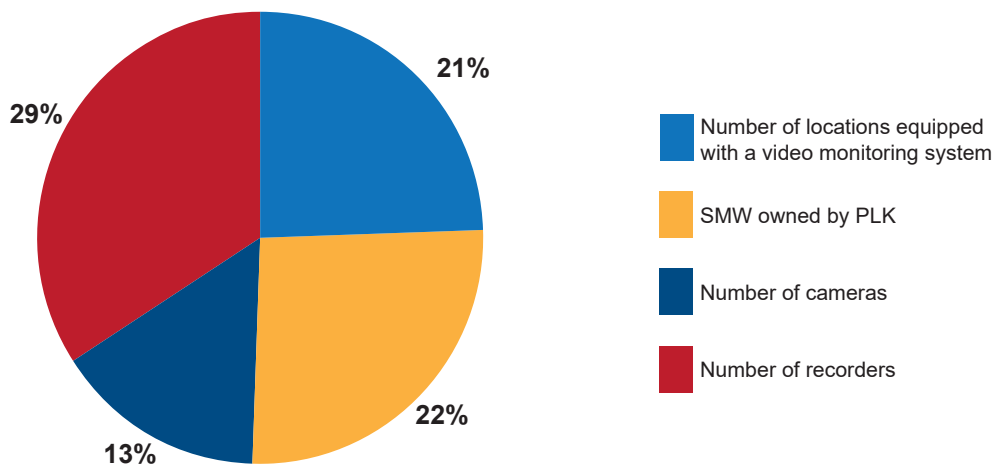
In 2018, the number of locations equipped with video monitoring systems (SMW) increased by 21% compared to the previous year, giving a total of 320 locations covered by video surveillance. Currently, PKP Polskie Linii

Kolejowe S.A. owns 285 SMWes. The Company has increased the number of cameras to 4,250 and DVRs to 234 compared to 2017.

### Video monitoring - comparison of 2018 vs. 2017

Years	Number of locations equipped with a video monitoring system	SMW owned by PKP Polskie Linie Kolejowe S.A.	Number of cameras	Number of recorders
2018	320	285	4,250	234
2017	265	233	3,765	181

### Presentation of data in %



## Names of passenger stops

In 2018, the process of organising and shaping the public space in which travellers move by assigning and changing the names of passenger stops, in accordance with the applicable regulations, was continued.

The names were given to 24 new passenger stations, i.e.: Łódź Śródmieście, Łódź Polesie, Stalowa Wola Charzewice, Zaklików Miasto, Kraków Opatkowice, Skawina Jagielnia, Wałbrzych Centrum, Lublin Zachodni, Kraków Złocień, Pisz Wschodni, Warszawa Targówek, Sosnowiec Środula, Katowice Morawa, Mokronos Górny, Iwiny, Chrząstawa Mała, Nadolice Małe, Wrocław Wojaków Wschodni, Wrocław Strachocin, Wrocław Popiele, Laski, Berejów, Szydłów Centrum, Słupsk Północny.

In addition, names of 9 passenger stations have been changed:

1. Wolin (formerly Wolin Pomorski);
2. Zielona Góra Główna (formerly Zielona Góra);
3. Zielona Góra Przylep (formerly Przylep);
4. Zielona Góra Stary Kisielin (formerly Stary Kisielin);
5. Szulborze Wielkie (formerly Szulborze-Koty);
6. Wieleń (formerly Wieleń Północny);
7. Tułowice (formerly Tułowice Niemodlińskie);
8. Zielona Góra Nowy Kisielin (formerly Nowy Kisielin);
9. Biała Piska (formerly Biała koło Pyszu).

## Equipment and maintenance of platforms and platform access routes

By means of the Resolution No. 1083/2018 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 27 December 2018, a new version of the "Architectural guidelines for railway passenger service facilities lpi-1" was introduced, in which selected provisions were updated/amended, and new recommendations concerning the elements of passenger service facility were added.

In 2018, a number of measures have been implemented with the aim to improve the comfort of waiting for trains to arrive on stations and passenger stops:

1. approx. 100 platform shelters have been purchased and installed in over 75 locations;
2. approx. 230 trash bins have been purchased and installed in over 60 locations;
3. approx. 230 platform benches have been purchased and installed in over 40 locations;
4. approx. 70 bicycle stands have been purchased and installed in over 25 locations.

## Adaptation of passenger service facilities to the needs of disabled persons and persons with reduced mobility (PRM)

The Company undertakes actions aimed to gradually eliminate architectural barriers at stations and passenger stops, so as to adapt them to meet the needs of disabled persons and persons with reduced mobility.

In 2018, an agreement was signed between Polskie Koleje Państwowe S.A. (PKP S.A.) and PKP Polskie Linie Kolejowe S.A., constituting a continuation of cooperation between the above mentioned companies in the scope of providing assistance to disabled persons and persons with reduced mobility at passenger stations by physical security staff and property employed by PKP S.A. and settlement of related costs. Under this agreement, in 2018 - assistance was provided to more than 13,340 persons with reduced mobility at 58 passenger stations.

As part of the modernisation of railway lines and investment projects carried out by Railway Lines District Units in 2018, over 170 platforms were reconstructed, taking into consideration their adaptation to the needs of people with reduced mobility.

Moreover, last year among others: 35 passenger cranes, 4 platforms and over 80 wheelchair ramps leading to platforms were installed.

A summary list of the outcome of the activities undertaken to adapt passenger stations managed by the Company to the needs of disabled persons and persons with reduced mobility at the end of 2018 is as follows:

1. 1,252 platforms were modernised;
2. elevators were installed on 206 platforms;
3. vertical platforms were installed on 61 platforms;
4. vertical platforms were installed on 117 platforms;
5. 37 escalators are leading to 17 platforms;
6. 8 travelators are leading to 4 platforms;
7. more than 660 platforms are equipped with tactile warning strips;
8. more than 780 passenger stations are equipped with ramps leading to platforms;
9. more than 90 stations have information in Braille.

The Company's actions in the area are a response to the growing needs of passengers and operators in terms of increasing accessibility and usefulness of railway infrastructure.

## Passenger stop inspections

By means of Resolution No. 923/2018 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 20 November 2018, the "Guidelines for auditing and inspecting of lpi-8 passenger stations" were put into force. This document regulates the principles of conducting audits and inspections of the technical condition and cleanliness of the passenger infrastructure by the employees of PKP Polskie Linie Kolejowe S.A. The implementation of inspections of passenger stations is a continuous process, based on the analysis of the state of infrastructure, information on the occurrence of possible irregularities and faults, obtained on the basis of inspection reports and other sources.

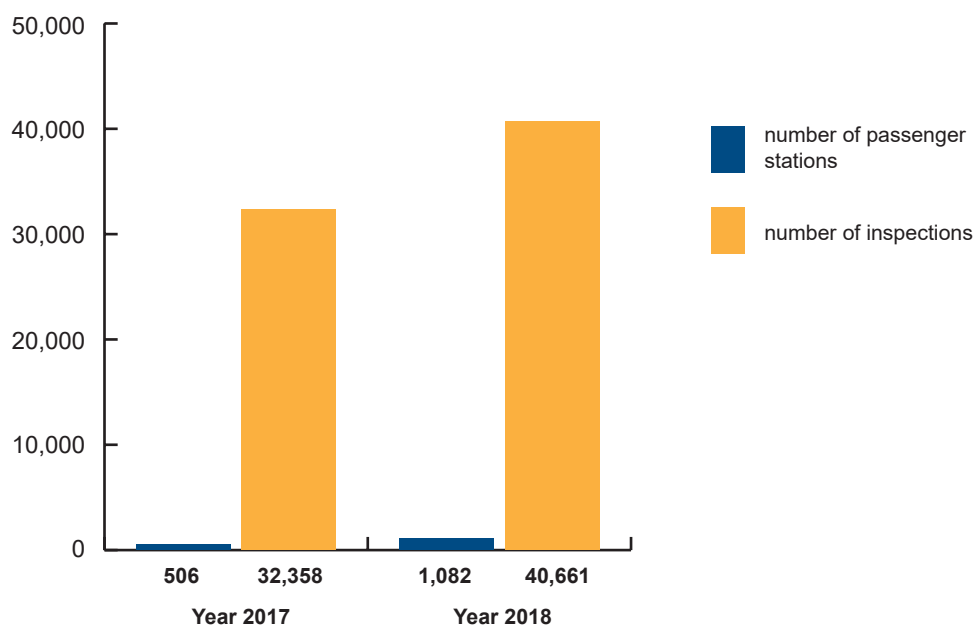
The average monthly number of inspections of passenger stations in 2018 amounted to nearly 3,500. A total of 40,661 inspections of 1,082 passenger stations were carried out.

The station inspections consisted of checking passenger infrastructure areas, in particular from the point of view of the following:

1. the level of cleanliness including:
  - a. platforms, access roads, intersections, escarpments;
  - b. street furniture elements, platforms marking, SDIP elements;

- c. graffiti on buildings and street furniture elements;
- 2. the level of winter maintenance including:
  - a. platforms, access routes;
  - b. elements of street furniture, platforms marking, SDIP system elements;
- 3. the technical condition of the passenger infrastructure:
  - a. elements of street furniture, elements of platforms and access roads marking, noticeboards, shelters;
  - b. platforms and access roads, walkways, footbridges, other traffic routes;
- 4. publication of different types of train timetables, including:
  - a. the line timetable (detailed);
  - b. the relational timetable;
  - c. the future timetable;
- 5. the dynamic efficiency of visual and voice information and time signalling systems.

### Comparison of 2017 and 2018 in terms of total number of inspections at passenger stations and number of stations inspected



The above measures, undertaken primarily for the sake of the passenger, are intended to ensure the required level of cleanliness, proper maintenance of passenger service facilities and appropriate quality of static and dynamic

information, and also contribute to improving the functionality and aesthetics of passenger stations, affecting the level of satisfaction of passengers using rail transport.

### Winter protection of railway lines

Intense snowfall, low temperatures and strong winds can cause disturbances in the railway operation and transport process. During the winter alert period, which runs from 15 November to 31 March, a suitable winter alert phase is introduced, depending on the influence of weather conditions on train operation. The introduction of a specific phase involves the inclusion of a sufficient number of workers, machines and snow machines in the winter work. Economically and socially important transport routes are subject to special winter protection.

Railway lines have been divided into three groups of winter maintenance order. Priority is given to railway lines with suburban train traffic related to commuting and schools. Over 14.6 thousand people (own

employees and external entities) are ready to carry out winter works in PKP Polskie Linie Kolejowe S.A. The basic element of the technical protection of railway lines are snow clearing machines - special snow clearance units, ploughs and snow removal machines. The Company owns a total of 236 such machines.

In addition, more than 17,400 turnouts are equipped with electric heating (eor) devices to ensure their efficient repositioning during snowfall. There are also 173 rapid intervention teams available for troubleshooting failures and faults in the railway track and control command and signalling equipment (CCS). Places exposed to snow, i.e. a total of 955 km of tracks, are covered with permanent and portable counter-snow curtains. In addition, up to 66 emergency trains equipped with impact de-icing devices

for contact wires and pantographs with reinforced overlays for removing frost and roam frost from contact wires are operated to remedy faults on the overhead contact

line. More than 4 000 km of contact wires in the traction network are covered with an anti-icing agent to limit the effects of ice and ice build-up.

## Commercial development of passenger infrastructure

In 2018, the new content of the "Guidelines for commercial development of passenger infrastructure managed by PKP Polskie Linie Kolejowe S.A." was introduced. This document defines the rules for renting space in passenger infrastructure areas for commercial purposes. In ad-

dition, in 2018, steps were taken to regulate the development of the retail, service and advertising space in the passenger stations.

## Maintenance of order and cleanliness at stations and passenger stops

In the first half of 2018, in cooperation with PKP S.A., a tender procedure was conducted in order to select contractors responsible for maintaining cleanliness at railway stations and passenger stations, within the framework of which, in 2018-2020, 2,686 passenger stations belonging to PKP Polskie Linii Kolejowe S.A. were covered by the cleaning services. The tender procedure, led by PKP Polskie Linie Kolejowe S.A., was divided into 24 tasks, for which one service provider was chosen, common for the areas of PKP S.A. and PKP Polskie Linie Kolejowe S.A. In order to maintain high quality of services, uniform procedures for supervising the performance of agreements in the areas of both Companies have been introduced.

In the areas covered by the joint cleaning management project, the modified "Book of Passenger Station Cleanliness Standards" was introduced in 2018, which was supplemented with new provisions being the outcome of experiences resulting from the previous agreements on the subject matter in question. One of the most important changes

is the increase in the requirements related to the acceptable level of cleanliness in the areas of passenger stations. Much attention has been paid to issues relating to passenger safety in winter. To this end, a two-stage system of evaluation of safety level and maintaining cleanliness on platforms and access roads has been introduced. Standardisation of the service provided presupposes maintaining a high level of cleanliness of all passenger infrastructure elements located in the areas covered by the common procedure.

In the process of controlling the level of performance, the audit structure of PKP Polskie Linie Kolejowe S.A. consisting of trained auditors operating on the premises of 23 Railway Lines District Units is applied. The auditors were equipped with mobile devices with a dedicated audit application, enabling them to provide assessment and possible comments to the service provider in real time.

## Passenger stop audits

In 2018, activities aimed at improving the condition of the passenger infrastructure were continued by a team of field auditors. During 3,997 audits carried out at 2,505 passenger stations, the following aspects were evaluated:

- elements of station equipment, including the condition of street furnitures and the condition of facilities allowing access for persons with reduced mobility;
- level of cleanliness;
- the quality of static and dynamic information;
- compliance of elements of passenger service facilities with guidelines in force at the Company.

The audits are aimed at ensuring the proper maintenance of the passenger infrastructure, the required level of cleanliness, the quality of dynamic and static information and, therefore, the comfort of passengers at passenger stations.

## Infrastructure Repair Company

Infrastructure Repair Company is a specialized organizational unit of PKP Polskie Linie Kolejowe S.A. that performs tasks in the scope of current repairs and maintenance of railway lines.

The entity was incorporated into the Company's structures in July 2018 as a result of acquisition of separate assets of Przedsiębiorstwo Napraw Infrastruktury Sp. z o.o. being at that time in composition bankruptcy, obtaining both fixed and current assets and staff.

Thanks to the establishment of the unit, PKP Polskie Linie Kolejowe S.A., was provided with facilities for fu-

ture repairs of railway machines and wagons, as well as storage yards and buildings. In addition, the acquisition of specialist track machines and wagons and qualified staff (including machine and equipment operators and persons holding executive licenses in rail, bridge, construction and building as well as road specialities) resulted in a significant increase in the operating capacity of the Company in terms of the implementation of maintenance works with the use of its own funds and increased the potential for the implementation of investment works.

### Operation the the Infrastructure Repair Company from 13 July to 31 December 2018

Machine	Quantity	Unit of measure
UNIMAT [m.b.]	80,521	m.b.
UNIMAT [pcs.]	362	pcs
PLM [pcs.]	68	pcs
PLM [m.b.]	48,270	m.b.
CSM	159,028	m.b.
MD	78,113	m.b.
PT-800	75,810	m.b.
DGS 62N	158,914	m.b.
PŁT-500A	5,430	m.b.
ZT 250	96,597	m.b.
ZTU	49,910	m.b.
USP	238,838	m.b.
OT-400	7,715	m.b.
SBT - gantry crane	11,150	m.b.

# Safety

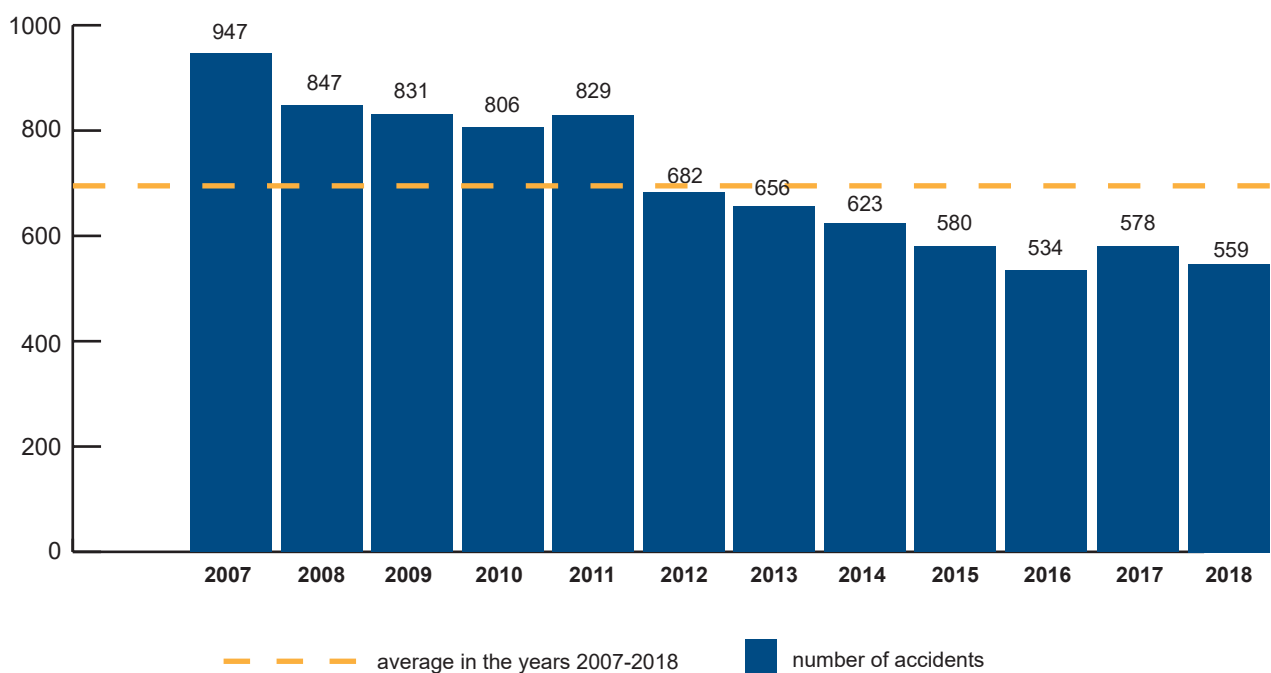
## Statistics of railway events

(As at 29 October 2019)

557 accidents (excluding suicides) occurred on the railway line network managed by PKP Polskie Linie Kolejowe S.A. between 1 January to 31 December 2018.

In comparison to 2017, the number of accidents decreased by 21 (3.63%).

### Comparison between the numbers of events that took place on the railway lines managed by PKP Polskie Linie Kolejowe S.A. in 2007-2018

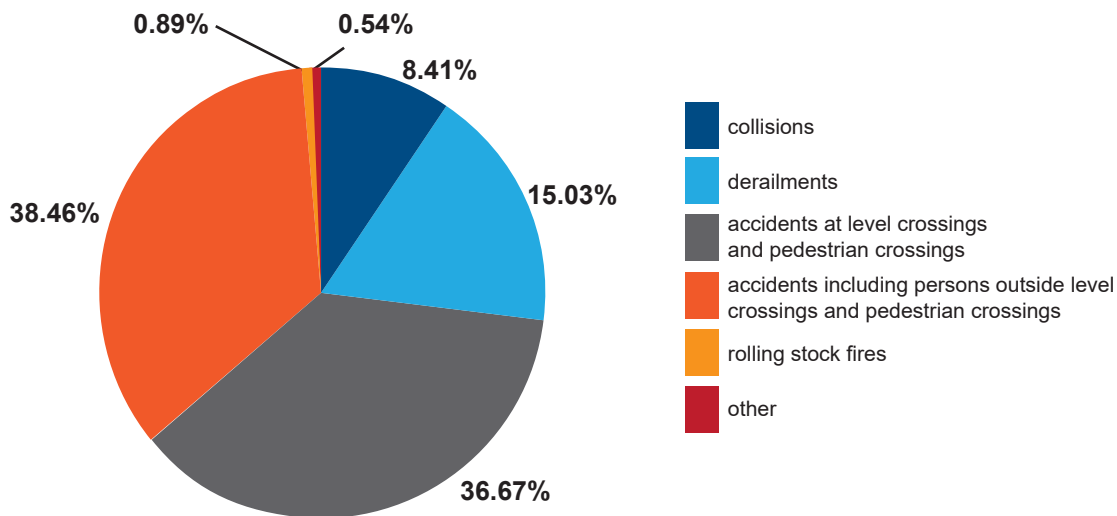


### Accidents and serious accidents by type

The railway accidents classification method used by PKP Polskie Linie Kolejowe S.A. compliant with the requirements of the Office of Rail Transportation (UTK) and the European Railway Agency (ERA) covers:

1. collisions;
2. derailments;
3. accidents at level crossings and pedestrian crossings;
4. accidents including persons outside level crossings and pedestrian crossings (excluding suicides);
5. rolling stock fires;
6. other accidents.

## Quantitative structure of accidents on the network managed by PKP Polskie Linie Kolejowe S.A. in 2018 by type



The diagram above shows that the most numerous group of accidents that took place on the network managed by PKP Polskie Linie Kolejowe S.A. were the accidents that involved persons outside level crossings and pedestrian crossings (persons who were on railway premises and were hit by trains, or who attempted to jump on/off trains) as well as accidents on level crossings and pedestrian crossings. Collisions and derailments accounted for less than 24% of all accidents in 2018. They are the events that usually result from the errors in the entire railway

system, namely of technical devices, procedures and/or human factor (on the side of the railway operator or infrastructure manager). The possibility to reduce these two types of accidents depends directly on the measures taken by railway market participants (infrastructure managers and railway operators), but also designers, producers, suppliers and contractors providing construction and maintenance services.

