PKP POLSKIE LINIE KOLEJOWE S.A.

Zarządca narodowej sieci linii kolejowych

Annual report
PKP Polskie Linie Kolejowe S.A.
for 2017

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

To whom it may concern,

for the third time I have the pleasure to present to you the annual report of PKP Polskie Linie Kolejowe S.A. The Company's Management Board together with a team of competent employees made every effort to ensure that our partners and individuals engaged in railway issues receive a reliable spectrum of knowledge about PLK's activity. The document presents all areas of our activity. The publication informs about the Company's structure, investment processes, the functioning of timetable or repair and maintenance activities on the railway network. I am convinced that thanks to this document you will gain a lot of useful information concerning the functioning of the national railway network manager and the development of network of railway lines in Poland.

The year 2017 was a very dynamic period for PKP Polskie Linie Kolejowe S.A. It is a year of changes and very intensive work. The Company has improved its structures. We signed agreements from the National Railway Programme worth over PLN 18.6 billion, and their cost estimate value exceeds PLN 23.6 billion. Not only have we completed, but we have exceeded the material scope planned for 2017. This includes the installation of almost 600 turnouts and the modernisation and construction of 95 platforms and 460 engineering structures. The railway lines actually become a construction site. This is a huge challenge, because apart from running the investment we are responsible for running the trains.

PKP Polskie Linie Kolejowe S.A. is the largest beneficiary of EU funds from the "Connecting Europe Facility" (CEF) funding instrument. In 2017, 4 projects submitted in the third call for applications under CEF received EU support. In total, 21 projects received more than EUR 4 billion in support under three CEF calls for applications. These investments will contribute to the restoration of the railway's rightful place in the country's transport system. The standard of travel and safety on regional routes will be increased and the conditions for transporting goods will be improved.

We have worked intensively throughout the past year to provide passengers with faster and more comfortable journeys. New railway stops have been created, e.g. in Kraków and Gorzów Wielkopolski, which have become convenient interchanges integrated with public transport. Today, they make it easier to get to work and school by train. Behind the projects are concrete actions, real benefits for society and the economy. Undoubtedly, this type of investment is the Kraków Zabłocie - Kraków Podgórze link. The largest railway flyover over Kraków since 10 December 2017 not only shortens the time of train journey to Zakopane, but also makes it easier to travel in the city and agglomeration.

We invest in the development of railways in eastern Poland. In 2017, we signed agreements for 7 out of 8 projects of the Operational Programme Eastern Poland. The attractiveness of railways in the eastern regions of our country will be ensured by more comfortable stops and platforms equipped with modern infrastructure, as well as the possibility of connecting public and individual transport with the railways – i.e. P&R car parks and interchanges. Stations and stops will be accessible to all passengers, including people with reduced mobility. Travel times will shorten and there will be good connections between the provincial cities of Eastern Poland, i.e. Olsztyn, Białystok, Lublin, Rzeszów and Kielce – within the concept of the so-called Eastern Arterial Route.

This will affect the attractiveness of the eastern regions, providing greater opportunities for the development of the economy and more favourable conditions for the development of tourism. We also take into consideration the growing needs of freight operators every year. Our investments are intended to provide better conditions for the transport of goods. We are preparing good routes from Silesia to the Baltic Sea and from east to west. We continue to modernise the international Rail Baltica route and provide better rail access to ports and mines.
All investments are carried out with particular emphasis on safety. This is a priority in the Company's operations. Separate projects for reconstruction of railway and road crossings and construction of collision-free crossings as well as for replacement of turnouts serve safety purposes. We are also continuing the social campaign Safe Crossing – "Risk barrier!".

We continue the dialogue, both with operators in arrangements related to the timetable, as well as with business partners and contractors. We know that the National Railway Programme is a project of an unprecedented scale, which has not existed so far, which is why good co-operation with partners is so important. Also in the context of a large scale investment, it is very important to maintain an appropriate level of railway infrastructure quality, eliminate maintenance backlog, maintain the railway network and long-term contracts for maintenance and repair of railway lines. In 2017, a draft "maintenance programme" was prepared and consulted. Its implementation will be an important step towards ensuring good condition of the Polish tracks.
The manager of the national railway network is now facing another important year and the continuation of the tasks from the framework 2014-2020. We are not slowing down.
I am handing over this document to you, wishing you an interesting and useful reading.