### Casualties of railway accidents

The number of casualties that resulted from accidents that occurred on the railway network managed by PKP Polskie Linie Kolejowe S.A. in 2018 was 267, with 185 fatalities and 82 severely injured.

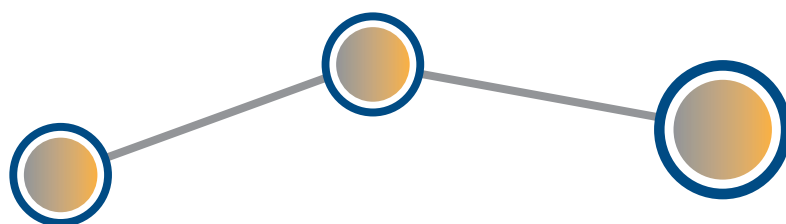
In comparison to 2017, the number of fatalities increased by 20 while the number of severely injured dropped by 3. The largest group of fatalities that resulted from accidents that occurred in 2018 comprised persons with no authorisation to be present on railway premises (130 fatalities – more by 9 than in 2017) as well

as users of level crossings and pedestrian crossings (48 fatalities – 6 more than in 2017). As regards persons that were severely injured in railway accidents, the largest group (43 people – 8 more than in 2017) were those with no authorisation to be present on railway premises, while the second largest group were the users of level crossings and pedestrian crossings (33 people – 4 more than in 2017).

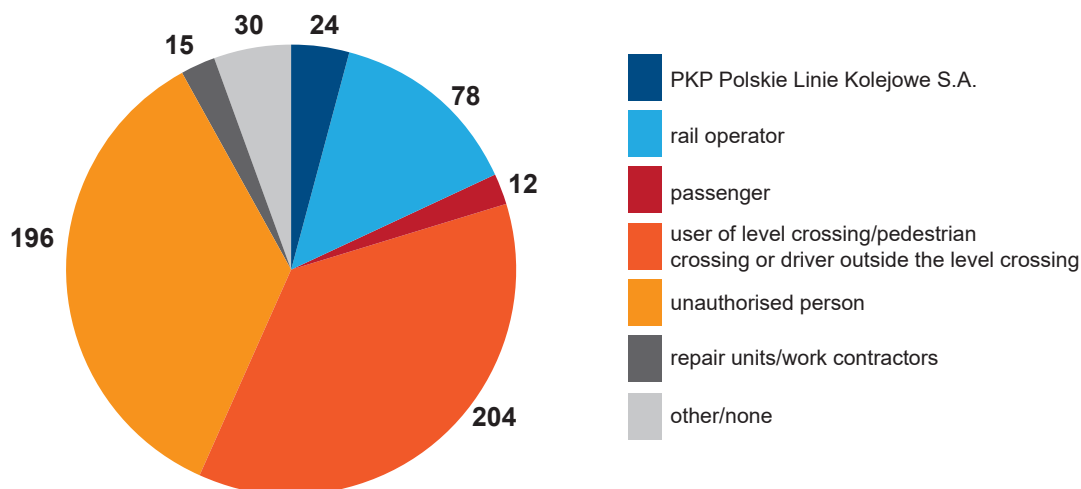
### Accidents by fault attribution

In most cases, the parties that were responsible for accidents in railway traffic were the users of level crossings and pedestrian crossings or with no authorisation to be present on railway premises, which is evident in the much higher number of accidents at railway crossings and pedestrian crossings with pe-

destrians outside level crossings and pedestrian crossings in the general statistical results related to accidents.



## Entities responsible for accidents in 2018



In 2018, 25 accidents were attributable to PKP Polskie Linie Kolejowe S.A. (fewer by 23, i.e. 47.9% than in 2017), including: 4 collisions, 18 derailments, 2 accidents at railway and road crossings and 1 accident classified as "other accidents". The most frequent reasons for the Company's aggravating events

were the premature route release or lifting the barrier and the moving the switch under the railway vehicle, as well as damage to or poor condition of the surface of the railway road or engineering facility.

## Measures taken to improve the safety of railway traffic

### Initiatives to improve the technical condition of infrastructure and equipment

PKP Polskie Linie Kolejowe S.A. implement a wide-scale programme for the modernisation and revitalisation of railway lines. The scope of works under individual investment projects involves the comprehensive replacement of railway tracks, local control command and signalling equipment and electric power equipment (both traction and non-traction) as well as the modernisation of level crossings and their removal and replacement with grade-separated junctions. The replacement of old, run-down and degraded railway infrastructure and technical equipment with new infrastructure and equipment made using modern technologies allows to significantly improve the operating parameters of railway lines (mainly maximum permissible speeds) while maintaining at least the same level of safety of railway traffic or even improving it.

Modernisation and revitalisation work carried out on railway lines allows to lower the risk of accidents (serious accidents, accidents, incidents) or potentially dangerous situations caused by bad technical condition and/or infrastructure malfunctions. Furthermore, the number of accidents that occur on level crossings is reduced by equipping crossings in additional safety and user warning equipment (i.e. re-classifying a crossing into a higher category).

Modernisation and revitalisation work carried out by PKP Polskie Linie Kolejowe S.A. on railway lines included the replacement and retrofitting of elements that play a crucial role in the prevention of the risk of derailment, i.e. turnouts. In 2018, on the network managed by the Company, investment activities covered 936 turnouts, including 225 turnouts were exchanged within the implementation of a dedicated investment project called "Safety improvement through the construction of new higher-standard railway junctions - stage II". This project was included in the National Railway Programme until 2023 (KPK) under item No. 1.147 and consists in the exchange of 245 turnouts with accompanying works. The total value of the project amounts to PLN 208 million. The task was divided into two contracts:

- Part I ("northern"), including the replacement of 142 turnouts, has been implemented since March 2018;
- Part II ("southern") covering the replacement of 103 turnouts is implemented from December 2017.

The advancement of the project (in-kind execution) at the end of December 2018 was 92%.

As part of modernisation and revitalisation projects currently in progress, PKP Polskie Linie Kolejowe S.A. is modifying level crossings and pedestrian crossings, equipping them with additional protection and/or warning solutions; moreover, level crossings and pedestrian



crossings are being removed and replaced with viaducts, footbridges or tunnels.

In 2018, the investment activities (the project entitled "Safety improvement on rail level crossings") covered a total of 380 journeys, where in various locations the scope of modernisation covered: automatic crossing signalling devices, installation of CCTV equipment and/or replacement of railway track. In addition, 53 grade-separated junctions were built or modernised.

The first stage of the project includes the modernisation of 182 level crossings throughout the country. The work consists in raising the category of journeys by equipping them with automatic crossing signalling devices or replacing worn out old type devices with new-type ones. On selected crossings, track and road works has been carried out related to the replacement of railway and road surface in the area of the crossroads. The project was divided into 5 tasks. By the end of 2018, the works

on 49 crossings were completed, including: 8 were after the final acceptance, 20 after the operational acceptance, and 21 were in the initial operation phase. The project is scheduled to be completed in April 2020.

Within the framework of the second stage of the project, PKP Polskie Linie Kolejowe S.A. will replace 5 level crossings with two-level crossings with very high traffic ratios. The works will be carried out on the Warszawa-Minsk Mazowiecki section of railway line No. 2 Warszawa Zachodnia-Terespol and will include crossings with the following streets: Chełmżyńska, Marsa and Raczkiewicza in Warszawa and al. Piłsudskiego, Krasieńskiego in Sulejów. Investments are carried out jointly with local authorities. Currently, preparatory works are in progress, including design works; the construction works are expected to be carried out in the years 2020 - 2022.

## Increasing safety during investment implementation and other track work

The implementation of investment works and other track work requires the closure of track sections. Proper planning and commencement of those operations is crucial from the perspective of safety of the railway traffic carried out on the track located next to the closed track and on other routes and operating control points located next to it. Track closure entails the necessity of introducing appropriate obstructions in the scope of railway traffic and, in case of long-term closures - changes in train timetables. Under some disadvantageous conditions this may be an additional risk factor of railway incident. In 2018, there was a total of 57,452 track closures on the network of PKP Polskie Linie Kolejowe S.A. (7% more than in 2017), including 6,304 closures that lasted the whole day (73% more than in 2017). Management of trains on railway lines where investment or other work is carried out in the vicinity of active tracks requires additional risk management measures.

In the recent years, the Company has taken a number of steps to improve safety during the implementation of investment projects and other works, both for people working in the vicinity of active tracks and safety of train traffic. Actions implemented in 2018 in this area included, among others:

- increasing the number of traffic stations during the investment at the station / route in the total amount of 41,236 hours;
- thematic audits of the Safety Management System (SMS) in the scope of railway traffic safety during the performance of investment works (in 2015 12 audits were conducted, in 2016 – 10 audits, in

2017 – 2018 – 9 audits per year, the audits will be continued in 2019);

- railway traffic safety inspections at investment works sites – in 2018, controllers on behalf of the Company's units and organizational units conducted 31 inspections in respect of the organisation and implementation of 24-hour track closures, taking into account the manner of securing and signalling investment works sites from the side of tracks active for train traffic; provisions of temporary traffic regulations during the execution of works; possession of and furnishing with the required documents of track machines performing works;
- applying the "Safety rules during the performance of investment, revitalisation, maintenance and repair works by employees of foreign companies on the premises of PKP Polskie Linie Kolejowe S.A." and "Guidelines for providing information and informing the employee of another employer about threats concerning safety and health while performing work on the premises of PKP Polskie Linie Kolejowe S.A." l bh-105;
- significant amendments to the "Guidelines for securing a site on a closed track when managing railway vehicles on a neighbouring track at V > 50 km/h l d-18". The guidelines apply to maintenance and investment works carried out by all Contractors. By virtue of the changes introduced, carrying out works at the speed of railway vehicles on the adjacent active track V > 50 km/h requires the preparation of the Site Safety Project.

Moreover, when the technology of works requires the use of heavy equipment, including two-way and construction vehicles, for stationary works, and their construction and manner of performing works may interfere with the gauge of the structure of the neighbouring active track, the obligation to use permanent fencing of dangerous zones (WSN) has been introduced. On the other hand, operators of heavy road, rail and construc-

tion machinery performing work on a railway track and/or adjacent strip of land along a railway line, which are equipped with a work machines warning system (SOM), are obliged to use it and maintain it in good working order.

## Installation of track occupancy control systems

In 2016, in order to reduce the risk of rolling stock collision on station tracks the Company initiated and, in 2018 continued, the activity consisting in the installation of track occupancy control systems at the railway stations which have not been yet equipped with such devices.

The said task was performed in the scope of Resolution No. 186/2018 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 6 March 2018 on the adoption

of the "Plan of operation of PKP Polskie Linie Kolejowe S.A. for 2018", as well as within other activities (investment and modernisation) financed from investment funds and own funds of Railway Lines District Units. In 2018, the track occupancy control systems were built on 116 tracks at 32 railway stations, which will be continued in 2019.

## Installation of interlocking of drive-through devices with station devices on the basis of a route element

In order to improve safety at level crossings of cat. A, located within the borders of traffic stations and protected by semaphores and road users, was initiated in 2016, and in 2018 an action was continued consisting in the development of interlocking of semaphores allowing the running of trains by means of crossings on the location of barriers on these crossings.

The activities were performed in the scope of Resolution No. 186/2018 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 6 March 2018 on the adoption

of the "Plan of operation of PKP Polskie Linie Kolejowe S.A. for 2018", as well as within other activities (investment and modernisation) financed from investment funds and own funds of Railway Lines District Units. In 2018, such interlockings were built up at 71 railway and road crossings of cat. A.

Activities within the said project will be continued in 2019.

## Purchase of W 24 indicators made with the use of LED technology

Starting from 2016, the Company has been implementing an activity aiming at improvement of the safety system on the railway network, consisting in the exchange of W 24 indicators "Opposite direction indicator" using non-incandescent LED light sources. Thanks to the use of LED technology it is possible to significantly increase the visibility and readability of these indicators, both due to the better visibility of the light source and the ability to adjust the brightness of the indicator to the right conditions (day/night, weather conditions). In the years 2016-2018, the funds for the implementation of central project of purchase of W 24 indicators in LED technology intended for installation at locations selected based on identified needs and operation criteria (daytime train traffic, line category, type of signalling and train control systems installed at the operating control point). The funds provided for in the investment activity plans made it possible to purchase, deliver and

install at selected locations: 555 indicators in 2016, 1,111 indicators in 2017 and 454 indicators in 2018 (a total of 2,120 indicators). In selected locations, they replaced the existing indicators made in technology based on incandescent light sources (signal bulbs). When installing new or replacing old control command and signalling equipment (CCS), only W 24 LED indicators are used.

## Marking of road-rail access routes with horizontal lines slowing down the train

In order to reduce the risk of collisions at railway and road crossings, PKP Polskie Linie Kolejowe S.A. implemented in 2014 and continued in the following years the activity consisting in placing special warning and slowing down signs on the access roads and railway crossings. The purpose of stripes applied to the access road surface at an appropriate distance from the railway line is to warn the driver of the road vehicle of approaching the railway crossing - a place of increased risk, where special care should be taken. Thanks to the small convexity, the strips generate characteristic vibrations and sound, while the bright red colour is a visual informational and warning

factor. These activities are carried out mainly in order to increase the level of safety at level crossings of category D (without barriers and light and sound signalling system), however, in justified cases signs are also carried out at crossings of categories B and C. From the moment the project was initiated until the end of 2018, the signs were made on the access roads to 372 level crossings (in 2014 - 150, in 2015 - 98, in 2016 - 47, in 2017 - 36, in 2018 - 41).

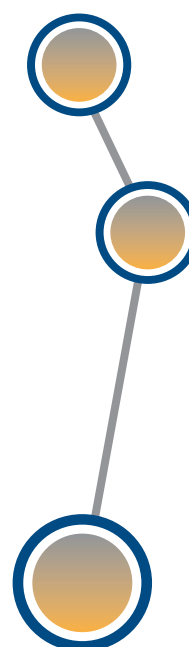
## Initiatives of the Company aimed at improving staff competences and shaping safety-oriented attitudes

PKP Polskie Linie Kolejowe S.A. is implementing a major programme aimed to develop safety-oriented attitudes among its employees, as well as its stakeholders. The actions undertaken in 2018 included, among others:

- running 14th edition of "Safe rail-road level crossing" social campaign;
- implementation of workshops on safety at railway and road crossings for representatives of driver training centres;
- discussing safety and safety circles;
- organising the 5th edition of the knowledge contest for the employees "Safety First";
- conducting a series of training courses for employees on a simulator of computerised traffic control equipment;
- internship as part of professional preparation for work in the Company in the following areas: the basics of the Safety Management System, risk management, as well as the human factor and safety culture;
- development and distribution of didactic and assistance leaflets for traffic janitors and duty personnel;
- providing all employees of the Company with semi-annual and annual information on safety on the managed railway network;
- developing information bulletins concerning railway events that have occurred and distributing them to employees responsible for railway traffic safety.

In 2018, as a signatory of the Declaration on the Development of Safety Culture in Railway Transport, PKP Polskie Linie Kolejowe S.A. took part in the 3rd edition of the competition entitled "Safety culture in the rail transport" organised by the Office of Rail Transport (UTK). The activities undertaken in the area of safety culture gained recognition of the jury composed of representatives of the

UTK and the committee evaluating the submitted initiatives - the Company was awarded for developing the psychological and professional behaviour profile of the Duty Movement, the aim of which was to define the psychological conditions for the proper performance of official duties by this group of employees. The result of the project is better management of the human factor in the safety of train traffic, as well as shaping among employees attitudes oriented towards safety and awareness of risks.



## Monitoring the Safety Management System (SMS)

PKP Polskie Linie Kolejowe S.A. implemented a monitoring process for their "Safety Management System", laid down in procedure SMS/MMS-PD-04 Monitoring and Continuous Development of the Safety Management System and the Maintenance Management System (MMS), in order to meet the requirements laid down in Commission Regulation (EU) No 1078/2012 of 16 November 2012 on a common safety method for monitoring to be applied by infrastructure managers after receiving a safety authorisation. Moreover, in compliance with the provisions of this Regulation, the Company implements a Monitoring Strategy establishing, among others, the principles for selecting tools and methods of SMS monitoring for problem areas as well as qualitative and quantitative ratios used in SMS monitoring. Main areas subject to the monitoring process include:

1. the safety of railway traffic operated on the railway network managed by PKP Polskie Linie Kolejowe S.A.;
2. the correct and effective application of SMS procedures at the Company;
3. the introduction of technical, operational and organisational changes considered as significant in the change management process (procedure SMS/MMS-PR-03);
4. cooperation with suppliers and contractors whose products/services have a direct or indirect impact on railway traffic safety;
5. the effectiveness of implementation of preventive and corrective measures, including:
  - the implementation of guidelines and recommendations of National Railway Accident Investigation Board (PKBWK);
  - the implementation of guidelines of railway committees included in the Final Memorandum of Understanding (PUK);

- the implementation of post-inspection conclusions from inspections carried out by the UTK or other public administration authorities;
  - the implementation of conclusions and recommendations from SMS audits, SMS controls, SMS inspections;
  - the implementation of recommendations issued by risk analysis teams;
  - the implementation of conclusions from the previous monitoring process application;
  - the implementation of tasks provided for in the Safety Improvement Programme;
  - the implementation of training, periodic and ad hoc instructions.
6. the effectiveness of implemented risk management measures and actions implemented as part of constant SMS optimisation.

The basic tools and methods of SMS monitoring at the Company include:

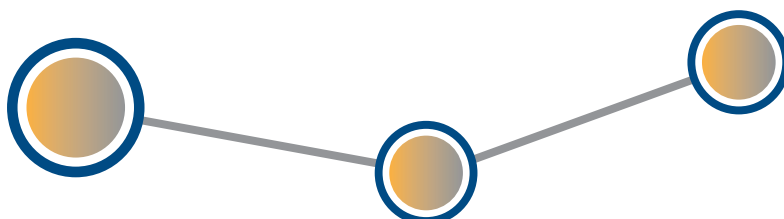
1. maintaining an Accidents and Events (WiW) database and performing statistical analyses of data collected therein;
2. running the Operating Performance Registration System (SEPE) application and a performing statistical analyses of data contained therein;
3. analysing common safety indicators (CSI) and how they change over time;
4. SMS audits;
5. SMS controls, taking into account all internal regulations concerning the performance of controls in the Company;
6. SMS inspections.

## Risk management activities

A total of 495 change significance assessments have been conducted in 2018, with 4 changes deemed to be significant – within the meaning of Commission Regulation (EC) No. 402/2013 of 30 April 2013.

In addition, 306 risk assessments for railway traffic safety has also been performed as an element of the Safety

Management System in force at the Company, so as to determine additional risk management measures in justified cases and minimise the degree of risk (enhance safety) related to the Company's activity.



## Implementation of the Railway Traffic Safety Improvement Programme

The primary purpose of developing and implementing the Railway Traffic Safety Improvement Programme in 2018 was to prevent any unacceptable risks and limit the frequency of hazards and their consequences through the application of appropriate risk management measures. Measures stipulated in the Programme are aimed at the implementation of main safety targets for the year 2018, laid down in Resolution No. 1050/2017 of the Management Board of the Company of 24 October 2017.

Apart from measures allocated to individual initiatives and targets, the Programme also includes indicators that allow to monitor the target achievement progress on an ongoing basis. These indicators have been designed in such a way, so as to enable their comparison in cumulative periods with the state as at the end of the base year. Warning and alarm values have also been determined for each indicator in reference to all periods. Organisational units of the Company are tasked with submitting quarterly reports from the implementation of the Programme for 2018.

In these reports, the units participating in the implementation of the Programme presented quantitative (expressed in percentages) and qualitative information concerning the performance of tasks stipulated in individual initiatives and provided the values of main safety target achievement indicators in relation to their own activity. Quarterly reports for the implementation of the Programme for the year 2018 were based on the verification and analysis of information provided and subject to approval by the Vice President of the Management Board, Director for Operational Affairs.

In 2018, the Company also implemented a number of additional measures to improve railway traffic safety in all areas of its activity. PKP Polskie Linie Kolejowe S.A. monitored the implementation of undertaken measures by developing the "Schedule of Safety Improvement Measures of PKP PLK S.A. for the years 2016-2018". The total number of measures included in the schedule that were undertaken in 2018 was 103, including 27 technical measures, 52 organisational and operational measures, and 24 employee-related measures.

## Technical railway rescue team

Safety is the absolute priority in railway traffic management. All measures aimed to ensure a high technical standard of the railway network managed by PKP Polskie Linie Kolejowe S.A. take into account the effective and efficient railway emergency response units. Thus, the railway technical rescue teams are located on the whole network managed by PKP Polskie Linie Kolejowe S.A., mainly at junction stations, in order to reach the places of events as quickly as possible. As of 31 December 2018, there were 20 teams operating, i.e. 10 Special Technical Rescue Trains (SPRT) and 10 Technical Rescue Trains (PRT), with vehicles, equipment and over 500 trained employees meeting the qualification and health requirements. The basic tasks of railway technical rescue teams are to remove the consequences of railway accidents and events that caused interruption or reduction in railway traffic and to transport railway vehicles damaged as a result of technical failures to the nearest station.

Railway rescue teams are prepared to work in all weather conditions, prevailing throughout the year in our country. The distribution and types of the teams were adjusted to the needs and intensity of traffic on the railway network. In addition, the teams perform a lot of work for the Company, including the replacement of turnouts with the use of railway cranes.

In 2018 PKP Polskie Linie Kolejowe S.A. purchased 5 new railway vehicles of UniRoller-S type for the needs of equipping the railway technical rescue teams. They

replaced the long-drawn-out 4 Unimog vehicles (1980 - 81) and 1 Unistar vehicle (1992). Thus, at the end of 2018, 15 UniRoller-S vehicles, equipped with equipment designed to deal with the consequences of railway accidents (mainly hydraulic lifts, rerailing bridges, power generators, control desks, wood for the substructure) and lighting equipment, were at the disposal of railway technical rescue services at the end of 2018. The vehicles also carry the crew performing the tasks of railway vehicle rerailing. They move at speeds of up to 80 km/h on the road and up to 50 km/h on the track.

In 2018, PKP Polskie Linie Kolejowe S.A. also purchased for the railway technical rescue teams a self-propelled WM-15A/PRT vehicle No. 07, which was included in the equipment of the Special Technical Rescue Train in Łódź.

As at 31 December 2018, the railway technical rescue team had 7 WM-15A/PRT vehicles at their disposal.

In addition, 58 hydraulic cylinders for 14 rescue teams were purchased in 2018 as part of the retrofitting of railway technical rescue equipment. Technical railway rescue teams also have the following equipment at their disposal:

- 5 railway cranes with a lifting capacity of max. 125 tons;
- a crane with a lifting capacity of max. 250 tons;
- 3 Unimog road-rail vehicles;
- a Unistar Road-Rail vehicle;

- 2 Uniman vehicles;
- 65 technical and utility wagons equipped with rerailing equipment and wood for the substructure, power generators and lighting equipment, as well as serving as social facilities (dining rooms, drying rooms for working clothes) for technical railway rescue teams, railway commissions determining

the causes of incidents or other persons involved in rescue operations.

## Railway Security Guard

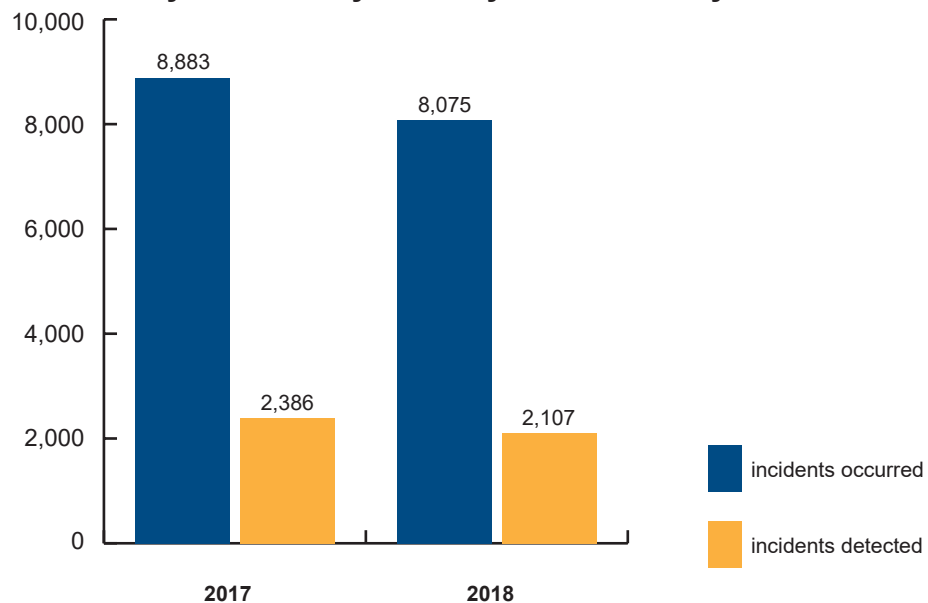
Approximately 9.1% less dangerous events were noted by the Railway Security Guard (SOK) in 2018 in comparison with 2017. Effective preventive measures taken by SOK officers are supported by modern equipment and trained staff. Mobile monitoring centres operate in the field – vehicles equipped with cameras, portable and thermal, installed on masts.

Since 2015, SOK officers have also been equipped with camera traps - devices that notify when an unauthorized person appears in the secured area, and since 2016 night vision and thermal imaging devices that guarantee better effectiveness during night-time activities. Significant sup-

port for the activities is also provided by company cars equipped with SOK equipment, which work in difficult terrain conditions and trained company dogs.

In 2018, the Railway Security Guard carried out more intensive preventive and anti-theft measures on trains, railway stations and railways. Due to the activity of officers of the Railway Security Guard, the number of offences committed in the railway area decreased by 9.1% (from 8,883 in 2017 to 8,075 in 2018, i.e. less by 808 events).

**Events recorded by the Railway Security Guard in the years 2017-2018**

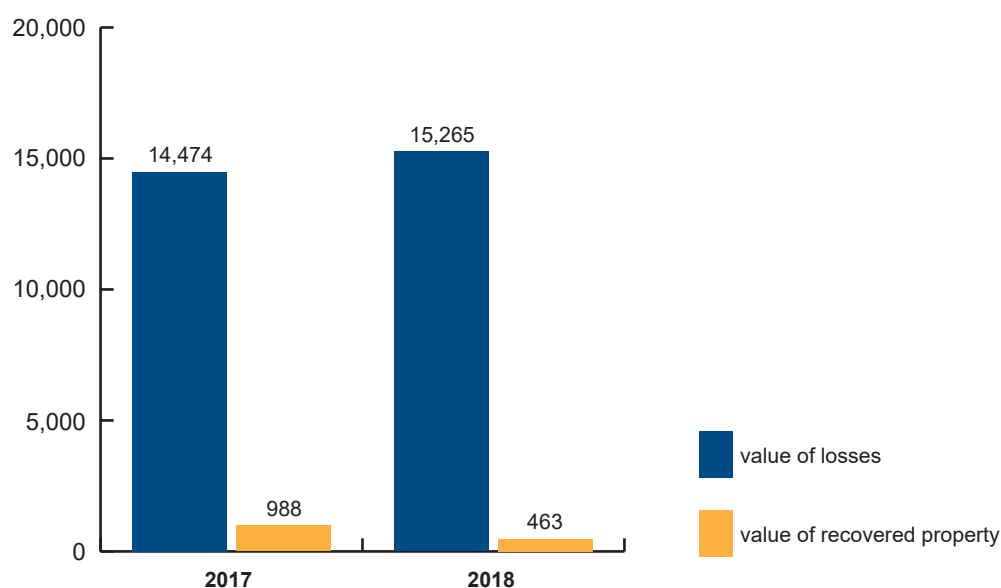


In 2018, an increase in the estimated value of losses resulting from offences committed in the railway area by 5.46% was registered (an increase by PLN 791 thousand), as compared to 2017, (when this value amounted to PLN 14,474).

In 2018, the largest percentage of all incident (37.56%) were devastations and other hooliganic pranks. Compared to 2017, the number of incidents recorded in this category has increased by 29 cases (from 3,004 in 2017 to 3,033 in 2018). This represents a 0.97% increase in incidents.

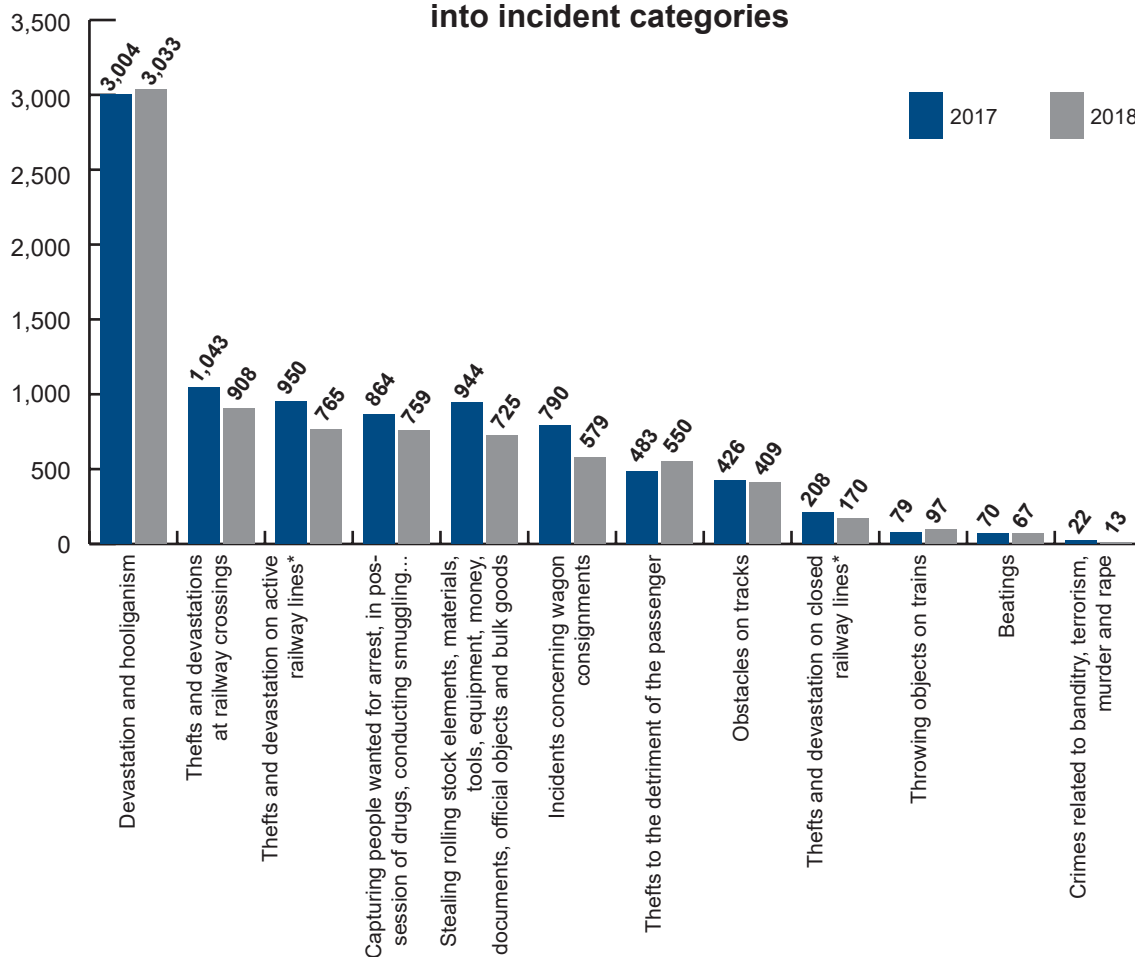
Other groups that stand out due to the number of recorded incidents were:

## Losses resulting from the offences committed in the railway area in PLN thousand



- theft and devastation of equipment at level crossings - 11.24% of all events recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 135 cases (from 1,043 in 2017 to 908 in 2018). This represents an increase in incidents by 12.94%;
- theft and devastation of equipment on open railway lines - 9.47% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 185 cases (from 950 in 2017 to 765 in 2018). This represents a 19.47% drop in incidents;
- apprehension of perpetrators of crimes and offences committed outside the railway area - 9.40% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 105 cases (from 864 in 2017 to 759 in 2018). This represents a 12.15% drop in incidents;
- theft of rolling stock surface elements, materials, tools, official objects and goods from bulk consignments - 8.98% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 219 cases (from 944 in 2017 to 725 in 2018). This represents a 23.20% drop in incidents;
- events related to freight consignments - 7.17% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 211 cases (from 790 in 2017 to 579 in 2018). This represents a 26.71% drop in incidents;
- theft to the detriment of travellers - 6.81% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has increased by 67 cases (from 483 in 2017 to 550 in 2018). This represents a 13.87% increase in incidents;
- obstacles on the tracks - 5.07% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 17 cases (from 426 in 2017 to 409 in 2018). This represents a 3.99% drop in incidents;
- throwing trains - 2.11% of all events recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 38 cases (from 208 in 2017 to 170 in 2018). This represents a 18.27% drop in incidents;
- theft and devastation of equipment on closed railway lines – 1.20% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has increased by 18 cases (from 79 in 2017 to 97 in 2018). This represents a 18.56% increase in incidents;
- persons' battery - 0.83% of all events recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 3 cases (from 70 in 2017 to 67 in 2018). This represents a 4.29% drop in incidents;
- banditry, terrorism, murders and rapes - 0.16% of all incidents recorded in 2018. Compared to 2017, the number of incidents recorded in this category has dropped by 9 cases (from 22 in 2017 to 13 in 2018). This represents a 40.91% drop in incidents.

## Incidents in the railway area in 2017 and 2018 according to the division into incident categories



In 2018, Railway Security Guard officers:

- checked 101,598 people;
- cautioned 72,712 people;
- imposed 36,687 fines by way of a ticket for the amount of PLN 2,548,675;
- conducted a total of 18,304 inspections of scrap metal collection points, during which 38 cases of railway property from theft were found, with a total value of PLN 66,243. As a result of the actions taken, 9 purchasers and 22 sellers of illegally acquired rail infrastructure elements were apprehended;
- apprehended 2,606 perpetrators of offences;
- carried out 58,627 patrols on passenger trains;
- carried out 162,552 patrols of routes;
- carried out 164,250 patrols of stations and passenger stops;
- carried out 57,908 patrols of freight stations;
- carried out 3,775 patrols of permanent control points;
- checked 1,103,924 freight wagons.

In addition, SOK officers took an active part in the following undertakings:

- in the scope of the social campaign "Safe rail-road level crossing" - SOK officers secured 17,813 rail-

way crossings and intervened with regard to 5,173 persons who committed offences;

- they secured 50,410 so-called wild crossings, intervened in relation to 15,883 persons who crossed the railway tracks in a place not designated for this purpose;
- within the "Safe Track" action - covering activities aimed at controlling the rights to stay in the railway area - during the activities, CSC officers inspected 32,681 employees performing work in the railway area and 6,574 outsiders. 21,334 SOK officers took part in the activities;
- during the nationwide activities entitled: "Infrastructure" - SOK officers inspected 9,314 railway routes and 7,697 scrap yards. In the course of its activities, 152 perpetrators of theft were apprehended;
- within the "Safe Control Point" action - a nationwide action consisting in carrying out checks on employees directly related to railway traffic in the whole country within a set time limit - during the action, SOK officers performed 5,706 checks on the alcohol content of the body, during which they checked 7,627 employees and 393 other employees. Six cases of intoxication were found during the activities; 837 lectures were conducted, in which 59,292 children and adolescents took part.



Safety of passengers during the passage of participants of mass events by railways is also of constant interest. In 2018, the Railway Security Guard officers secured the railway area during the passage of 885 trains, in which were 109,721 football fans. During the travel of football fan, order was ensured by 7,791 SOK officers and 35,778 police officers.

In the Central Headquarters of the Railway Security Guard, there is a nationwide emergency telephone, which

receives reports of incidents in the railway area. 2,603 emergency calls were registered from 1 January to 31 December 2018.

## Social campaign "Safe rail-road level crossing"

In 2018, more than 200,000 educational and informational materials were developed, published and distributed in printed and electronic form for the "Safe rail-road level crossing" campaign. Among others, leaflets and brochures, films from travels, educational animations, infographics, presentations and pro-

motional material in the breakfast program have been created. Press briefings were carried out throughout Poland with the participation of national and local media and several dozen press releases were prepared and disseminated on the most important stages and projects of the "Safe rail-road level crossing" campaign.

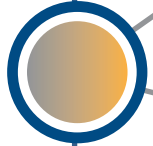
### PLK Yellow Sticker prevents tragedies on the track

One of the key projects implemented within the campaign in 2018 was #PLKYellowSticker, i.e. easier location of the crossing.

PKP Polskie Linie Kolejowe S.A. has marked all 14 thousand level crossings with special stickers containing an individual identification number allowing to locate a given intersection (INI). At the same time, the INI database was integrated with the system used by operators of the emergency number 112. The danger (or accident) identification number on the yellow sticker provided by the notifying person allows the operator of the 112 number to accurately locate the route or crossing and to react quickly. There are also telephone numbers for railway dispatchers on the stickers. An immediate reaction increases the chance, e.g. to stop a running train at a safe distance and thus prevent an accident on the crossing.

In the period from June to December 2018, the stickers were used over 400 times, calling the emergency number 112. In 30 cases, the speed limit was applied and drivers were instructed to drive with caution, and in 24 cases, in order to avoid a tragedy, trains were stopped. One such example was the situation on 13 December 2018 in Wodzisław Śląski. During a manoeuvre in the area of a level crossing, the driver of the city bus

got stuck on the tracks. One of the drivers used the data contained on the yellow PLK sticker and notified the 112 number and the railwaymen about the event. The duty officer immediately stopped the train traffic between Wodzisław Śląski and Czyżowice. As a consequence, there was no incident and the train from Katowice to Bohumin stopped at a safe distance from the bus.



numer  
skrzyżowania:

**003 299 660**

**W razie wypadku lub zagrożenia wypadkiem tel.:**

**112**

**W razie awarii tel.: +48 012 345 678, +48 01 23 45 678**

## A better prepared instructor means a safer course participant

Workshops and trainings should be included among the equally important aspects of the Company's activity within the framework of the social campaign "Safe rail-road level crossing". Specialised seminars organized at the turn of October and November 2018 were attended by safety specialists, including representatives of local driver training centres, Regional Driver Training Centres (WORD), Railway Security Guards, Regional Police Headquarters, Regional State Fire Brigade Headquarters and medical rescue teams. During the meetings, topics such as Road Traffic Law in the context of rail-road crossings were discussed, categories of crossings and the most common offences committed by drivers were presented in detail, as well as physical curiosities translated into railway and automotive topics and video materials from CCTV cameras, showing dangerous behaviour of drivers were shown. Last year, the seminars held in Bielsko-Biała, Częstochowa, Gdańsk, Olsztyn, Opole, Radom and Toruń were attended by representatives of 250 Driver Training Centres. They enable instructors to actively participate in discussions with rail safety experts and to discuss the most current issues. On the other hand, during the meetings with WORD representatives, the knowledge on the correct crossing of crossings and the functioning of the #PLKYellow Sticker project was passed on. In 2018, such work-

shop was held in Siedlce, Białystok, Piła and Spała. A total of 218 examiners took part in the workshop.

In September and December 2018, representatives of PKP Polskie Linie Kolejowe S.A. also conducted trainings for police, fire brigade and ambulance dispatchers from the Kujawsko-Pomorskie and Lubuskie provinces and operators of the 112 emergency number. 320 people were trained during 6 days of meetings on the subject of effective use of #PLKYellowSticker in the process of receiving notifications of safety risks at railway and road crossings and railway areas.

Thanks to the meetings, video materials from events at the drive, infographics and multimedia presentations with safety rules and additional teaching aids were transferred to several thousand driver training centres. Organized seminars with instructors play a very important role in the educational process of the students.

## About safety on the road - for adults and children

"Safe Fridays" is an action that aims to reduce unnecessary tragedies and obstructions in railway traffic. Each year, the "Safe Friday" campaign is carried out near the level crossings of all categories and along the tracks where there are so-called "wild crossings". Despite preventive actions and repeated appeals for caution by railwaymen throughout Poland, there are still people who, with their irresponsible behaviour, pose a serious threat to themselves and other traffic users. The aim of the action is to improve safety at the crossings of tracks with roads and to limit getting across the tracks in forbidden places.

The "Safe Fridays" campaign in 2018 started on 22 June and lasted until the end of August. During 11 summer holiday Fridays, the Company's employees distributed specially prepared materials with tips and patterns of correct behaviour in railway areas and talked to drivers and pedestrians about safety. Police and Railway Security Guard officers involved in the initiative observed and reacted to negative behaviour at level crossings and the so-called "wild crossings". In 2018, as part of "Safe Friday" action, nearly half a thousand information and prevention actions were carried out, about 45 thousand information materials were distributed, almost 800 improperly behaving persons were cautioned, 119 mandatory fines were issued and over 1,200 sobriety tests were carried out. This is an extremely important initiative, which is intended to remind every traffic participant that it is their duty to act in accordance with the regulations and common sense - it guarantees, among other things, safety both at railway and road crossings, as well as at railway areas.

Among the numerous and important activities undertaken within the "Safe rail-road level crossing" campaign, the action addressed to the youngest part of the society - "October is the month of education" should also be included. In October each year, PKP Polskie Linie Kolejowe S.A. tries to reach as many children as possible with the "Safe rail-road level crossing" campaign by means of educational lectures at schools and kindergartens. In 2018, the more than 400 educational lectures attended by 17,530 thousand were conducted. During educational meetings, children learnt the basic rules related to crossing level crossings, learnt signs, acquired knowledge considering what they must not do in the area of railways. Meetings were enriched with educational films, games, plays and competitions in order to match the materials to the age group in the best possible way. During the course, children received educational books, colouring books, items reflecting light and other mini gadgets. Since June 2018, the coordinators also informed pupils about yellow stickers placed on the crossings.