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

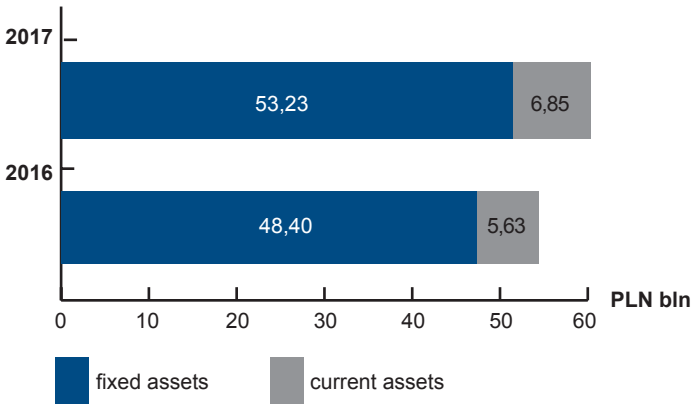
* As of 30 August 2018

Financial result

The Company's economic and financial situation was assessed based on financial reports representing the status as of 31 December 2017.

Company assets

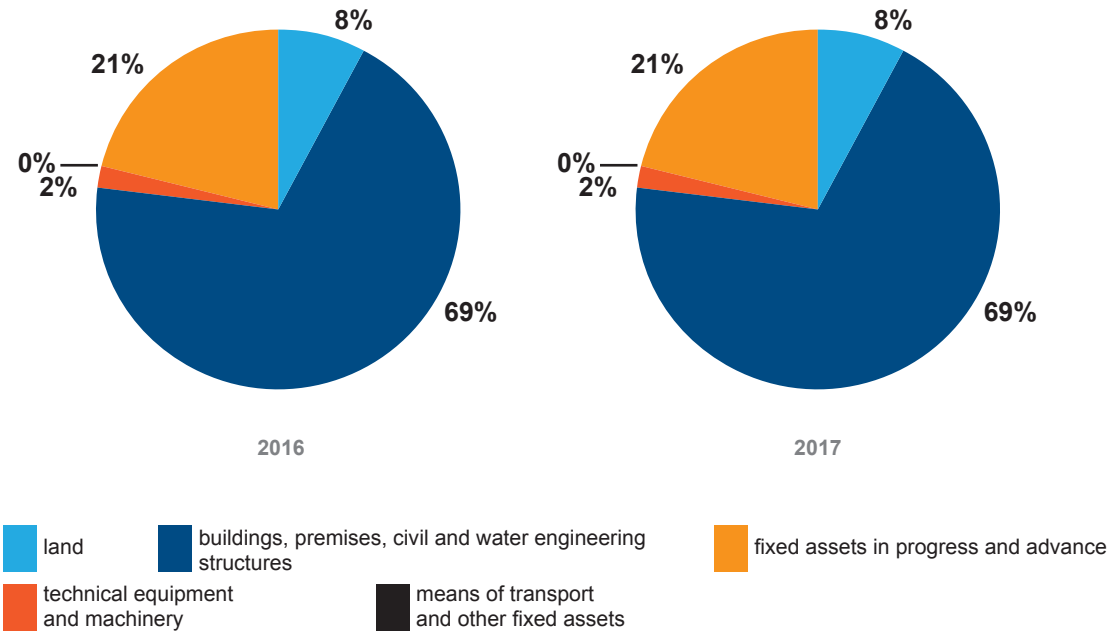
The assets of PKP Polskie Linie Kolejowe S.A. in 2016-2017



The book value of the assets owned by PKP Polskie Linie Kolejowe S.A. as of 31 December 2017 amounted to PLN 60,080.6 million and was 11.2% higher than in 2016.