## Millions of Internet users following events on trips and information campaigns in social media

In 2018 the social campaign "Safe rail-road level crossing" was present in traditional and social media, ensuring that it reached a wide audience. 10 videos of inappropriate behaviour of drivers at railway and road crossings were published on YouTube. The greatest interest among Internet users was aroused by the material entitled "Niebezpieczne zachowania kierowców na przejeździe w Małopolsce" (Dangerous behaviour of drivers at the crossing in Małopolska) generating over 3.5 million impressions. The video entitled: "Tarnów – zderzenie auta z pociągiem pasażerskim" (Tarnów - collision between a car and a passenger train) was equally popular - more than 300 thousand impressions and the video „Zachowanie kierowcy na przejeździe

w Piotrkowie Trybunalskim" (Driver's behaviour at the crossing in Piotrków Trybunalski) - over 200,000 hits. All 10 videos from the crossings were watched by nearly 5 million people. Posts concerning the project #PLKYellowSticker or safety contests were published on Facebook, and an information campaign with animations presenting proper behaviour on the crossings was conducted. During the summer holidays, the TVP "Pytanie na śniadanie" programme published a report "Żółta NaklejkaPLK na wszystkich przejazdach" (PLKYellowSticker on all crossings), which was followed by a discussion in the studio with the participation of a psychologist and a representative of PKP Polskie Linii Kolejowe S.A. The spot promoting the project is also constantly broadcast on passenger trains.

## "Safe rail-road level crossing" in numbers

In 2018 the following were conducted:

- 1,110 educational lectures on railway safety (including the project "October - the month of education") - over 50,000 educated children;
- over 900 leaflet and preventive actions at level crossings and pedestrian crossings (including the "Safe Friday" project);
- 2,253 sobriety tests of drivers (including the "Safe Friday" project);
- marking of 13,760 journeys within the project #PLKYellowSticker;
- 5 simulations of a locomotive colliding with a motor vehicle;
- 127 open-air events;
- 7 workshops for Driver Training Centres;
- 6 workshop for WORD examiners were conducted;

the following were produced, published and broadcast:

- 307 banners with graphics #PLKYellowSticker placed at the level crossings;
- 3 articles/press advertisements;
- 3 radio programmes;
- advertising campaign #PLKYellowSticker on LCD screens in passenger trains;
- 6 animations showing the desired behaviour at level crossings and 10 videos showing the inappropriate behaviour of drivers at level crossings;
- videoinfographics #PLKYellowSticker with an information campaign in social media;
- over 204,000 information and educational materials;
- 223 defects were reported via the form "Zgłoś usterkę".

# Development prospects

## General strategic framework

PKP Polskie Linie Kolejowe S.A., in accordance with the statutory obligations, fulfils the function of the managing body of the national railway network, operating within the framework of the state policy in the area of railway transport.

The strategy for Responsible Development until 2020 (with perspective up to 2030)<sup>1</sup> defines strategic projects for the railway sector. Two of them relate directly to the Company's business. These include: "National Railway Programme until 2023. Railway infrastructure managed by PKP Polskie Linie Kolejowe S.A."<sup>2</sup> (KPK) and the long-term programme "Assistance in financing the costs of railway infrastructure management, including its maintenance and repair until 2023"<sup>3</sup>. The KPK includes investment projects co-financed from the EU funds within the financial framework 2014-2020/23 and other investments in railway infrastructure managed by PKP Polskie Linie Kolejowe S.A. financed from public funds, while the second of the above-mentioned programmes is to ensure sustainability of railway infrastructure operating parameters, thanks to stability of financing and effective infrastructure management.

The long-term programme "Assistance in financing the costs of railway infrastructure management, including its maintenance and repair until 2023" is implemented in complementarity with the activities carried out within the framework of the KPK, ensuring co-financing of the costs of railway infrastructure management until 2023, especially in the area of maintenance and repair. This will improve the quality of rail infrastructure and shorten travel times, increase passenger safety and, as a result,

increase the competitiveness of rail transport. The execution of the programme in question is an agreement<sup>4</sup> concluded between PKP Polskie Linie Kolejowe S.A. and the Ministry competent for infrastructure on 21 December 2018. The development prospects of PKP Polskie Linie Kolejowe S.A. result from decisions taken at the governmental level concerning railway transport and provisions in this area adopted in EU and national strategic documents. It is assumed that they will be implemented continuously in subsequent years.

A key document laying down the Company's activity is the "Transport Development Strategy until 2020 (with perspective up to 2030)"<sup>5</sup>. It shall be implemented in accordance with the guidelines laid down in the Implementing Document.<sup>6</sup>

Key development activities in 2018 and subsequent years will focus on the implementation of investments specified in the KPK and in the Detailed Plan of Implementation of the KPK, including planned expenditures and sources of financing of individual investment projects.

The main prospects of the Company's development are also determined by actions aimed at improving railway traffic safety, increasing the quality of the infrastructure offer and expanding cooperation with operators and contractors. Further work is expected to be carried out in order to improve the efficiency of the Company's operations. Particular attention will be paid to the cost-effectiveness of the activities carried out and to taking the fullest possible consideration of the needs of railway operators as well as the expectations of society and the economy.

<sup>1</sup> Document adopted by the Council of Minister on 14 February 2017.

<sup>2</sup> Document adopted by the Council of Minister on 15 September 2015.

<sup>3</sup> Document adopted by the Council of Minister on 16 January 2018.

<sup>4</sup> Agreement of 21 December 2018 for the implementation of the long-term programme "Assistance in financing the costs of railway infrastructure management, including its maintenance and repair until 2023"

<sup>5</sup> Document adopted by the Council of Minister on 22 January 2013.

<sup>6</sup> Implementing Document to the Transport Development Strategy until 2020 (with perspective up to 2030), adopted by the Resolution of the Council of Ministers of 24 September 2014, and amended by Resolution no 201/2014 of the Council of Ministers of 13 October 2014

Activities related to ensuring compliance of technical solutions with the requirements of the Technical Specification for Interoperability (TSI) will be continued.

In the longer term, the Company's activities will continue to focus on the implementation of investment projects aimed at modernising the railway network and providing

## International cooperation

In 2018, the Company continued its participation in the EU project of key performance indicators (KPI PRIME) concerning all areas of activity of railway infrastructure managers in the EU. Based on the project work,

## Legislation - EU levels

In 2018, executive acts and guidelines for the technical pillar of the 4th Railway Package concerning the future procedure for the approval of track-side projects for the European Rail Traffic Management System (ERTMS) were published at EU level. In addition, the European Commission has submitted proposals for regulations under the Multiannual Financial Framework, including a new draft regulation establishing the Connecting Europe Facility funding instrument (CEF) and

## Strategic Planning

In 2018, the Company submitted an extensive list of projects analysed for the New Financial Perspective 2021-2027 to the Ministry competent for infrastructure. The material illustrates the horizontal shape of the railway network and includes more than 350 projects with specification of their nature (regional/super-regional), maturity and purpose. The list also includes projects to be implemented within the framework of the construction of the Central Transport Port (CPK), for which there is a potential to handle traffic related not only to CPK service.

In 2018, the planning works initiated in 2017 related to the preparation for the implementation of investment tasks from the funds of the Regional Operational Programmes (ROPs) in the next financial perspective for the years

## Support for investment projects

Ongoing cooperation was conducted with organisational units of communes, districts, marshal and provincial offices in the scope of infrastructural railway projects implemented in the 2014-2020 perspective, in particular project initiation, setting investment priorities, target list of projects and its updates, co-financing rules and the scope of documentation required when applying for funds from the European Regional Development Fund (EFRR).

Moreover, it was analysed in terms of purposefulness and the possibility of the Company's undertaking possible implementation or cooperation with government and

an infrastructure offer at a level corresponding to market demand and the society's expectations. They will be implemented within the framework of the KPK for the New Financial Perspective 2021-2027 and in the framework of the next edition of the multi-annual programme for infrastructure management and maintenance.

the European Commission has published the first publicly available Benchmarking Report, which includes results from the following areas: punctuality, security, condition of infrastructure, finance.

the proposal for a regulation on the Cohesion Fund (CF). The company also worked on the analysis of a draft of a new regulation on rail passengers' rights and obligations, a directive on the availability of products and services, a directive amending directive 2007/59 with regard to language requirements for drivers and a regulation on improving the implementation of investments in the TEN-T network (the so-called SMART TEN-T - Transeuropean Network - Transport).

2021 - 2027 were continued. The result of the work will be the development of a list of investment projects planned for implementation in the coming years and the identification of those projects which, on the basis of analyses, will best fit into the network nature of rail transport, and thus will contribute to the increase in the number of passengers and cargo. Therefore, cooperation with the marshal offices of all provinces in the scope of investment plans for the years 2021-2027 was intensified by providing the offices with a list of over 100 projects at the stage of both project and study works, as well as new proposals, in order to further verify them and finally develop an optimal list of investments within ROPs for the years 2021-2027. The above works will be continued in 2019.

local government administration units, initiatives and investment motions submitted by those units which concern railway transport, e.g. changing the location and construction of new stops, restoration (reactivation) of railway traffic.

The Microsimulation and Analytical Model of Track Systems (MAMUT) as a specialist IT tool for testing the capacity of railway lines, based on a precise mapping of infrastructure (with accuracy to the location of e.g. single turnouts and semaphores), was used for current analyses supporting the investment process

of the Company. The micro-simulation modelling was also used in feasibility studies to support the identification of technical solutions beneficial for rail traffic. The MAMUT tool was used in particular to conduct

analyses for the identification of projects of the New Financial Perspective 2021-2027.

## Interoperability

Updated in 2018, the Strategy for Implementation of Interoperability on the railway network managed by PKP Polskie Linie Kolejowe S.A. concerned the state of certification on the railway network managed by the Company.

In 2018, in the process of negotiating tender materials and giving opinions on the documentation produced within realised investments, the aim was to obtain and ensure the conformity of technical solutions with the requirements of the Technical Specification of Interoperability (TSI). Confirmation of such compliance is possible on the basis of:

- notified bodies certifying documents: indirect EC verification certificates and EC verification certificates for structural subsystems;
- contractors of investment projects and works, EC declarations of verification issued by to the above certificates.

These measures were implemented to monitor the compliance of the materials reviewed with the legal require-

ments for interoperability. Certification and conformity assessment were taken into account in the work of the Evaluation Teams of Investment Projects (ZOPI) and Study Evaluation Groups (ZOS). The process of submitting projects to the President of the Office of Rail Transportation (UTK) on the renewal or modernisation of structural subsystems has been continued to obtain an administrative decision on the necessity to apply for a re-authorisation of the structural subsystem after the completion of the investment.

At the EU forum, work was carried out in the EIM expert groups (EIM PRM Working Group and the EIM-CER PRM joint expert group) and working groups on interoperability for freight corridors. A representative of the Company took part in the work of the expert team for the implementation of the PRM TSI at the European Commission (EC PRM Advisory Body) and the EIM MNB group (planned monitoring system for notified bodies), as well as in the work of the PRM Working Group at the European Union Agency for ERA.

## Research and development activities

One of the most important activities undertaken in 2018 by the Company was the continuation of cooperation with the National Research and Development Centre (NCBiR). In 2018, the competition for the implementation of research and development projects fully defined by the Company was resolved.

The total budget of the competition will amount to PLN 50 million (PLN 25 million each) on the part of NCBiR and the Company, the competition will be implemented within the time horizon until 2023.

The number of projects subject to the competition - 24, the number of projects submitted for implementation - 16, and the number of projects selected for implementation - 10.

Total value of projects selected for implementation - over PLN 42.9 million (including the Company's financial contribution of PLN 17,644 million).

Projects selected for implementation:

1. development of standard technical solutions for interfaces in computerised signalling equipment (CCS);
2. development of innovative methodology of building photovoltaic panels in acoustic screens on the network managed by PLK;

3. development and implementation of a technology for measuring the temperature of rails installed in tracks with wireless transmission of the obtained measurement data to IT systems;
4. new solutions to protect people and the environment from noise;
5. new solutions for the protection of people and buildings against vibrations;
6. development of a prototype (technical solution) monitoring device for traffic network line in terms of efficiency, continuity and completeness;
7. testing and improving the electromagnetic compatibility of control command and signalling equipment (CCS) and rolling stock;
8. optimization of the ultrasonic transducer system for detection of internal defects of railway rails in accordance with PLK's catalogue of defects;
9. development of an innovative method for determining the precise trajectory of a railway vehicle;
10. development of an innovative methodology/system of lighting infrastructure management on the network managed by the Company.

# Development of freight corridors

Freight corridors operate under Regulation (EU) No. 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight transport, which defines the rules for their creation, operation and development. On this basis, 11 freight corridors were launched, three of which run across Polish territory: freight corridor No. 5 Baltic-Adriatic, freight corridor No. 8 North Sea-Baltic and Amber freight corridor No. 11.

Freight corridors are not investment projects. Their main objective is to enhance the competitiveness of international rail freight transport through cooperation between EU rail infrastructure managers and allocation bodies, transport ministries, operators and terminal managers and owners. The European network of freight corridors is intended to enable rail freight services to be provided under good conditions and to optimise the use of the European rail network. Improving the functioning of the internal rail market, in particular as regards international freight transport, is an essential element of progress towards sustainable mobility.

In this respect, actions are and will continue to be implemented, including organisational improvements, among others: harmonisation of requirements and removal of barriers (especially cross-border ones), provision of information to customers and creation of a joint offer of capacity ordered in one place (one-stop-shop for C-OSS applications). The offer of freight corridors may be used by authorised applicants, i.e. railway operators, interna-

tional groupings of operators, consignors, freight forwarders or combined transport operators.

The freight corridor No. 5 Baltic – Adriatic connects Polish ports with the ports of the Adriatic Sea. Six countries are involved in its implementation: Poland, Czech Republic, Slovakia, Austria, Slovenia, and Italy. The freight corridor No. 8 North Sea–Baltic, which connects east and west of Europe, is formed by: Belgium, the Netherlands, Germany, Poland, the Czech Republic and Lithuania. Both corridors were launched at the end of 2015 and there is a European Economic Interest Grouping (EZIG) on each of them.

In January 2017, the European Commission issued a positive decision on the creation of the Amber Rail Freight Corridor No. 11. During 2018, intensive work was carried out by experts from Poland, Slovakia, Hungary and Slovenia in order to prepare for the smooth launch of the corridor within the planned timeframe, i.e. early 2019. The Amber Rail Freight Corridor No. 11 will connect the industrial and commercial centres of the countries forming the corridor with a common capacity offer for international freight trains. The corridor will join the European network of freight corridors and complement the system of freight corridors running through Poland.

## Asset Management System

In 2018, PKP Polskie Linie Kolejowe S.A. undertook works aimed at preparing a pilot implementation of an integrated IT solution for the process of railway infrastructure maintenance - Enterprise Asset Management. The implementation of the system will ensure fuller use of technical and human resources, better control over costs and improvement of the efficiency and effectiveness of the Company's operations. This task must be supported by a uniform IT tool throughout the rail network, containing a complete, up-to-date and coherent description of the railway infrastructure, which optimises maintenance and management processes.

In particular, the implementation of the system will allow for the preparation of innovations in the scope of:

- a coherent data model for all maintenance industries (railways, power engineering, automation, telecommunications, passenger infrastructure);
- optimization of technological processes;
- planning maintenance works on the level of technical objects/groups of technical objects;
- increase the granulation of cost analysis to the level of technical objects/groups of technical objects, which will enable comparative analysis of the costs of the same maintenance work.

## International cooperation

In terms of international cooperation the Company participated in the works of the most important international organisations: the International Union of Railways (UIC), the Organisation for Cooperation of Railways (OSJD), the Association of European Railway Infrastructure Managers and RailNet Europe (RNE), the Community of European Railways and Railway Infrastructure Companies

(CER), the General Assembly of the Association of European Railway Infrastructure Managers (EIM), United Nations Economic Commission for Europe (UNECE) and Colpofer (the European organisation of railway companies and police forces, established in 1980), as well as the Platform for European Railway Infrastructure Managers (PRIME).

PKP Polskie Linie Kolejowe S.A. has become a signatory of the the European Railway Safety Culture Declaration under the aegis of the European Union Railway Agency (ERA). By joining this initiative, the Company confirms its commitment to promoting and improving safety in rail transport.

PKP Polskie Linie Kolejowe S.A., as the leader of the railway subgroup in the ONZ Expert Group on the comparative analysis of costs of transport infrastructure construction, prepared a questionnaire on the costs of construction, modernisation and renovation of railway infrastructure. The analysis of the collected data will be presented in the report on the work of the group.

There was also active bilateral cooperation with railway infrastructure managers and railways from neighbouring countries, both at management level and at expert level, as well as contacts with institutions and entities representing the railway sector, including those from Bulgaria, Italy and Hungary.

Within the Infrastructure Group with DB Netz AG (German railway infrastructure manager), the Company cooperated in planning and execution of infrastructure projects in the border area (e.g. electrification of the Węglińiec-Zgorzelec-Görlitz section, construction of a railway bridge at the Kostrzyn-Kietz crossing, modernisation and electrification of the Szczecin-Angermünde-Berlin line or launching the ETCS/ERTMS system on Polish-German sections used in border traffic).

In addition, a representative of the Management Board of the Company participated in the ceremonial commissioning of a section of the Węglińiec-Horka (Gbf)-Knapenrode line on 9 December 2018.

Traditionally, as in previous years, the Company organized border conferences together with Czech and German infrastructure managers for railway undertak-

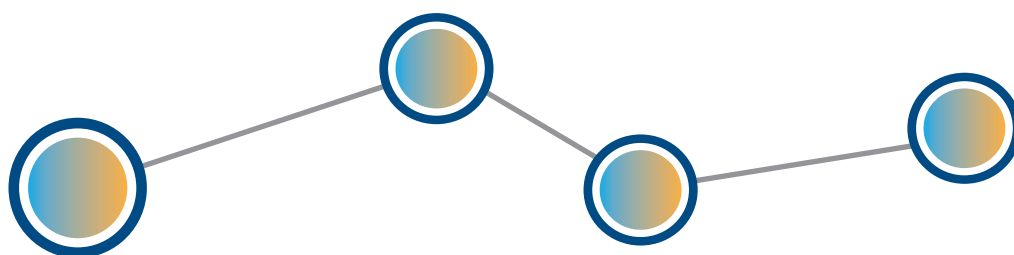
ings carrying out transport through Polish-German and Polish-Czech border crossing points, as well as in cooperation with DB Netz AG "Round Table" workshop for freight transport operators to discuss problems related to the planning and implementation of transport at Polish-German border crossing points.

A closer cooperation has been established with the special purpose vehicle RB Rail AS, established by the Lithuanian, Latvian and Estonian Railways to implement the Rail Baltica project in the Baltic States.

In terms of multilateral cooperation, the Company was involved in the work of the team of experts from the Visegrad Group railway, the team of 7 railways (Belarus, China, Kazakhstan, Mongolia, Germany, Poland and Russia) for the development of the New Silk Road, as well as participated in the East-West-East conference held on 15-17 May 2018 in Grodno, Belarus. The Company's representative continued to participate in the work of the tripartite ministerial team for railway line No. 346 Liberec-Zittau.

International cooperation made it possible to exchange experiences and good practices and the above-mentioned activity allowed to expand the market of contractors for investments conducted and planned by the Company and influenced the strengthening of the Company's image as a partner open to dialogue and new technologies.

The Representative Office of PKP Polskie Linie Kolejowe S.A. in Belarus (extended to Lithuania, Russia and Ukraine) continued its activity, supporting, among others, key investment projects carried out on the Polish-Belarusian border and activities related to the growing intensity of railway traffic across the border.