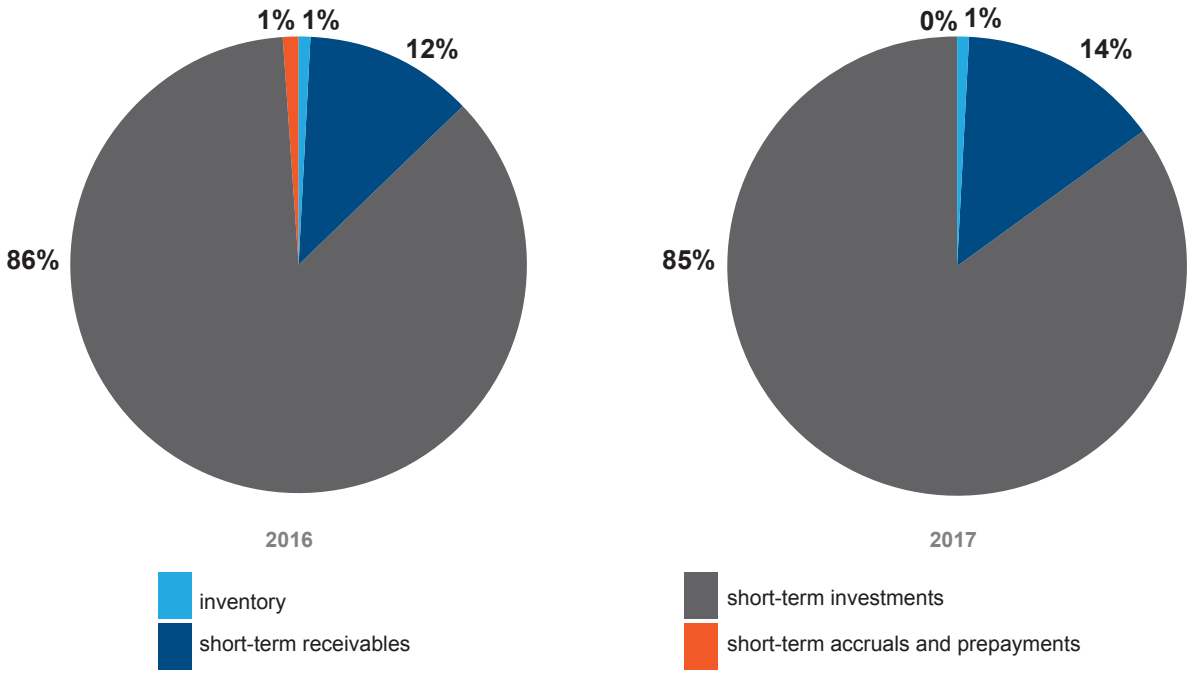
The structure of what the Company owns is asset--based, which is typical for railway infrastructure managers, which mostly comprises buildings, premises and civil and water engineering structures. In 2017, the Company's fixed assets comprised approximately 89% of its total assets. Over the financial year, fixed assets grew by approx. 10%, mainly due infrastructure modernisation works, i.e. investments that have been completed and commissioned on railway lines.

Structure of intangible fixed assets in 2016-2017



The current assets of PKP Polskie Linie Kolejowe S.A. in 2017 amounted to over 11% of all assets. Their balance value grew by 21.8% when compared to the year 2016. This grow 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 investment projects from: the Operational Programme Infrastructure and Environment (OPI&E), Operational Programme Eastern Poland (OPEP), "Connecting Europe Facility" (CEF) funding instrument, recapitalisation of the Company by PKP S.A. in exchange for acquisition of shares in the increased capital by PKP Polskie Linie Kolejowe S.A., loans granted by the European Investment Bank (EIB) and bonds for the implementation of investment projects.

Structure of current assets in 2016-2017



In 2017, PKP Polskie Linie Kolejowe S.A. held shares reported as long-term investments in the following subsidiaries:

1. Przedsiębiorstwo Napraw i Utrzymania Infrastruktury Kolejowej w Krakowie Sp. z o.o. (100% of shares in share capital);
2. Dolnośląskie Przedsiębiorstwo Napraw Infrastruktury Komunikacyjnej DOLKOM Sp. z o.o. we Wrocławiu (100% of shares in share capital);
3. Zakład Robót Komunikacyjnych – DOM w Poznaniu 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).

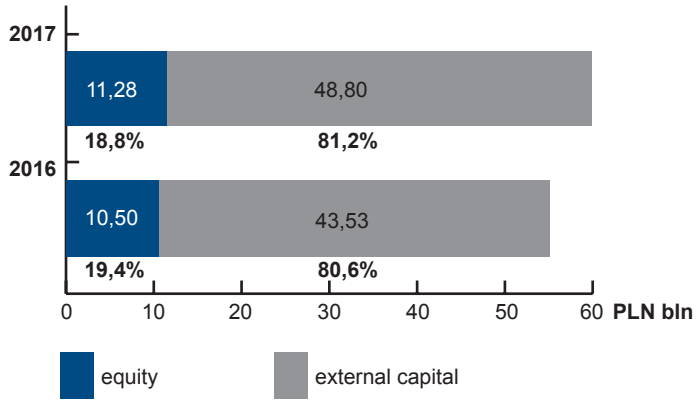
The balance value of the assets in question as of 31 December 2017 was PLN 166.97 mln.
The maintenance and repair companies are the necessary potential of PKP Polskie Linie Kolejowe S.A that is used to:

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.