# Information Technology

## Systems area – railway domain

1. Within the maintained and developed system of Network Description Maintenance (POS, e-POS) and Change of Railway Line Operation Parameters (ZMIPEL) applications, an application was developed and implemented to handle applications for new operation facilities and a mechanism to version data made available by the Company from the POS database. The analysis of needs and possibilities of obtaining data for the needs of the Assets Register was carried out and the business specification of the Assets Register was developed. Changes resulting from the update of the internal guidelines have been developed and implemented in the ZIMPEL application;
2. Within the maintained system, the Poznan Records of Limitations and Their Settlement System (POSEOR) implemented changes resulting from the establishment of areas of operation, seats and borders of Railway Line Departments and Operation Sections. Moreover, the Database Comparison option has been modernised. Additionally, the system has been extended to support speed limits on additional main tracks, for which road speeds are higher than 40 km/h;
3. Within the maintained and developed system of timetable construction system (SKRJ) and Internet train route ordering system (ISZTP), a report showing the functioning of track closures in the timetable was implemented. In addition, a report was developed and implemented to determine the impact of changes introduced in the POS database on the existing timetable, modifications were introduced to improve the efficiency of the system functionality for automatic parameter change, and the OT module was modified to support double-traction locomotives. The ISZTP system and the OCTOPUS interface have implemented a new functionality consisting in adding/removing/ updating non-occasional commercial stops of passenger trains on existing train path orders. Dynamic traffic diagrams for ISZTP have been created and implemented. Software was developed and new versions of the interface OCTOPUS v2.01 and OCTOPUS v2.02 were implemented. SKRJ-VM service (virtual machines for railway undertakings) was performed and implemented for four railway undertakings;
4. Within the maintained system, the System of Operational Work Records (SEPE) extended the functionality of the "Module for presentation of data on planned and completed manoeuvres, stoppage of railway vehicles and use of services in OIU" by adding a tag enabling searching for duplicates related to stops of depots on the same track number (generally accessible, OIU cargo, OIU stoppages) performed by the same carrier and in the same period of time. The following modules were developed and implemented: settlement of accounts for the access of railway undertakings to railway infrastructure in the Train Timetable for 2018/19 and quality for the execution of the Train Timetable for 2018/19;
5. Within the maintained and developed application, the Internet version of the Operational Work Records System (e-SEPE) expanded the mechanism of authorization and notification and added the possibility of generating reports in the ordering module and monitoring the implementation of services in the scope of manoeuvres, stops and wagon timing requested by railway undertakings;
6. Within the framework of the System for Record of Operational Work, version II (SEPE II), the so-called application dispatcher modules were developed and tested. In addition, a module was made available to provide data for settlements with carriers for the quality of the performed timetable and implemented basic reports. The assumptions for the implementation architecture were prepared and the target concept of the user authentication mechanism with the use of the ADFS mechanism was prepared;
7. Within the maintained and developed train dispatcher support system (SWDR), functions related to blocking and authorization of the system's functionality were introduced. "Services" of services ordered by railway undertakings (manoeuvres, depot stops and wagon timing);
8. Within the electronic traffic register (EDR) system, the system's functionalities have been extended to cover new cases - traffic on the route with a distance station, traffic on the route bordering the Local Control Centre (LCC). Training on the use of the EDR system on the CMK line for on-call traffic from two Operation Sections - at Idzikowice (Railway Lines District Unit in Skarżysko Kamienna) and Włoszczowa Północ (Railway Lines District Unit in Kielce) - was carried out. The production environment of the EDR system was prepared and made available, traffic stations were configured, traffic registers were created, users were created, and authorizations were assigned to the system for train dispatchers and coordinators in the Włoszczowa Północ and Idzikowice Operation Sections. For the production environment, the Agent EDR application has been created to take care of system updates. Extensions of the EDR system functionality have been implemented with the possibility of emergency entry, editing and monitoring of applications submitted by carriers for capacity reservations in order to perform manoeuvres, stop railway vehicles

and use services in OIU, as well as enter data on stops on wide tracks (1 520 mm);

9. Within the framework of the maintained and developed system, the Interactive Map of CZK was developed and implemented a new version of the application dedicated to freight railway undertakings;
10. The Passenger Portal (PDP) system has been developed and published. The Passenger Portal version 3.0.0.0.0 includes the WCAG 2.0 standard, confirmed by the received WCAG 2.0 level A and AA certificate. In addition, the Passenger Portal was implemented in terms of production, taking into account the requirements of RODO and new set of services provided on trains and new categories of commercial trains;
11. The new mobile application Passenger Portal has been implemented, tested and submitted to acceptance tests by a wider and diversified group of users of our Company;
12. Within the dynamic passenger information system (CSDIP), a new version 2.0 of communication protocols for SDIP devices (displays, audio devices, train presence detectors), taking into account the authentication of devices through certificates, was implemented and launched. The mechanism of automatic notification of the business coordinator, maintenance/guarantee service and CSDIP console operator about the state of unavailability of devices (displays, audio devices, train presence sensors) in particular objects serviced by CSDIP was implemented. The following facilities of the Warsaw ring road, i.e. the CSDIP line, were prepared and integrated into the CSDIP: Warszawa Wola, Warszawa Młynów, Warszawa Koło with operator's console at Warszawa Gdańska station.
13. Within the maintained and developed Management System of Electricity Consumption Points (SZPEE), the next stage of development work has been completed;
14. As part of the work of the interdisciplinary Acceptance Committee of the DP560 diagnostic vehicle, tests and acceptance of individual modules of the measure track motor car were performed, as well as acceptance of individual business modules;
15. Representatives of the Company participated in the work of an interdisciplinary team aimed at preparing and carrying out a pilot railway investment made in BIM (Building Information Modelling) technology. A BIM expert selected in the course of the proceedings was collaborated with in order to develop an optimal data model and identify the most effective IT tools supporting investment works.

## Systems area – business domain

1. SAP Release Procedures were prepared and tested;
2. Procedures for handling service requests were prepared and implemented, including those related to orders and incidents within the implementation of the EMILKA2 system;

### Significant changes and implementations in the business domain:

1. **functional development of the Human Resources Management System - SAP HCM**
  - a. eTeczkA - SAP HCM module (modern IT tools allowing for automatic and digital management of employee documentation) allowing for collecting electronic documentation. The launch of this module allowed for the implementation of the project of digitalization of employee files collected previously in paper form;
  - b. train driver register - SAP HCM module, implemented for the purposes related to the fulfilment of

- c. legal obligations resulting from the establishment of a nationwide train driver register (Article 22ca of the Railway Transport Act (Journal of Laws of 2017, item 2117) and in connection with the creation of new positions in the classification of the Company Collective Bargaining Agreement for Employees of PKP Polskie Linie Kolejowe S.A. (ZUZP as of 1 May 2018) i.e. "specialist train driver" and "senior specialist train driver". The module allows the recording of driver performance data and the generation of documentation in accordance with the requirements of the applicable legislation. Moreover, it enables their transfer to the National Register of Train Drivers via the Train Drivers Register application (modified version of the Register of Drivers' Rights);
- c. data migration in connection with the inclusion of Infrastructure Repair Company in the Company's structures;

- d. KCP - Modifications of Timesheets - adaptation of SAP HCM to handle changed timesheets, implementation of changes in the reporting process.

## 2. Functional development of SAP - FI/CO

- a. Split payment - implementation in the SAP FI area in connection with the regulations in force in Poland since 1 July 2018 related to the split payment mechanism.
- b. JPK - (Uniform Control File) - implementation of new JPK structures in SAP ERP with tax offices in the scope of data structures;
- c. Active VAT - implementation of verification of VAT payers' data for SAP in order to verify the status of

a VAT payer from the SAP level by means of data provided by the Ministry competent for finance;

- d. Transfer Pricing - implementation of SAP system adjustment to the requirements of new legal regulations concerning entities conducting transactions with related parties in the tax year, which have a significant impact on their income (loss). The aim of the implementation was to support the process of preparing tax documentation for these transactions or other events;

## Other major projects and works

1. **Procurement Platform - PZ2** - implementation of a new system allowing for full support of procurement and tender processes related to supplier selection, conclusion of contracts and their registration in the central register. Thanks to the integration with SAP ERP, the system will allow for cost planning and support the processes of expenditure control and contract execution. Extension of system functionality by the following modules: Planned, Electronic reconciliation of procurement documents (e.g. SIWZ, draft contract), acceptance with the use of mobile devices;
2. **Intranet** - expansion of the Intranet with new functions such as adding advertisements, status of employee's absence from the address book;
3. **EPM 2013 (MS Project Professional)** - a solution allowing for central management (remote control) of installations and uninstallations of the MS Project Professional program in all units of PKP Polskie Linie Kolejowe S.A. has been developed.
4. **Sales document flow system (SPOD) - implementation and production launch of a system whose main modules are:**
  - a. eFaktura (eInvoice)- expansion of the existing process of issuing and circulation of sales documents

issued in the SAP ERP system with regard to recording and archiving these documents and introduction of electronic invoice;

- b. Centralny Rejestr Umów Przychodowych (central register of revenue contracts) - uniform registration and updating of revenue documents;
- c. Centralny Portal Zatwierdzeń (central approval portal)- access portal to systems requiring the acceptance and approval of various applications, documents, etc;
- d. Archiwum dokumentów (document archive) - revenue document management panel.

5. **EMILKA 2** - implementation of a new version of the service desk system allowing for handling requests for rights, access to licenses and supply of equipment. The next stage of work will be integration with the systems of service providers and development of reporting tools;
6. **Electronic Invoice Circulation (EOF, EODF)** - as part of the development work, new reports on overdue invoices and a workflow allowing for the handling of applications were carried out. A periodic report on all outstanding invoices was also implemented. The report works on the basis of data downloaded from SAP ERP.

## Infrastructure area

1. Maintaining SLA parameters at the level expected by the Company for key critical infrastructure services (srv+lan/wan). Proactive measures to increase system reliability, internal review of the current infrastructure in the context of HA mechanisms, analysis and necessary reconfiguration of the systems in place according to the system keyability category, and the monitoring system used as a complement to the independent monitoring system for external and public services and the implementation of the change procedure in the area of infrastructure systems. Reactive actions to ensure business continuity of internal audit

systems and update the policies of creating / restoring back-up copies and ensuring proper care of 24-hour systems;

2. Supervision over the implementation of the plan of consolidation of subsidiaries of PKP Polskie Linie Kolejowe S.A. in the scope of IT stream;
3. Implementation of Windows 10 support in the area of basic systems and a standardization procedure for workstations;
4. Extension of the File Server system by the "My important files" functionality, designed to store individual employee data in a safe way;

5. Implementation of a number of improvements in the area of the Corporate Mail service, including marking of external messages, personal quarantine with notifications, encrypted electronic mail flow in the Company, automatic signatures for the employees of the Head Office, full geo-redundancy of the service;
6. Implementation of a new File Sharing System for the exchange of files with third parties in a managed and organised manner;
7. Purchase and implementation of new HSM modules and modernisation of the PKI system;
8. Upgrading the version of the VMware virtualization environment operating in the Company from 5.5 to 6.5 along with server migration (743 servers) to the new platform;
9. Expansion of the space of the high-performance All-Flash matrix along with migration of key IT systems;
10. Production implementation of external monitoring of public services;
11. Maintenance of the efficiency of workstations and applications and ongoing service of emerging problems at the end users;
12. Conducting the proceedings and selecting a contractor for the data transmission services of the IP VPN network for the years 2019 - 2023 for nearly 200 buildings constituting the headquarters of the Company's organizational units, about 2,000 operating control points, making a dedicated connection ensuring technical synchronization of Data Processing Centres and access for service providers and external customers;
13. WAN network modernisation, providing warranty support and access to LTE technology;
14. Commencement of LAN network modernisation through replacement of network switches in all organizational units of the Company;
15. Purchase and implementation of a tool for advanced diagnostics and testing of WAN network performance in terms of compliance with the agreement with the telecommunications operator;
16. Launch of the second Internet access point.

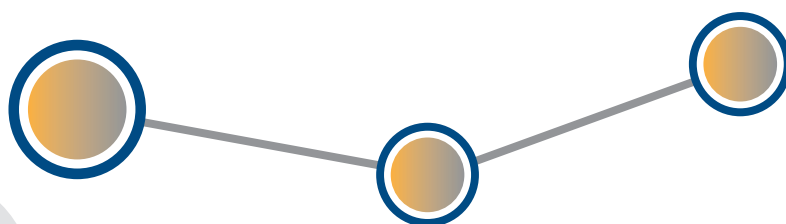
### Security systems area

1. Purchase and implementation of McAfee Advanced Threat Defense (sandbox) system supporting protection against malware attacks;
2. Extension of the AirWatch system with the functionality of tunnelling mobile applications;
3. Purchase of technical support for 36 months for AirWatch MDM service;
4. Purchase of technical support for 36 months for the ArcSight SIEM service managed by SOC;
5. Preparation of systems for handling Electronic Payment Centres.

### Architecture and international cooperation area

Representatives of the Company took part in numerous meetings of international teams and working groups, whose decisions and recommendations will influence

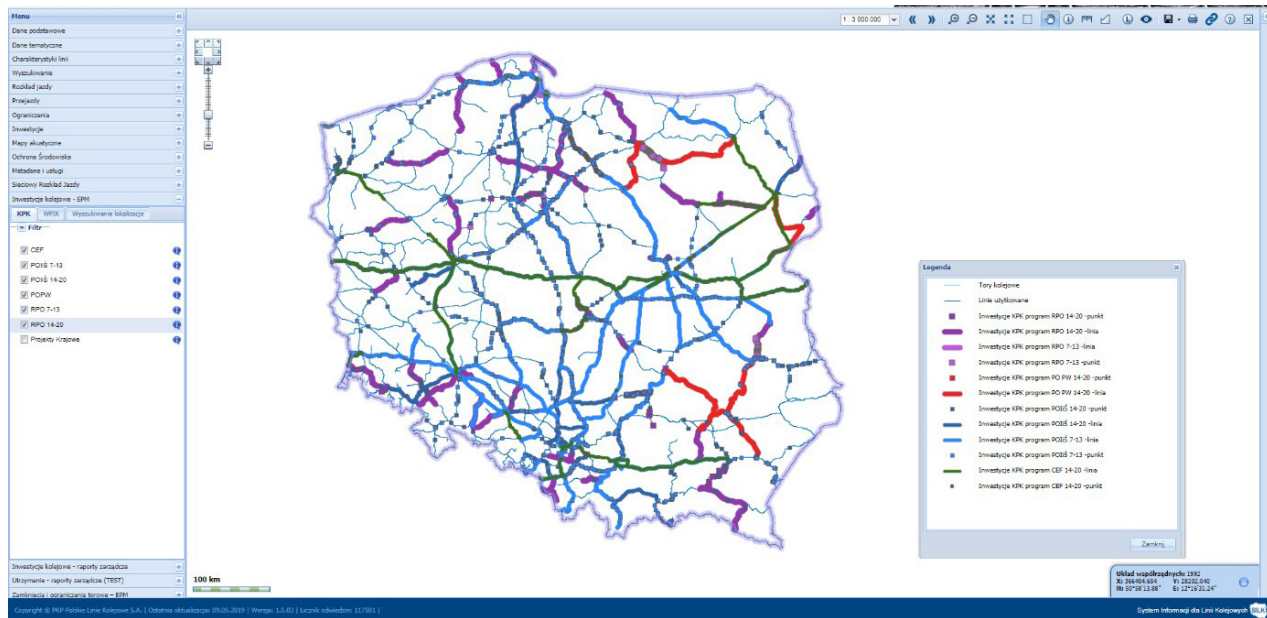
business processes and directions of IT systems development in the coming years.



# Geoinformation

2018 was the year of implementation of new tools and functionalities of the Railway Line Information System (SILK) supporting the Company's employees in the analysis of spatial data related to railway infrastructure. Within the framework of the three-year SILK 2020 Project, initiated in 2018, the possibility of dynamic development of the SILK application until the end of 2020 has been ensured.

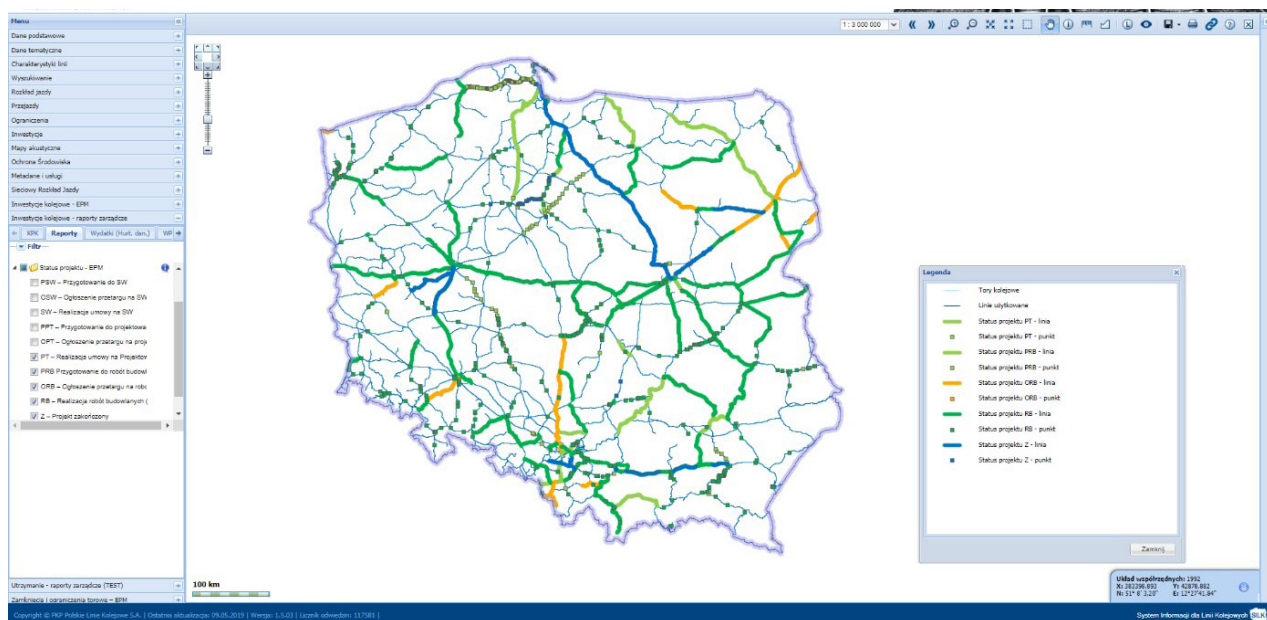
In 2018, the development of the SILK system was mainly aimed at ensuring the expansion of the interactive map of railway lines (MILK) in the scope of providing users with new tools facilitating analytical work on spatial data. The focus was also on extending the visualization of investment data, including the EPM (Enterprise Project Management) System 2013.



## Investment projects at MILK - Implementation programmes

Investment projects on the MILK map have been presented using new management reports, i.e. by showing, among other things, the material advancement of in-

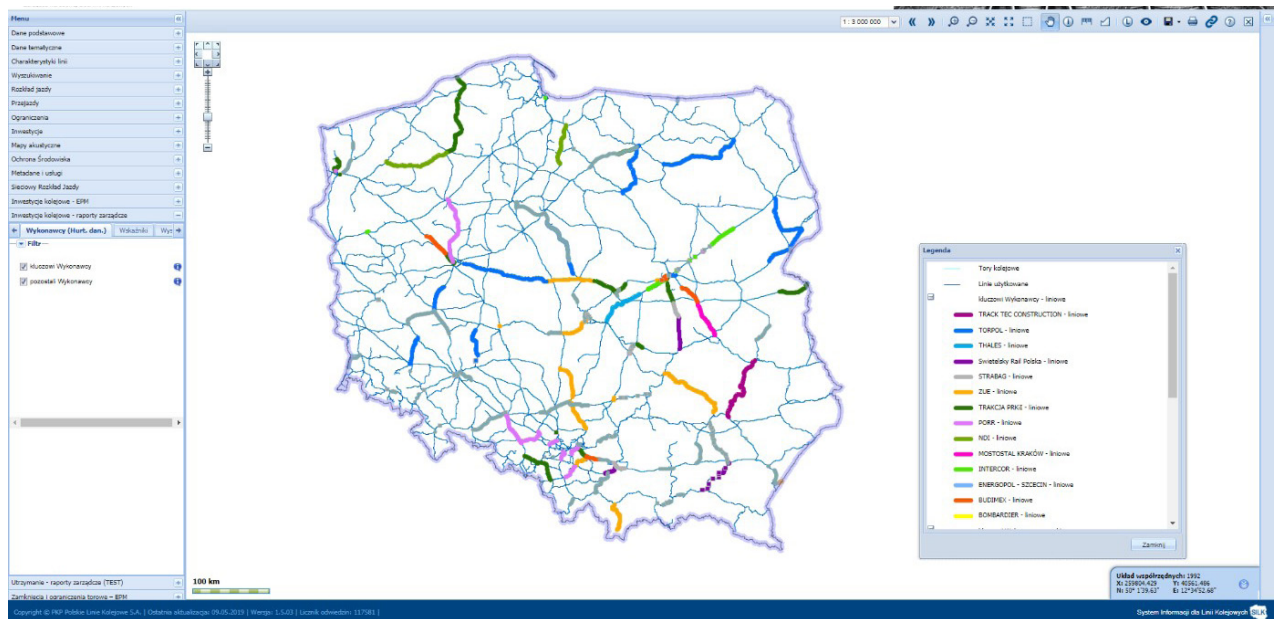
vestments, project financing and the division of projects according to their implementation status.



## Investment projects at MILK - Status of projects

Users of the map can view layers related to projects in the preparatory phase, information on administrative decisions concerning projects, as well as the layer of invest-

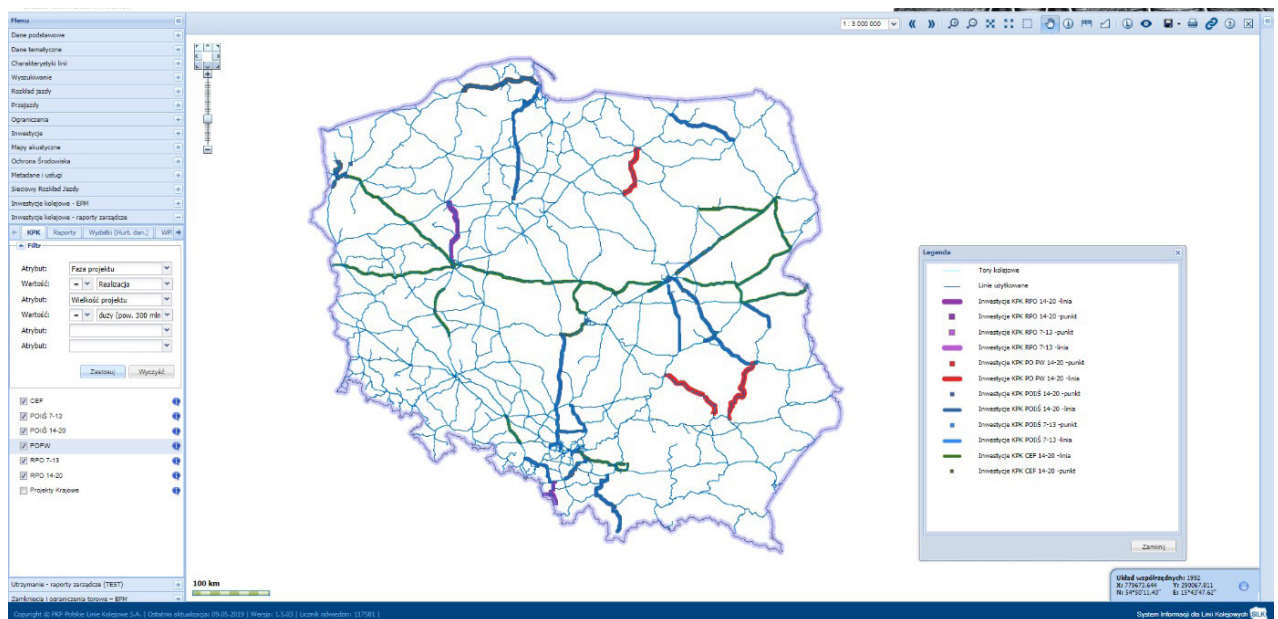
ment contracts in progress, distinguishing between contractors for individual works.