In addition, by 28 April 2017, pursuant to the agreement on holding shares in usufruct signed on 17 April 2014 with PKP S.A. as well as in accordance with the authorisation granted by PKP S.A., PKP Polskie Linie Kolejowe S.A. executed corporate rights resulting from 171,622 shares representing 100% of the share capital of PKP Utrzymanie Sp. z o.o., whose principal activity was telecommunication.

Source of assets financing

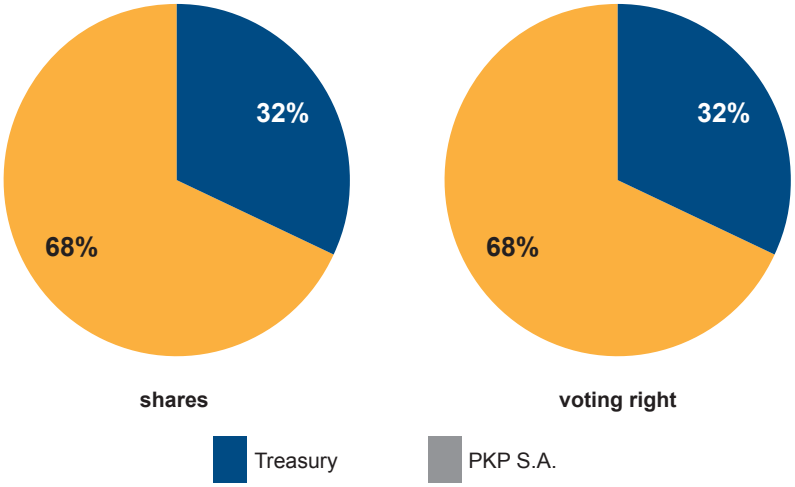
The source of financing assets of PKP Polskie Linie Kolejowe S.A. in 2016-2017



Equity

In 2017, the Company's equity made up over 19% of its assets; in comparison to 2016, it increased by approx. 7.4%. The increase results mainly from the increase in the share capital in 2017 by PLN 41.9 mln by the in-kind contribution made by PKP S.A, comprising tangible and intangible assets, constituting the right of perpetual usufruct of land and the title to the buildings, structures and facilities erected thereon with a total area of property amounting to 17.9519 ha.