### Investment projects at MILK - Contractors

In order to improve the quality of work on data, a data filtering functionality was implemented, thanks to which the user can narrow down the displayed data by defining four selected parameters related to the implemented project,

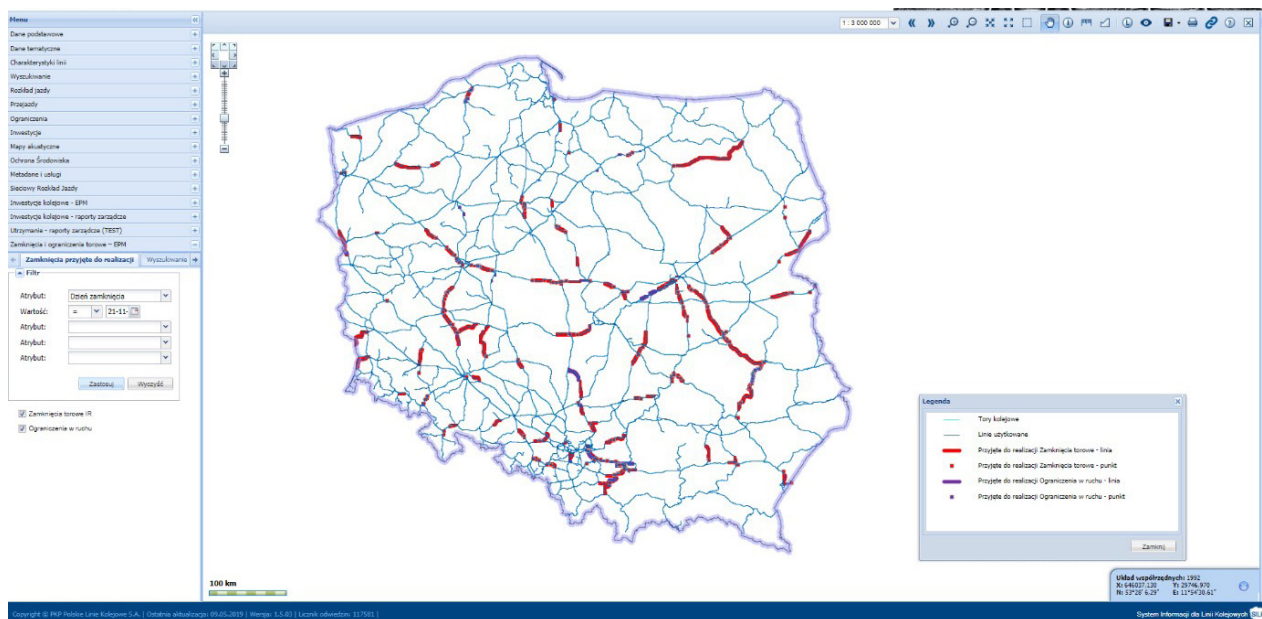
such as: the implementation program, the area of investment, a specific railway line or the value of the project.



### Investment projects at MILK - Data filter function

A novelty in the application is to show on the map investment track closures, which are already piloted on MILK.

Operators, using the possibility of data filtering, can perform basic analyses of spatial data in this scope as well.



### Investment track closures

In 2018, assumptions for further development of new functionalities of the SILK system were worked out, within the framework of which the integration of SILK with the timetable construction system (SKRJ) in the scope of visualization of maintenance track closures and traffic restrictions was also planned. Additionally, in order to make it easier for the Company's employees to verify the availability of operating documentation in the SILK system, it is planned to implement a new spatial layer on the MILK map, including a visualisation of the availability of documentation on individual railway lines. The

SILK system is constantly being developed in order to provide the best possible tools supporting current works, including the analysis related to the monitoring of railway investments carried out by the Company.

In addition, in 2018 a geoinformatic solution was implemented, providing operators of the emergency number 112 with continuous access to the geographical location of railway and road crossings on the network of railway lines managed by PKP Polskie Linie Kolejowe S.A.

## Environmental protection

Environmental issues have an impact on the preparation and implementation of investments in two aspects: time and costs. This is primarily due to the need to carry out an environmental impact assessment, the performance of which requires the preparation of reliable environmental documentation. The quality of documentation depends on the state of knowledge about the environment – therefore it is necessary to carry out an environmental analysis along the railway line and to assess the impact of the planned investment on the environment before commencing the execution of the investment. In order to obtain a decision on environmental conditions for railway investment projects carried out by PKP Polskie Linie Kolejowe S.A. from the EU perspective 2014-2020, two framework agreements for development of environmental documentation concluded in 2015 and 2018 have been implemented. The total budget of the two agreements amounts to PLN 11,059,400 net. In 2018, the objects of the contract for 13 executive agreements were completed and received. The total value of new executive agreements signed last year amounts to PLN 1,597,456.34 net.

In 2018, PKP Polskie Linie Kolejowe S.A. obtained 37 decisions on environmental conditions and 2 decisions amending the decision on environmental conditions, as well as 1 decisions specifying the conditions for the investment at the stage of the renewed environmental impact assessment. Obtaining these decisions allowed for further administrative steps to be taken in order to obtain the necessary decisions in the process of investment preparation.

Decisions on environmental conditions may also impose the obligation to perform post-execution analyses or environmental monitoring after the completion of implementation of investment projects and commissioning of railway lines for use. In 2018, 4 studies for 2 completed investment projects were commenced. Three studies concerned the acoustic impact or vibrations and one concerned the impact of railway lines on the soil and water environment. Last year, the implementation of studies for which contracts were concluded in previous years were also continued. It was 21 studies - 9 concerned the acoustic impact,

2 the acoustic impact and 10 the impact on the natural environment on surface waters. In 2018, out of 25, 18 studies were completed. 7 studies are still in progress.

In order to broaden the knowledge on the impact of railway lines on the natural environment, in 2018 "Monitoring of the occurrence and migration of animals along railway lines No. 3 and No. 356" was developed. The aim of the analysis was to obtain information on the occurrence and species diversity and the location of migration routes for daily and seasonal animals as well as the degree of mortality and movement of animals across railway lines No. 3 and No. 356. The results of the study on animal mortality showed that the impact of the railway line on animal mortality is marginal, although the area of the railway line is regularly used by animals. In most observed cases, the animals passed or foraged peacefully along the tracks, and the camera trap footage did not show signs of severe stress or anxiety from the presence of railway lines. A significant percentage (75%) of observations of animals during the evening and night period, when train traffic is lower, may indicate the influence of current traffic on the railway line on the conditions of animal traffic.

This study was prepared with expert opinions completed in earlier years, i.e:

1. Expert opinion on the impact of railway lines on animals and migration routes for investment projects from the 2014-2020 perspective – mammals (2015);
2. Expert opinion on the impact of railway lines on animals and migration routes for investment projects from the 2014-2020 perspective – amphibians and reptiles (2016);
3. Expert opinion on the impact of railway lines on animals and migration routes for investment projects from the 2014-2020 perspective – birds (2016);
4. Expert opinion on the impact of railway lines on bats (2016);
5. Expert opinion on the impact of railway lines on fish and lampreys and recommended minimising solutions (2017)

closes a series of studies on the impact of railway lines on animals.

In 2018, a study entitled "Expert opinion on adaptation of railway infrastructure to climate change - maintenance of railway lines and investment projects financed from the 2014-2020 financial perspective". Purpose of the study was to:

- carry out an analysis of the current state of two-way interactions: rail infrastructure - climate;
- identify the areas of the Company's activity that may affect the quality of the climate;
- identify the areas of the Company's activity susceptible to the influence of weather phenomena;

- develop methods for assessing the impact of the Company's operations (individual project, entire network) on climate change and methods for assessing the impact of climate change on the Company's operations;
- identify a set of measures necessary to take to enable the Company to adapt to the forecasted climate changes in Poland.

The key products of the study are:

#### **1. Guidelines on how to integrate climate considerations into environmental documentation**

The study is a set of executive guidelines enabling appropriate inclusion of climate change and biodiversity issues in the environmental impact assessment in the scope of preparation of environmental impact reports and project information sheets. The purpose of the Guidelines is to facilitate the implementation of a comprehensive and effective assessment of the impact of individual projects of PKP Polskie Linie Kolejowe S.A. on the climate and biodiversity, as well as the analysis of the projects' resilience to climate change and the ability to cope with extreme events.

#### **2. Plan of railway infrastructure adaptation to the climate change**

This study is a document summarizing the analysis of two-way interactions: railway infrastructure - climate. It contains recommended actions dedicated to the Company that will guarantee adaptation of railway infrastructure to the climate change and reduce its impact on the climate change.

The most important issue, both at the stage of investments, as well as during daily operation and maintenance of railway lines, is the problem of railway noise and vibrations. Reconstruction of railway infrastructure, and thus increasing the speed of train traffic, may change the nature of the impact. With this in mind, the following studies were carried out in 2018:

#### **1. "Acoustic analysis of the impact of changes in operating conditions on the environment - railway line no. 4 Grodzisk Mazowiecki - Zawiercie - Central Railway Main Line (CMK)"**

The aim of the study was to examine the impact of the change of speed of particular categories of trains operated on the Central Railway Main Line (CMK) on the environment. Taking into account the speed of 230 km/h or 250 km/h achieved by Express InterCity Premium (Pendolino) trains does not significantly affect the scale of the acoustic nuisance compared to the current state of affairs. However, taking into account the movement of freight trains at the CMK causes the occurrence of noise exceedance in the environment for most of the protected areas adjacent to the CMK. The analysis



shows that the modernisation of rolling stock by reducing noise at the sound source is a solution to reduce noise in the whole area adjacent to the CMK. Reduction of the negative impact of rail noise should be carried out in parallel both by the infrastructure manager and railway undertakings, e.g. by means of modernisation of the tracks, construction of noise barriers, application of modern rolling stock, modification of braking systems in existing rolling stock and elimination of worn-out depots.

## **2. "Analysis of the impact of vibrations on buildings and people living in buildings for railway line No. 4 Grodzisk Mazowiecki - Zawiercie - Central Railway Main Line (CMK)"**

The aim of the study was to assess the impact of vibrations on people and buildings caused by the operation of the CMK in connection with the assumed increase in the train speed. The scope of work included the study of the influence of vibrations on buildings and people in buildings in their present condition. Simulation analysis was carried out in scenarios related to train speed and type of train. On the basis of the studies carried out, it was found that, in order to enable passenger trains to run at speeds  $V > 200$  km/h (up to 250 km/h), as well as freight trains at speeds above 120 km/h and at a load of 18 t/axle, it is necessary to introduce solutions that minimize vibrations. The predicted vibration level requires the use of under-ballast mats. In view of the forecasted small number of travels, in which it will be possible to increase vibrations above the limit values, an alternative solution has been proposed, consisting in the introduction of a vibration monitoring system. The result of the application of the above system should be permanent control of railway undertaking's trains and identification of rolling stock of poor technical condition. The analysis presents recommendations for solutions allowing to minimize excessive vibrations. Conclusions resulting from the conducted analyses indicate that it is necessary to introduce solutions minimizing the acoustic impact on the selected sections of the CMK, as well as the propagation of vibrations from the railway line, i.e. acoustic screens, anti-vibration mats, monitoring measurements of vibrations.

Noise protection is also about planning the use of areas close to noise sources. Locating acoustically protected buildings (e.g. residential buildings) in the immediate vicinity of railway lines increases the number of people exposed to excessive noise. Therefore, the Company actively participates in the process of issuing opinions on planning documents, in particular, local spatial development plans and studies of conditions and directions of spatial development of communes in order to reduce the number of residential buildings erected in the close vicinity of railway lines. To this end, a total of approx. 600 planning documents were analysed in 2018. The main objective of the agreements and opinions was to limit the introduction of new

acoustically protected buildings in the very close vicinity of railway lines, and thus, in the long term, to limit the need to build guards to protect the environment from the excessive impact of railway noise.



# Investments

## General information

The investment activity of PKP Polskie Linie Kolejowe S.A. as the manager of the national railway network is aimed at improving the efficiency and performance of the Polish transport system through the realisation of an extensive investment programme including modernisation of numerous railway lines.

In 2018, the Company continued the implementation of investment projects included in the "National Railway Programme until 2023" (KPK). The programme was adopted in September 2015 and then updated in 2018 by Resolution of the Council of Ministers No. 181/2018 of 6 December 2018. The main objective of the KPK is to strengthen the role of rail transport in the integrated transport system of the country by creating a coherent and modern network of railway lines, which results directly from the provisions of the "Strategy for Transport Development until 2020 (with a view to 2030)" as far as rail transport is concerned. The KPK assumes the maximum use of EU funds to finance projects within the scope of: Operational Programme Infrastructure & Environment (OPI&E) for the years 2014-2020, Connecting Europe Facility (CEF), Operational Programme Eastern Poland (OP EP) for the years 2014-2020, and the Regional Operational Programmes (ROP-S) for the years 2014-2020. In addition to EU funds, the KPK also plans to spend public funds (state budget), the Company's own funds and funds from the issue of bonds. The European Investment Bank

(EIB) loans are also an important source of expenditure financing.

The period of implementation and settlement of investments under the KPK coincides with the EU financial perspective for the years 2014-2020 and takes into consideration the n+3 rule, which means that the period of eligibility of expenditures ends on 31 December 2023 (for I and II CEF call it is 2020) The expenditures of the KPK's basic list, after taking into account the refunds related to the projects within the perspective 2007-2013, amounts to PLN 66 billion.

Among the largest projects (with outlays exceeding PLN 2 billion) implemented under the KPK's basic list are:

- 1 works on railway line No. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Otwock - Dęblin - Lublin section, stage I – OPI&E 2014-2020;
2. development of the ERTMS/GSM-R system infrastructure on railway lines within the framework of NPW ERTMS - OPI&E 2014-2020;
3. works on the E 59 railway line, Poznań Główny - Szczecin Dąbie section – CEF 2014-2020;
4. works on railway line C-E 65 on the Chorzów Batory – Tarnowskie Góry – Karsznice – Inowrocław – Bydgoszcz – Maksymilianowo – OPI&E 2014-2020;
5. works on the E 20 railway line on the Warszawa - Poznań section – other works, the Sochaczew - Swarzędz section – CEF 2014-2020.

## Implementation of the National Railway Programme

In 2018, the Company implemented investment projects throughout the country on the basis of agreements concluded with contractors. Activities related to comprehensive monitoring of all projects from the KPK's basic list continued, in particular with respect to key issues such as:

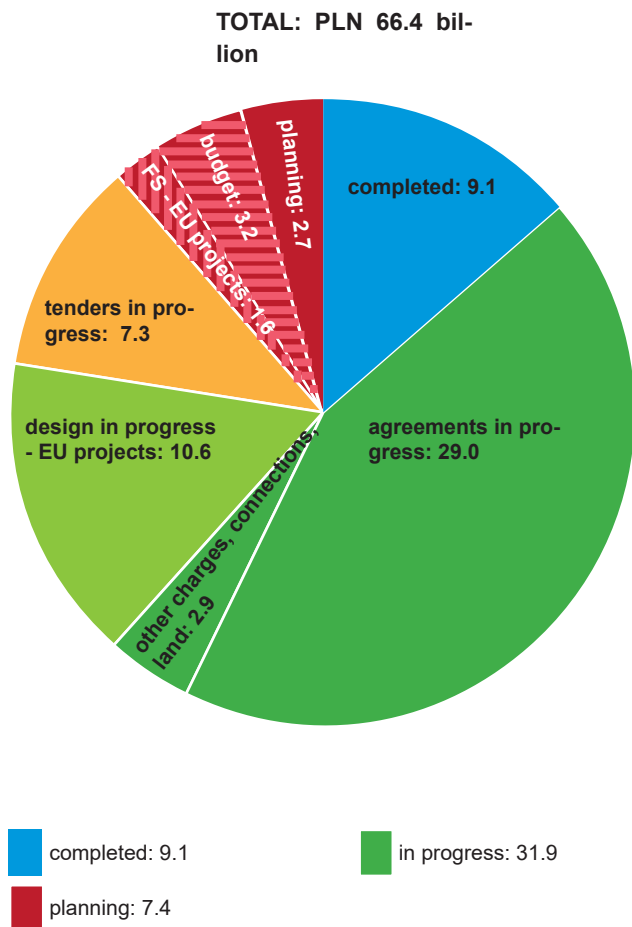
execution of works on construction sites, forecasting of expenditures, public procurement procedures, timely execution of milestones and project schedules.

In 2018, the key activities related to the implementation of projects included in the KPK were connected with

conducting tender procedures in order to select contractors for project implementation and signing agreements with contractors. Work on construction contracts concluded in previous years was also continued.

In 2018, contracts for projects included in the KPK with a total value of PLN 9.56 billion were signed.

### Status of KPK implementation as at 31 December 2018



**Completed** – value of completed agreements

**Agreements in progress** – value of signed agreements

**Other fees and connections** – value of expenditure carried out on an ongoing basis on projects without the need to conduct contract award procedures

**Tenders in progress** – value of ongoing tender procedures (estimated net value of contracts)

**EU projects in progress project documentation** – value of planned to announce tender procedures for construction works for which project documentation is being prepared

**EU projects** – value for which feasibility studies are being prepared

**Planned** – agreements before the announcement of the contract award procedure

**Budget** – value of Feasibility Studies (FS) agreements planned for implementation in subsequent years in accordance with the budget limits for individual years until the end of the implementation of the KPK.

At the end of the fifth year of the current EU perspective, out of the global amount of the KPK programme PLN 66.4 billion, almost 62% were in progress or were completed. In addition, over PLN 7 billion constituted tenders in progress (11%).

In 2018, in many tender procedures, potential contractors submitted bids for amounts exceeding the estimated

values specified by the Employer, i.e. PKP Polskie Linie Kolejowe S.A. This made it necessary to cancel part of the tender procedures and to reopen them. In addition, activities in the field of video monitoring of the progress of projects using cameras, drones and helicopter flights were implemented.

### Investments in 2018

The basis for the investment activity carried out by PKP Polskie Linie Kolejowe in 2018, as in previous years, was the Company's Investment Plan (PI2018) which assumed the implementation of projects financed using funds from the Cohesion Fund, the state budget, the Railway Fund and the Company's own resources.

PI 2018 as an element of the Company's Operation Plan was adopted by the Management Board of PKP Polskie Linie Kolejowe S.A. by Resolution No. 186/2018 of 6 March 2018. The most important group in PI 2018 were projects financed from the CEF and OPI&E. Within the PI2018, over 200 investment projects

were accepted for implementation, and its execution in 2018 amounted to over PLN 9.0 billion.

The largest capital expenditures were incurred for:

- works on railway line No. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Otwock - Dęblin - Lublin section, stage I – OPI&E 2014-2020 (PLN 770.7 million);
- modernisation of railway line E 30, Zabrze - Katowice - Kraków section, stage 2b – CEF 2014-2020 (PLN 471.1 million);
- works on the E 20 railway line on the Warszawa - Poznań section – other works, the Sochaczew - Swarzędz section – LCC Konin area CEF 2014-2020 (PLN 336.9 million);
- works on the E59 railway line on the Wrocław - Poznań section, stage IV of the Lower Silesia province boarder - Czempień – CEF 2014-2020 (PLN 303.0 million);
- works on the E 20 railway line on the Warszawa - Poznań section – other works, the Sochaczew - Swarzędz section – CEF 2014-2020 (PLN 269.0 million);
- modernisation of the railway line no. 354 Poznań Główny POD-Chodzież-Piła Główna RPO 2014-2020 (PLN 268.5 million);
- works on the line E75 in the section Sadowne - Czyżew along with other works in the section Warszawa Rembertów - Sadowne – CEF 2014-2020 (PLN 261.4 million);
- works on the E 30 railway line on the Kraków Główny Towarowy – Rudzice section and the addition of the agglomeration line tracks CEF 2014-2020 (PLN 244.1 million);
- modernisation of railway line no. 273 on the Głogów – Zielona Góra – Rzepin – Dolna Odra section, together with connecting lines no. 821 and 822 Budget (PLN 189.7 million);
- safety improvement through the construction of new higher-standard railway junctions – stage II OPI&E 2014-2020 (PLN 188.8 million).

## Investment outlays in material terms

The scope of individual investment projects carried out by PKP Polskie Linie Kolejowe S.A. includes comprehensive replacement of railway superstructure, railway traffic control and power engineering equipment (traction and non-traction), as well as modernisation of level crossings and their liquidation and replacement by two-level crossings. The replacement of old, run-down and degraded railway infrastructure and technical equipment with new infrastructure and equipment made using modern technologies allows to significantly improve the operating parameters of railway lines (mainly maximum permissible speeds) while maintaining the same level of safety of railway traffic or even improving it.

As part of the implementation of IP 2018 on the railway network managed by PKP Polskie Linie Kolejowe S.A., investment works were carried out, including in particu-

lar the modernisation, revitalisation or construction of 1,267.9 km of tracks, 380 level crossings, as well as 113 railway and road viaducts were built or modernised.

## Implementation of selected material measures in 2018

No.	Item	Unit of measure	YEAR 2018	
			Plan	Implementation
1.	Modernisation of railway track (including: repair of a railway surface, track bed, OC rails)	km of tracks	1,523.12	1,267.9
2.	Construction of turnouts	pcs	1,427	936
3.	Engineering structures, including:	pcs	1,237	768
	3.1. Bridges	pcs	165	97
	3.2. Viaducts	pcs	178	113
	3.3. Culverts	pcs	894	558
4.	Platforms	pcs	254	194
5.	Traction network	tkm	1,307.7	735.07
6.	Level crossings	pcs	680	380

## Threats, risks and actions taken

2018 was the fifth year of the current EU perspective. As at December 2018, modernisation works were carried out throughout the country under over 200 contracts concluded with contractors for construction works.

Intensification of work and the need to coordinate many contracts at the same time required efficient project management – not only from the point of view of monitoring the physical and financial progress of investment projects, but above all from the point of view of the ability to operate trains while modernising railway lines.

Many of the identified and monitored risks in 2018 are events typical for the implementation of investment projects. In particular, these risks were related to: prolonged tender procedures (offers above the investor's cost estimates), the potential of construction works contractors, the ability to provide track closures, the quality of project documentation and the dynamically changing situation on the construction works market (increase in prices of materials and labour).

One of the most important events in 2018 was the withdrawal by PKP Polskie Linie Kolejowe S.A. from the agreements with the contractor on railway line No. 7 (LOT C - the Dęblin - Lublin section) and E59 (the Leszno - province border section) from causes attributable to the contractor. This had a significant impact on the level of PKP spending and required remedial actions to continue the implementation of projects.

The most significant risk areas which affected the course of project implementation in 2018 are:

### **1. Delays in tender procedures - submission of bids above investor's cost estimates**

The most important influence on conducting tender proceedings and concluding contracts with contractors in 2018 had a changing macroeconomic situation - in particular, the increase in prices of materials and labour in the construction industry, which translated into the submission of offers significantly exceeding the investor's cost estimates. In many cases, this has led to the cancellation of tender procedures, their re-announcement or the search for additional financial resources.

### **2. The issue of insufficient capacity of contractors - lack of high-performance equipment**

The question of verification of contractors' compliance with contractual conditions in terms of ensuring capacity to perform both human and equipment tasks was also relevant in 2018. Track closures without maximum mobilisation of forces and potential of the contractor posed a risk of prolonging the works and thus of track closures. In this context, it was crucial to obtain assurance that the contractor's equipment and capabilities are adequate and

sufficient to perform the scope of work in accordance with the contract schedule, including the fact that it guarantees the planned performance of ongoing closures.

The above area was the subject of special attention of PKP Polskie Linie Kolejowe S.A. Last year, the Company intensified its efforts to monitor its investments for the use of high-performance machinery (including AHM, PUN, SUM, DGS) in the context of contractual provisions, i.e. whether the potential required under the contract is reflected on the site. This made it possible to identify the contractors' willingness to enter the track closures in order to carry out the works and actually provide them with adequate high-performance equipment.

### **3. The issue of increasing the profitability of contracts concluded in previous years by the contractors' market**

Intensification of modernisation works in the railway sector, related in particular to catching up with investments and simultaneous implementation of infrastructure projects in other sectors (road sector) contributed to a significant increase in demand for construction services. In 2018, the prices of building materials and labour costs increased. At the same time, many construction companies have in their portfolio contracts concluded with PKP Polskie Linie Kolejowe S.A. in previous years, in which unit prices were significantly lower than at present. For this reason, there is a risk that companies will raise the issue of the profitability of their contracts and ask for their indexation. This may jeopardise the smooth execution of contracts, hamper progress or ultimately lead to the contractor leaving the site.

### **4. The issue of coordination of track closures - the need to ensure the operation of trains and the implementation of investment works**

An increasing number of investments has an impact on the throughput of transport routes. It is natural that the huge scale of investment works may lead to a reduction in the capacity of the railway network. Therefore, the Company places particular emphasis on the coordination of the introduced timetables and their updating in terms of the schedules of the executed investments.

### **5. Influence of poor-quality design documentation on investment implementation**

The quality of prepared studies and design documentation has a significant impact on the stage of investment execution. In particular, in projects implemented under the "Build" formula, errors, deficiencies in studies are the reason for potential claims of the contractor and often the need to correct errors from the design stage depends on the commencement or further continuation of works on

the site. The poor quality of documentation determines in some cases the need for alternative design solutions or their modification and additional works.

#### **6. Collisions with non-surveyed foreign infrastructure**

Despite the care taken at the stage of preparing maps for design purposes and documentation arrangements, there are situations of unforeseen collisions of the implemented elements of railway infrastructure with non-surveyed networks or facilities, which often involves the need to rebuild foreign equipment. The most frequent effects of materialisation of these risks include temporary suspension of construction works resulting in failure to meet the original investment deadlines and the need to perform additional works. Depending on the

scope of discrepancies with the design, additional costs are incurred in order to carry out the necessary research, changes are introduced in technical solutions or modified technologies of works.

### **Measures to streamline the investment process**

#### **1. Dialogue with the contractors' market**

In order to increase the effectiveness of the investment process, in 2018 the dialogue with representatives of contractors was continued as part of the regular meetings of the Investment Forum Working Groups and the Expert Council aimed at optimising the railway investment implementation process. The main issues discussed with contractors in 2018 were related to:

- a. instructions for contractors;
- b. indexation of contracts;
- c. risk matrix in the "design and build" system.

#### **2. Participation in the works on the development of the new Public Procurement Law (PZP)**

In 2018, using its experience in conducting large-scale tender procedures, the Company actively participated in work on the development of a new PZP-Act. Representatives of the Company provided opinions on the concept of the new act and took part in conferences organised by the Public Procurement Office (UzP), in cooperation with the Ministry competent for entrepreneurship, as part of consultations on the concept of the new PZP-Act.

#### **3. Work of the High Level Group on Railway Investments**

In 2018, the High Level Group, established in December 2016, continued its work, which included representatives of the European Commission (EC), the Ministry competent for investment, the Ministry competent for infrastructure, the Centre for EU Transport Projects (CUPT) and PKP Polskie Linie Kolejowe S.A. In 2018, mainly the stage of KPK implementation was discussed, the difficulties encountered and the remedial actions taken, particularly in the area of issues related to the activities of PKP Polskie Linie Kolejowe S.A. in relation to the contractors' market.

#### **4. Streamlining of project management and monitoring**

After conducting the Pilot Project in 2017 concerning tests of video monitoring of investments using modern technologies, the Company decided to continue the monitoring of key KPK projects (with the largest involvement of works) in 2018.

The tools with which the investment works were monitored were:

- camera points providing a constant online preview of the areas of railway investment indicated by PKP Polskie Linie Kolejowe S.A. and allowing for the preparation of photographic documentation taken at an interval of 10 minutes. Camera points have been installed in 70 locations including the construction of engineering structures on railway lines (tunnels, footbridges, bridges, viaducts);
- regular helicopter inspection flights, which resulted in the obtaining of filmed documentation from long railway lines in a short period of time (2 days), on which a risk of completion deadline was identified, and which were used to talk to contractors about taking corrective actions to mitigate the delays;
- Unmanned Aircrafts (drones), as a result of cyclical flights, video materials and photogrammetric data from monitored investments (digital aerial photographs, orthophotographs, along with the performance of analyses consisting in measuring the volume of aggregates or earth masses) were obtained.

Unmanned Aircraft were used, among other things, for the inventory of construction work following the termination of the contract on railway line No. 7 by the contractor (LOT C - the Dęblin - Lublin section).

Additionally, in 2018, field monitoring was continued on the construction sites of the most important investments carried out within the KPK. The monitoring teams carried out 129 monitoring visits in total, focusing their attention on projects with the largest outlays planned for 2018 and on single-track lines.

In the area of tools supporting the implementation of the investment in 2018, the Company continued work aimed at improving the EPM system, which was aimed at improving the quality of data entered, increasing analytical

capabilities and expanding the scope of management information, including investment risks and schedules. This made it possible to obtain more complete management information on both projects and programmes.

Moreover, in 2018 the monitoring of individual projects included in the KPK and the entire document was continued in the form of a status (monitoring) table of the programme. It contains all the projects included in the KPK with a breakdown into individual contracts and information on, among others, tender procedures, contracts, material and financial progress and milestones. The report is prepared monthly and submitted to the Ministry competent for infrastructure, Ministry competent for investment and Centre for EU Transport Projects (CUPT).

## Sources of financing

### EU subsidy applications (SA)

In 2018, the Company applied for EU funds under the Operational Programme Infrastructure and Environment (OPI&E). There were 8 applications for co-financing submitted, as shown in the table below. The total value of applications amounted to PLN 6,521,218.0 thousand, including the value of co-financing from the Cohesion Fund (CF) - PLN 4,959,376.0.

### List of submitted SAs within the framework of the OPI&E 2014-2020 (PLN thousands)

No.	Project Name	Date of application	Total net project value with the SA	Value of ERDF co-funding in accordance with the SA
1.	Works on railway line C-E 65 on the Chorzów Batory – Tarnowskie Góry – Karsznice – Inowrocław - Bydgoszcz - Maksymilianowo section	29/06/2018	4,639,492.7	3,522,432.6
2.	Improvement of the technical condition of passenger service infrastructure (including adaptation to the requirements of TSI PRM)- Stage III Rzeszów Główny	26/06/2018	238,456.6	202,390.6
3.	Improving safety at level crossings Stage II - viaduct part	30/05/2018	184,945.8	62,328.6
4.	Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections	28/12/2018	423,240.4	346,332.3
5.	Improving safety at level crossings - Stage I - crossing part	29/03/2018	277,491.4	235,867.7
6.	Improving rail traffic safety through the purchase of specialised technical equipment	23/02/2018	338,250.0	233,750.0
7.	Design, supply and installation of elements of dynamic passenger information and the system of video monitoring with technical infrastructure at railway station buildings, stations and railway stops	27/06/2018	183,817.7	156,079.3
8.	Safety improvement through the construction of new higher-standard railway junctions - stage II	29/03/2018	235,523.4	200,194.9
<b>Total</b>			<b>6,521,218.0</b>	<b>4,959,376.0</b>

## Funding agreement (FA)

In 2018 PKP Polskie Linie Kolejowe S.A. concluded with the Centre for EU Transport Projects (CUPT) 10 agreements for co-funding within the framework of the OPI&E 2014-2020 for a total net amount of PLN 6,673,295.6 thousand, of which the EU funds amounted

to PLN 4,916,117.2 thousand – according to the table below. At the end of 2018, the Company had contracted funds for 33 projects within the OPI&E programme for the total allocation amount of EU funds of PLN 13,458,347.0 thousand.

### Signed co-financing agreements within the framework of the OPI&E 2014-2020 (PLN thousands)

No.	Project Name	Date of signing the funding agreement	Total net value	Net eligible costs	Funding in the funding agreement	EU funding
1.	Work on the railway line No. 8, the Warka - Radom section (Lot C, D, E)	22/06/2018	671,443.3	670,289.1	559,726.3	475,767.3
2.	Works on railway line C-E 65 on the Chorzów Batory - Tarnowskie Góry - Karsznice - Inowrocław- Bydgoszcz - Maksymilianowo section	28/12/2018	4,217,791.0	4,217,017.0	3,578,018.6	3,041,315.8
3.	Improvement of the technical condition of passenger service infrastructure (including adaptation to the requirements of TSI PRM), Stage I Szczecin Główny	25/05/2018	59,671.3	59,671.3	59,671.3	50,720.6
4.	Improvement of the technical condition of passenger service infrastructure (including adaptation to the requirements of TSI PRM)- Stage III Rzeszów Główny	28/12/2018	216,810.5	216,460.5	195,749.1	166,386.7
5.	Improvement of safety at level crossings - Stage II - viaduct part	18/12/2018	147,473.6	66,661.6	66,661.6	56,662.4
6.	Improving safety at level crossings - stage I - crossing part	24/09/2018	252,619.9	252,264.9	227,911.8	193,725.0
7.	Improving rail traffic safety through the purchase of specialised technical equipment	28/09/2018	248,920.0	248,920.0	248,920.0	211,582.0
8.	Improving safety through the construction of new turnouts of a higher construction standard - stage II	27/09/2018	214,112.1	214,112.1	214,112.1	181,995.3
9.	Construction of the Wrocław Szczepin railway station on line No. 143 with reconstruction of the railway viaduct over the Długa street in Wrocław and the necessary infrastructure	22/05/2018	41,370.7	40,975.7	40,975.7	34,829.4
10.	Revitalization and reconstruction of partially closed railway line No. 182 Tarnowskie Góry - Zawiercie	19/09/2018	603,083.2	602,715.3	591,920.7	503,132.6
<b>Total:</b>			<b>6,673,295.6</b>	<b>6,589,087.5</b>	<b>5,783,667.2</b>	<b>4,916,117.2</b>



In 2018, the Company also concluded 1 FA within the framework of the Operational Programme Eastern Poland (OP EP) for the total net amount of PLN 298,868.7 thousand, including the amount of EU funds of PLN 254,038.4 thousand- in accordance with the table below.

At the end of 2018, PKP Polskie Linie Kolejowe S.A. had contracted funds for 9 projects within the OP EP for the total amount of allocation of EU funds of PLN 1,502,424.9 thousand.

### Signed co-financing agreements within the framework of the OP EP (PLN thousands)

No.	Project Name	Date of signing the funding agreement	Total net value	Net eligible costs	Funding in the funding agreement	EU funding
1.	Work on the railway line No. 219 on the Szczytno - Elk section	12/04/2018	298,959.2	298,868.7	298,868.7	254,038.4
<b>In total</b>			<b>298,959.2</b>	<b>298,868.7</b>	<b>298,868.7</b>	<b>254,038.4</b>

In 2018, the Company also signed a Grant Agreement (GA) with the INEA Executive Agency for 1 project under the CEF Transport Blending 2017 (financial facility CEF "Connecting Europe") - according to the table below.

In total, as at the end of 2018, the Company signed

GA agreements for 22 projects with a value of EUR 4,632,058.8 thousand, including CEF co-financing of EUR 3,505,003.3 thousand (including annexes), thus using the entire available amount of funds available under the CEF programme allocation.

### GA agreements concluded in 2018 (EUR thousands)

No.	Project Name	Date of application	Date of signing the GA by INEA	Project value with the GA	CEF co-funding value in accordance with GA
1.	Works on railway line E-59 on the Wronki – Słonice section	14/07/2017	16/04/2018	302,735.2	60,547.0
<b>In total</b>				<b>302,735.2</b>	<b>60,547.0</b>

## Investment Forum

The Investment Forum (IF) is a platform whose main objective is to develop cooperation, dialogue and agreement between the contracting authority, contractors and public administration on investment issues, the results of which will be used by the railway sector in its broadest sense. The inaugural meeting of the IF was held on 12 December 2012 on the initiative of PKP Polskie Linie Kolejowe S.A. From the very beginning, the proposed form of dialogue was well received by the whole railway environment, and the Working Groups established within the IF worked out a common position concerning, among others, documentation required from contractors at the stage of submitting bids, description of required building permits in relation to the managerial staff, criteria for evaluating bids used in tender procedures (including criteria such as: completion date, availability of

the railway line and experience of the contractor's staff), as well as risk assessments – for which a risk matrix was developed. Some of the provisions after the presentation of postulates were reflected in the Terms of Reference (SIWZ), and some of the Working Group within the IF are still being worked on

#### The main objective of the IF:

1. joint development of a position based on the knowledge of all those who work for the railway construction industry and want to discuss important issues, pointing out problems, proposing solutions, working together for standardisation and improvement of cooperation, taking into consideration the consultation of model documents;
2. permanent improvement of the investment process

through constant dialogue and exchange of information with the environment of companies providing services in infrastructure execution;

3. continuation of the established communication platform in order to ensure effective cooperation, exchange of experiences and the introduction of changes with respect to faster implementation of railway investments.

The Working Groups meet regularly from 2013. Taking into account the objectives of IF, which is to conduct

a dialogue and develop solutions to improve the investment process (in particular templates of base documents), in 2018, 8 meetings of Working Groups were organized, including the Plenary Investment Forum.

In addition, regular meetings are held within the Board of Experts, which was established at the end of 2016 on the basis of a Regulation of the Minister competent for infrastructure. The Board of Experts shall approve the findings of the IF, decide on dissenting opinions and indicate recommendations.

**The key topics addressed by IFs in 2018 were primarily:**

### Indexation

Work continued on developing amendments to the terms and conditions of agreements signed between the contracting authority and contractors with regard to the introduction of indexation provisions. Cooperation with the Land Transport Chamber of Commerce (PZPB), Polish Association of Construction Employers (IGIL), Road Chamber, Railway Business Forum (RBF), Centre for EU Transport Projects (CUPT) and Central Statistical Office (GUS) was also initiated in order to develop activities aimed at including the said provisions on indexation in contracts with contractors. According to the adopted assumptions, the indexation of the contracts will be monthly,

settled on the basis of the actual performed construction works, together with a interim payment certificate. Its maximum height will amount to 5% of the contract, and it will be calculated on the basis of objective macroeconomic indicators published by the GUS. This data will be used to create so-called "indexation baskets", separate for railway and road contracts. The indicators taken into account in the creation of "baskets" will include, among others, production prices of fuel, steel, copper, aggregates, average wages of industry employees and inflation.

### Risk matrix

In October 2018, the Board of Experts expressed a positive opinion on the risk matrix determined jointly by the participants of the railway investment process, recommending its application in railway contracts. It was decided that this document, after its proper implementation, would be a kind of a signpost. From the stage of bid

preparation, through the time of task completion, to the completion of the investment, the Contractor will know what risks should be included in the price of the contract and then manage them. In view of the above, work was undertaken on the implementation of the risk matrix in tender documents.

## Topics worked out and effects achieved in 2018 within particular Working Groups

### Plenary Investment Forum:

Thematic summary of 2017 and the intentions of the Forum's tasks for 2018 were presented. The implemented solutions are also presented, which include in particular:

- alternative performance, so that unforeseen circumstances do not have an impact on the disruption of the tasks;
- investment monitoring;
- verification of the potential demonstrated by contractors;
- the impact of the terms and conditions of the employer's contracts on the contracts signed by the contractors with subcontractors;
- changes in the underlying documents.

### Contractual Provisions Working Group:

The issues worked out during the meetings included:

- amendments to Sub Clause 4.4 concerning subcontractors;
- introduction of a new warranty card;
- change in the definition of the warranty period, which starts from the date entered on the warranty card;
- changing the provisions concerning contractual penalties, including deletion of the provisions concerning contractual penalties indicating the necessity to purchase materials and equipment;
- adjustment to Article 142 paragraph 5 of the Public Procurement Law Act (PZP) with respect to the minimum hourly rate;
- introduction of a provision on insurance.

### **Selection Criteria Working Group:**

As part of the Group's work, the focus was primarily on Article 30a of the Public Procurement Law Act (PZP) on labelling and modification of the provisions contained in the document entitled: "Instructions for the Contractors" (IDW). In the field of labelling, the Group Leader has obtained the approval to present the matter to the Board of Experts. On the other hand, with respect to the modification of the provisions concerning the selection of offers, it was indicated as the most important to:

- modify the requirements concerning the experience of the contractor's required staff, so that the weighting of this criterion in the selection process for tenders should be adjusted accordingly;
- make a clear distinction between the condition of participation in the procedure and the criterion of selection of the offer within the criterion of personnel experience, which was also reflected in subsequent modifications of the basic tender documents used by the Company.

### **Working Group, Contractor, Manufacturer, Supplier:**

As part of IF's work, in 2018 a joint meeting of contractors, manufacturers and suppliers with the contracting authority was held, primarily aimed at:

- development of standards influencing the length of track closures;
- discussion of the procedure verifying the contractor's readiness to undertake track closures in order to minimize problems related to operational difficulties;
- discussion of the potential of contractors, manufacturers and suppliers and the possibility of implementing the expected scale of railway investments.

The topics developed by the Group during the meeting indicated the elements influencing the duration of the works, raised the problem of contractual penalties related to track closures.

### **Working Group Engineer and Designer with the participation of contractors:**

During the meeting of the Working Group consisting of all the participants of the investment process, the problems occurring during the implementation of the investment were discussed. The objections of all parties to the investment process - contractors, engineers and contracting authorities - were raised. The issues raised related to many problems - from the required documentation, staff experience, to the response time of the parties and decision making in relation to contractual events. Dispute cases were also discussed and issues relating to the implementation of further work on the regulation of the most problematic issues for the parties were raised.

### **Working Group Engineer and Designer:**

The most important issues raised within the scope of the Group's work include in particular:

- the need to specify the provisions contained in guideline Igo-1 "Guidelines for soil investigations for the needs of construction and modernisation of railway infrastructure", which will be continued as part of the Group's work;
- resignation from the application of the criterion of conversation with the Project Engineer;
- discussion of issues related to the current procedure for the issuance of a water permit;
- proposals for changes to the "Design Work Schedule" and "Payment Schedule" and consideration of separate tender procedures for geological services;
- discussion of the issues of geodesy in railway investments.

The conclusion of the meeting was the necessity to undertake work within the Group to work out compromises and provisions to improve the investment process in the above mentioned issues.