Shareholder structure of PKP Polskie Linie Kolejowe S.A. as of 31 December 2017

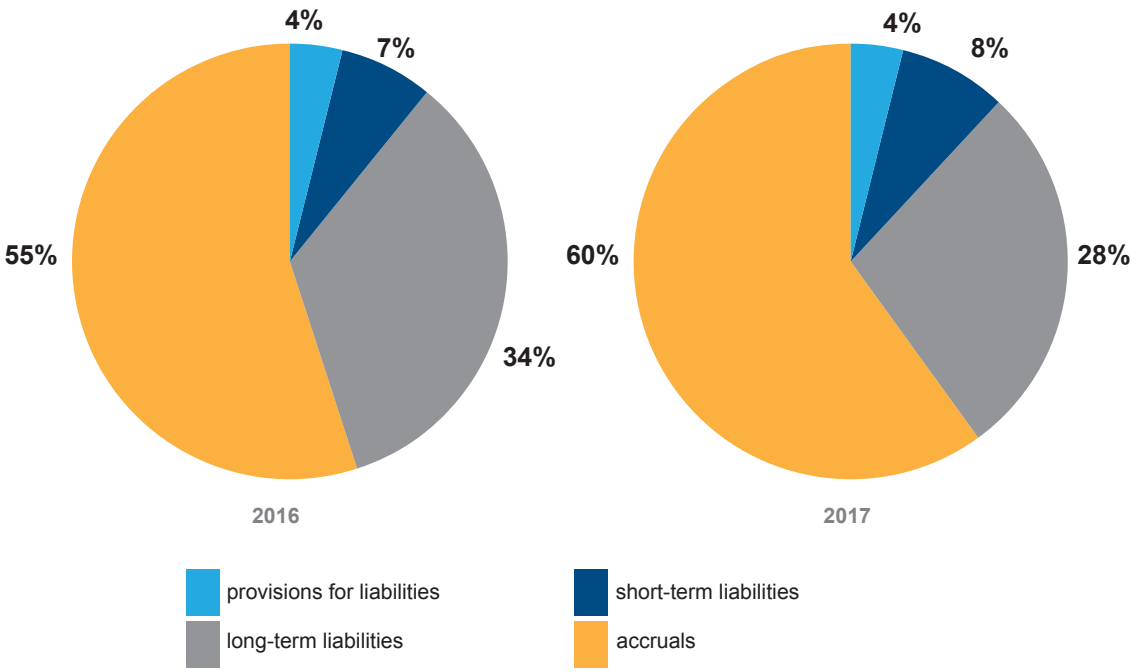


External capital

In 2017, 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 2017, they amounted to PLN 48,803.3 mln, covering the Company's assets resources in 81%.

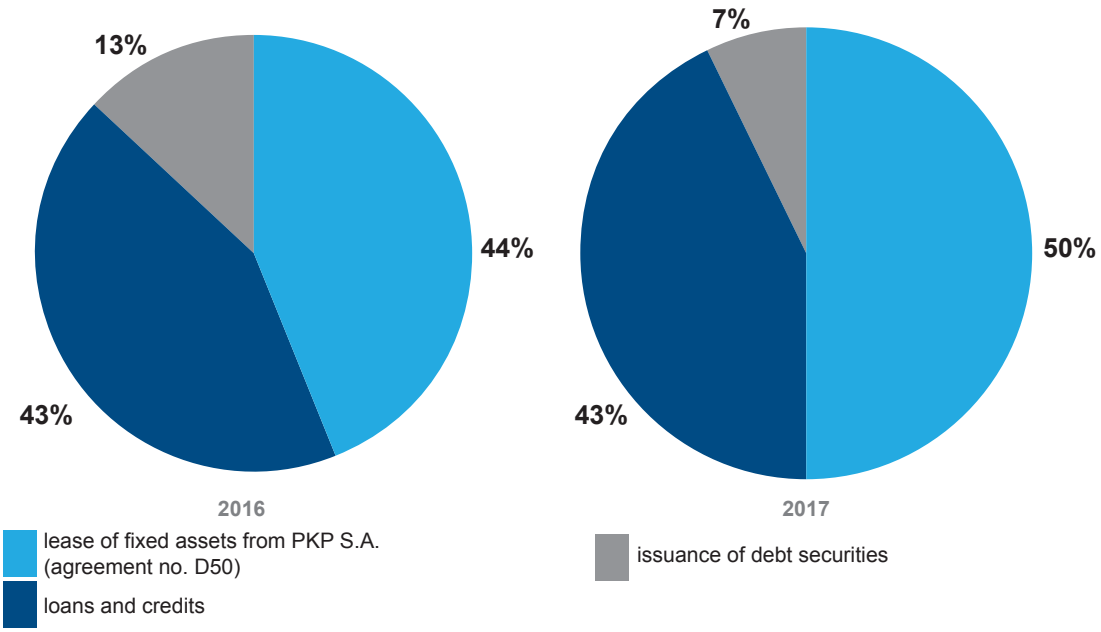
The share of external capital in financing the Company's assets increased in 2017 (when compared to 2016) by 0.7 percentage point (p.p.) as a result of an increase in long-term prepayments and accruals for the modernisation of railway infrastructure obtained from budget subsidies, the Railway Fund, the European Union and other public sources.