On the basis of the course and conclusions of the 2018 meetings, a clear impact on the investment process of the solutions developed within the committee is noticeable.

# Human Resources

## Employment analysis

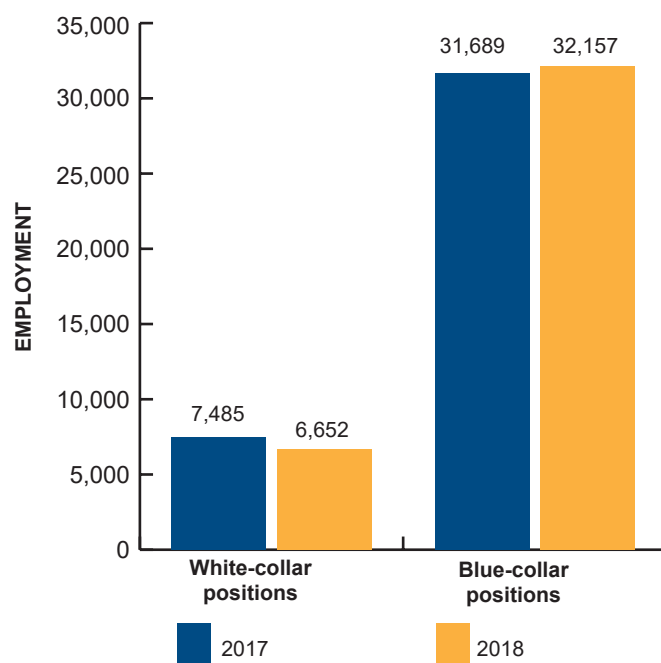
As of 31 December 2018, the employment level at PKP Polskie Linie Kolejowe S.A. amounted to 38,809 people and decreased by 365 compared to 31 December 2017. In 2018, the reporting on employment was adjusted to the Company's internal needs. The change has had an impact on:

- the increase in the employment level of white-collar positions from 7,485 (as of 31 December 2017) to

6,652 employees (as of 31 December 2018), i.e. there was an employment decrease in this group went up by 833 people (11.13%);

- the increase in the employment level of blue-collar positions from 31,689 (as of 31 December 2017) to 32,157 employees (as of 31 December 2018), i.e. the employment level went up by 468 people (1.48%).

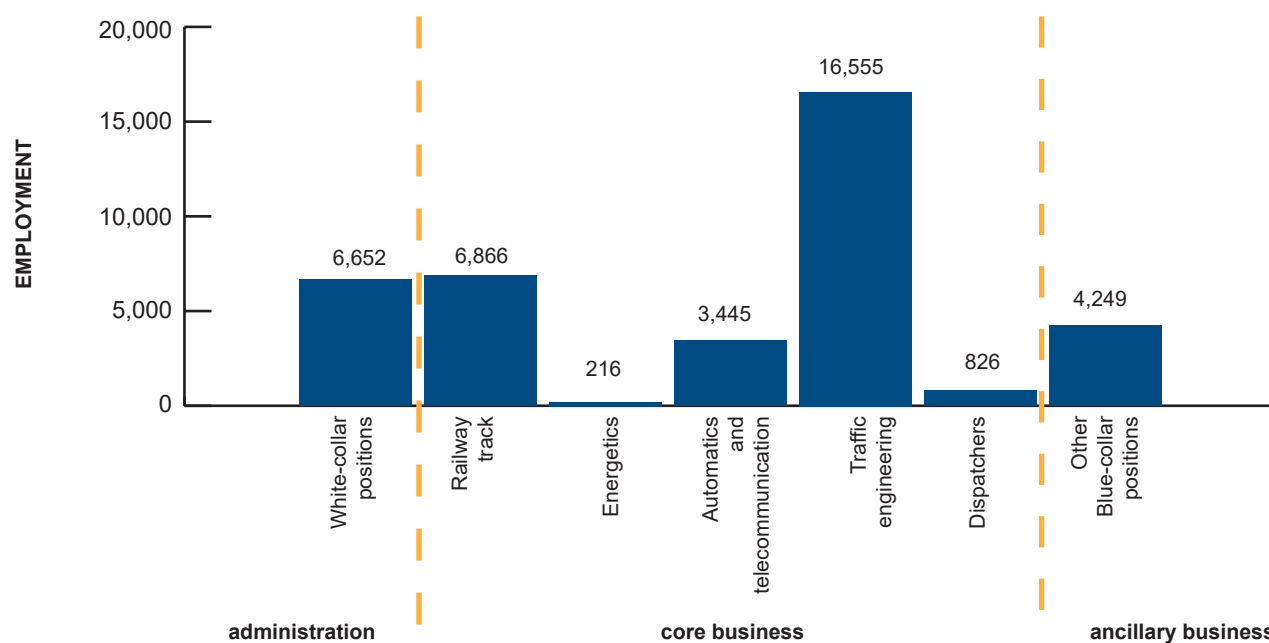
### Employment in professional groups (as of 31 December 2018 – in persons)



The employees aged 26-50, i.e. who are people in the period of their most intensive professional activity, are the largest group in the Company. In 2018, they comprised 48.62% of the entire workforce (18,870 employees). In

relation to 2017, the employment in this group decreased by 621 employees, i.e. by 1.13%. The employees aged 25 and less comprised 4.74% of the entire workforce in 2018 (1,839 employees). Compared to 2017, the em-

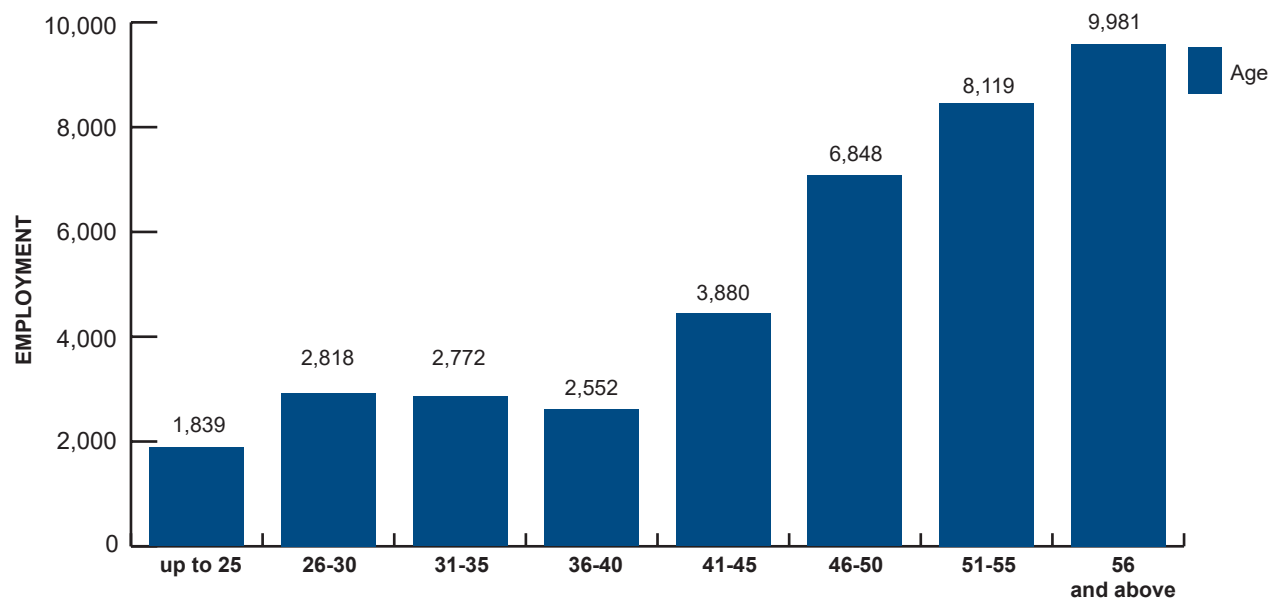
## Employment in professional groups (as of 31 December 2018 – in persons)



employment in this group decreased by 50 employees, i.e. by 0.08%. In 2018, employees aged 51 and more comprised 46.64% of the entire staff (18,100 employees).

In this group, the employment level grew by 306 employees in comparison to 2017, i.e. by 1.22%.

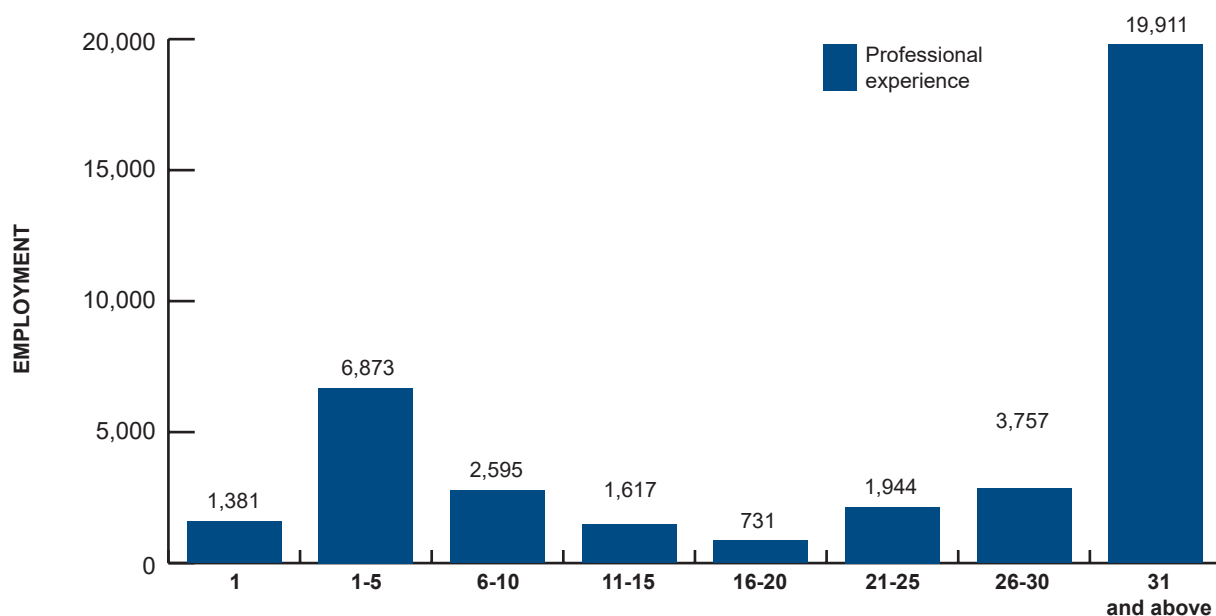
## Employment structure by age as at 31 December 2018 – in persons



Employees with up to 10 years of seniority comprised 27.95% of the staff (10,849 persons) – this group recorded an increase by 236 employees, i.e. by 0.86% (compared to 31 December 2017). Employees with 11 to 20 years of seniority comprised 6.05% of the entire staff (2,348 persons), which means an increase by 379 employees, i.e. by 1.02% (compared to 31 December 2017). The most nu-

merous group at the Company were employees with more than 21 years of seniority, who comprised 66.00% of the total number of employees (25,612 persons). In comparison to 31 December 2017, this group recorded a decrease by 980 employees, i.e. by 1.88%.

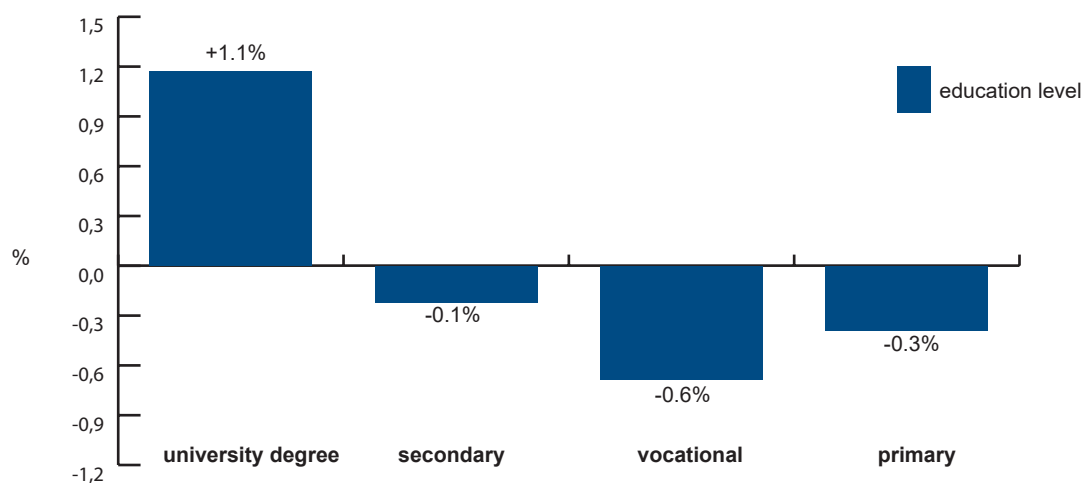
## Employment structure broken down by seniority as at 31 December 2018 – in persons



The employment structure at PKP Polskie Linie Kolejowe S.A. is systematically improving due to education. In 2018, the share of employees with higher education increased by 1.1% in relation to 2017, while the number of people with secondary, basic vocational

and primary education decreased. This results from a conscious employment policy which aims at recruiting highly-qualified employees and implementing education system by the Company.

## Dynamics of change in education in 2018



## Staff development

PKP Polskie Linie Kolejowe S.A. focuses on qualified personnel by reimbursing employees for the costs of further education, training, acquiring new qualifications and professional competences.

Interested employees of the Company attend specialist and development trainings, take part in congresses and conferences dedicated to the railway industry. A large part of the Company's staff raises the level of foreign lan-

guage skills, and also educates themselves at university and post-graduate level.

Expenses related to employee development are an important part of the company's budget. In 2018, a total of 110,000 participants (one employee may participate in several training courses) were included in the process of raising their qualifications. More than PLN 10 million has been allocated to these activities.

Last year, 667 employees benefited from higher education at master's level, engineering, post-graduate studies, including MBA, doctoral studies and attorney training, and 53 employees participated in language courses. PKP Polskie Linie Kolejowe S.A. has been cooperating with the Association of Railway Employers for many years in the field of postgraduate studies, in particular MBA studies conducted by the Gdańsk Foundation for the Training of Managers.

The Company also implements special training cycles dedicated to the employees of investment teams and departments preparing and supporting these activities. A total of 776 employees of investment teams were trained last year. These employees participated in 11 training cycles related to topics such as:

1. carrying out investments based on the FIDIC procedures in the "build" and "design and build" system;
2. claims and disputes in contracts under the FIDIC contract conditions;
3. changes in the construction law;

4. fixed assets in EU projects: settlement, valuation, recording, financing;
5. closure and settlement of infrastructure projects;
6. MS Project 2013 - basic level, advanced level;
7. project management methodology: PRINCE2 Foundation, PRINCE2 Practitioner;
8. risk management: M\_o\_R Foundation.

PKP Polskie Linie Kolejowe S.A also establishes cooperation with higher education institutions in the area of launching studies with a railway profile. In addition, it cooperates with 42 secondary schools all over the country offering education in the following fields: rail transport technology, automation techniques of rail traffic control, railway track and engineering structures techniques and electric power engineering techniques for rail traffic control. Within the cooperation, the Company funds scholarships for the most talented students, and all students have the opportunity to take part in practical trainings and internships on the premises of Railway Lines District Unit and to use a simulator of railway traffic control and communication equipment.

## Centralisation of vocational training

In 2018, PKP Polskie Linie Kolejowe S.A. continued to prepare its employees to work for positions related to the management and safety of railway traffic within the company's internal system. Theoretical training in the form of a qualification course for the following positions: train dispatcher, rail signal control operator, points operator, crossing attendant, track supervisor, round attendant, automatic control operator and train manager in the field of maintenance and repair as well as work trains were conducted by the Company's employees appropriately prepared for this purpose on the basis of training programmes approved by the Office responsible for human resources.

In 2018, 53 qualification courses were organised with 1,299 participants for the following positions:

Qualification course name	Total number of participants in 2018	Number of training groups
Train dispatcher	284	11
Rail signal control operator	434	16
Points operator	109	5
Crossing attendant	124	7
Track supervisor	53	2
Round attendant	90	4
Automatic control operator	154	6
Maintenance and repair train manager	51	2
<b>Total:</b>	<b>1,299</b>	<b>53</b>

In the said period, 2 training courses for driver's license were conducted, in which 40 employees of the Company participated.

In 2018, PKP Polskie Linie Kolejowe S.A., in connection with the change of regulations concerning employees driving railway vehicles, issued 966 driver's certificates

entitling to drive railway vehicles operated in the Company on open tracks. In order to maintain the rights to drive railway vehicles, the Company also concluded an agreement with CS Natura Tour Sp. z o.o. for a comprehensive service of driving, preparation and professional development of employees holding driver's certificates.



# External communication



## 12th International Trade Fair for Transport Technology InnoTrans

PKP Polskie Linie Kolejowe S. A. together with other railway companies participated as an exhibitor in the 12th International Trade Fair of Transport Technology InnoTrans 2018 in Berlin (18-21 September 2018). This trade fair is the largest undertaking in Europe dedicated to rail transport, as well as a meeting place for manufacturers from the transport sector and representatives of public and private transport companies, engineers and railway enthusiasts.

InnoTrans is an excellent opportunity to promote rail transport, freight forwarding and rail logistics and to present the latest technologies. The event attracts

more and more visitors and exhibitors every year, who present at their exhibition stands, among others, innovative solutions in the field of transport technologies or modern rolling stock. The undertaking is accompanied by a rich programme with debates, conferences, numerous seminars and company presentations. During the Trade Fair PKP Polskie Linie Kolejowe S.A. was represented by an official delegation taking part in official meetings and presentations of rolling stock, equipment and systems.



## Participation in Transport Day celebration

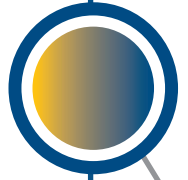
The year 2018 marked the 100th anniversary of the establishment of the Ministerial Group related to transport. On this occasion and in order to familiarize the public with the broadly understood transport in the road, rail and air sectors, as well as with the functioning of entities providing services to transport, including research institutes, inspectorates and agencies, a Transport Day was organized on 29 September in Warsaw. The event took the form of a city game in which each of its participants had to visit 6 points (locations) in order to collect occasional stamps. The collected set of stamps made it possible to receive a special gift. In particular locations, the organizers of the Transport Day prepared a number of attractions for the participants of the event, including: retro train and motor car rides, an exhibition of rolling stock, an exhibition of specialist transport vehicles, an exhibition of rescue railway, road and air equipment, a visit to the postal sorting facility, as well as a guided tour of the pre-war Electric Locomotive Depot

Warszawa - Grochów. In addition, numerous workshop and competitions for children and young people were organized.

The organizers of the Transport Day were: Ministry competent for infrastructure, Polskie Koleje Państwowe S.A., PKP Polskie Linie Kolejowe S.A., PKP Intercity S.A., PKP Cargo S.A., Wars S.A, Foundation of PKP Group, Railway Transport Office (UTK), Railway Institute (IK), Road and Bridge Research Institute (IBDiM), Motor Transport Institute (ITS), state enterprise "Porty Lotnicze" Chopin Airport, Civil Aviation Office (ULC), Polish Air Navigation Services Agency (PAŻP), General Directorate for National Roads and Motorways (GDDKiA), Centre for EU Transport Projects (CUPT), National Road Safety Council (KBRD), General Inspectorate of Road Transport (GITD), Polish Post Office (PP) and General Communication Library.



## Participation in the celebrations of the 100th anniversary of Poland regaining its independence



PKP Polskie Linie Kolejowe S.A. joined the celebrations of the 100th anniversary of Poland regaining its independence, by carrying out a number of promotional activities, including: planting the Oak of Independence at the headquarters of the Company, which took place on 8 November 2018, displaying the official logo of the celebrations of the 100th anniversary of Poland regaining its independence - the inscription "Niepodległa" (independent) together with the national flag on the facade of the Company's headquarters building.

In an exceptional year 2018 - the year of 100th anniversary of regaining independence by Poland -

PKP Polskie Linie Kolejowe S.A. also gained its own flag - a flag with a crowned eagle and the patron of railwaymen - Saint Catherine of Alexandria. The flag was established for the first time in the history of the Company. It was consecrated on 18 November 2018 during the 25th National Railway Pilgrimage to Jasna Góra.

The flag of PKP Polskie Linie Kolejowe S.A. is a symbol of respect for the Independent Homeland, the unity of the railway community, as well as remembrance and commitment to the tradition. Together with the colour party, it takes part in important state, patriotic and religious ceremonies.



# Contact details

## Company's Head Office

Targowa 74 street  
03-734 Warszawa

[www.plk-sa.pl](http://www.plk-sa.pl)  
[www.plk-inwestycje.pl](http://www.plk-inwestycje.pl)  
[www.bezpieczny-przejazd.pl](http://www.bezpieczny-przejazd.pl)  
[www.kgsok.pl](http://www.kgsok.pl)

## Board Administrative Department

phone: (22) 473 25 65  
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## Sales Office

phone: (22) 473 20 30  
fax: (22) 473 28 04  
e-mail: [ius@plk-sa.pl](mailto:ius@plk-sa.pl)

## Communications and Promotion Department

phone: (22) 473 23 38  
fax: (22) 473 23 34  
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## Investment Implementation Department

phone: (22) 473 21 53  
fax: (22) 473 21 54  
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## Logistics Department

phone: (22) 473 33 26  
fax: (22) 473 24 69  
e-mail: [ilg@plk-sa.pl](mailto:ilg@plk-sa.pl)

## Spokesperson

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# Map of railway lines