Structure of external capital in 2016-2017



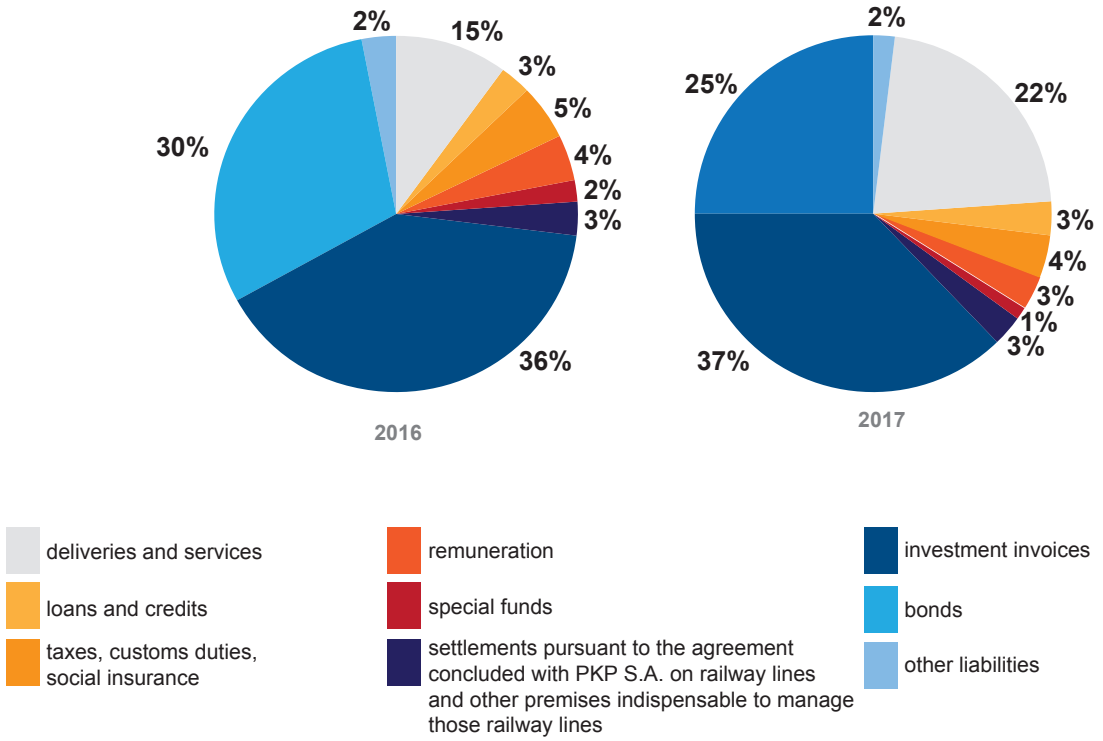
As of 31 December 2017, the long-term liabilities amounted to PLN 13,783.9 mln. 50% of these liabilities arising from the agreement concluded with PKP S.A. in 2001 for handing over the railway lines along with other immovable property required to manage these railway lines for paid use (agreement no. D50-KN- 1L/01). The loans granted by the EIB for co-funding and pre-financing modernisation of railway lines accounted to 43% of the liabilities, while the bonds issued for investment purposes amounted to 7% of the liabilities and decreased as compared to 2016 as a result of reclassification of bonds and long-term loans into short-term liabilities and their valuation.

Structure of long-term liabilities in 2016-2017



Short-term liabilities as at the end of 2017 amounted to PLN 3,930.9 mln and were higher than in 2016 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 2016-2017



Economic-financial results

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

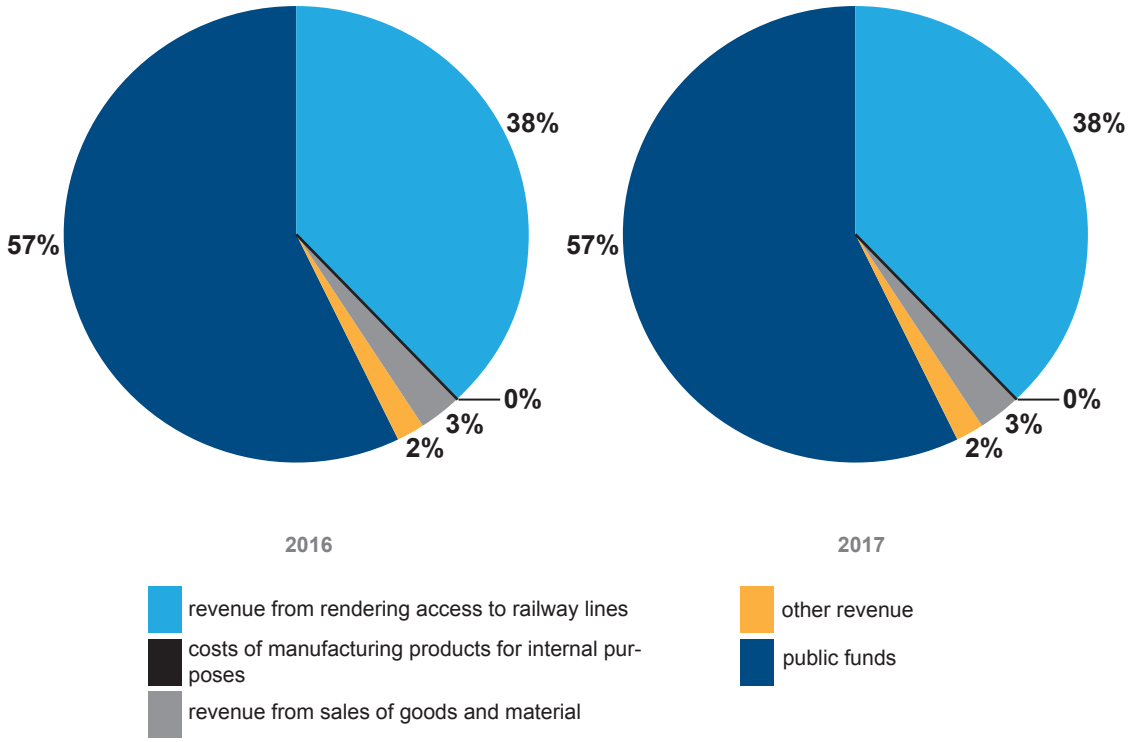
No.	Item	2016 r.	2017 r.	Change	
				Value (PLN mln)	%
1.	Revenues from sales and equivalent	5 575,64	5 717,65	142,01	2,5
2.	Operating costs	5 949,95	6 530,15	580,20	9,8
3.	Result on sales (1-2)	-374,31	-812,51	-438,19	117,1
4.	Other operating revenue	890,38	1 162,42	272,04	30,6
5.	Other operating costs	360,03	514,35	154,32	42,9
6.	Result on other operating activity (4-5)	530,35	648,07	117,72	22,2
7.	Result on operating activity (3+6)	156,04	-164,44	-320,47	-205,4
8.	Result on operating activity excluding depreciation and amortisation (EBITA)	1 514,57	1 510,18	-4,39	-0,3
9.	Financial revenue	56,05	278,01	221,96	396,0
10.	Financial costs	256,84	69,88	-186,96	-72,8
11.	Result on financial operations (9-10)	-200,79	208,13	408,92	-203,7
12.	Gross profit (7+11)	-44,76	43,69	88,45	-197,6
13.	Income tax	23,42	28,56	5,13	21,9
14.	Net result (12-13)	-68,18	15,14	83,32	-122,2
15.	Net result excluding depreciation and amortisation	1 290,35	1 689,75	399,40	31,0

The net financial result achieved in 2017 was higher than the one achieved in 2016 by PLN 83.32 mln, i.e. 122.2%. This is the best financial result achieved since 2010, the main source of which was the settlement of subsidies received to finance expenditure on the construction of fixed assets and the occurrence of exchange gains related to the increase in the exchange rate of the Polish zloty to Euro. The settlement of the subsidy takes place in parallel to depreciation write-offs of those fixed assets, the construction of which was financed from the subsidy.

In 2017, the Company obtained financial income, generating a surplus in the form of a positive net result in the amount of PLN 7,158.08 mln and thus covered 100% of the costs it has incurred. The highest position in total income is held by sales revenue and equivalent, including domestic public funds and revenues from rendering access to railway lines to licensed passenger and freight operators.

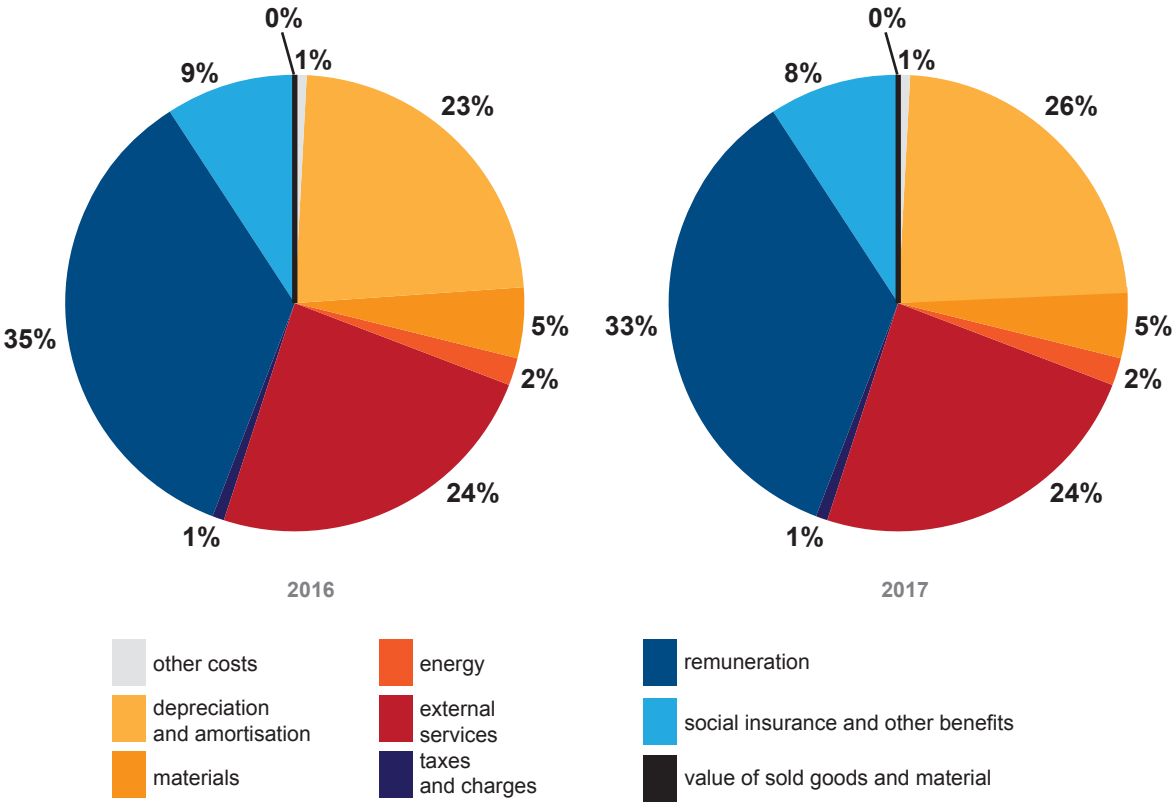
The public funds obtained in 2017 amounted to 102% of the revenue received in 2016 and have been earmarked for financing management costs, including for the implementation of maintenance and renovation tasks, thus contributing, among others, to the improvement of operating safety, increase in train speeds, maintenance of proper traffic flow on railway lines, and enhancement of their appearance. Revenue from leasing the railway lines in 2017 was higher by PLN 64.8 mln than in 2016. The recorded increase resulted from higher operating performance of freight operators – by 9% – due to their acquisition of new transport services as compared to 2016. In 2017, revenue from leasing the railway lines amounted to PLN 2,200,977 thousand.

Sales revenue and equivalent in 2016-2017



As result of its business activity, in 2017 the Company incurred costs amounting to PLN 7,114.3 mln, which were 8.3% higher than in 2016. As in previous years, labour costs represented approx. 40% of these costs.

Cost structure by type in 2016-2017



Significant increase in operating costs in 2017, as compared to 2016, can be observed for such items as:

1. depreciation – due to higher deductions from expenses on fixed assets settled in 2017;
2. materials and external services – in relation to the implementation of a more extensive scope of maintenance and repair works enabling the provision of proper standard of safety and elimination of speed limits on railway lines;
3. labour costs – as a consequence of raises in remuneration, an increase in the minimum wage and higher level of work.

In 2017, PKP Polskie Linie Kolejowe S.A. reported improvement in the efficiency of the management of assets as evidenced by more favourable level of profitability than in 2016 acquired thanks to a positive financial result. The positive result also contributed to the positive value of net and gross profit margins, which is an improvement compared to the previous year. Moreover, the Company successfully sought its claims and, as a result, the period of waiting for the recovery of receivables has been reduced by 2 days. As a consequence of the redemption of part of the bonds issued to finance the investment activities and the repayment of instalments of loans taken out by the EIB to co-finance and pre-finance the modernisation of railway lines, the debt was reduced. The Company's financial liquidity remained unchanged as compared to 2016, which means that the Company has retained its ability to meet its short-term liabilities. Workforce productivity also increased – the revenues from sales amounted to PLN 145,1 thousand per one employee employed in the Company in 2017, which is by PLN 2,9 thousand more than in 2016.

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. Until 9 December 2017, the access was granted based on agreements signed with licensed railway operators. On 30 December 2016, the Act of 16 November 2016 amending the Act on Railway Transport came into force, which significantly affected the conditions of access to railway infrastructure, starting from the timetable effective from 10 December 2017. The Act expands 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 will continue 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 2017, on the basis of train timetable provided to railway operators/applicants, a total of 2,480,019 train rides were performed, including on the basis of:

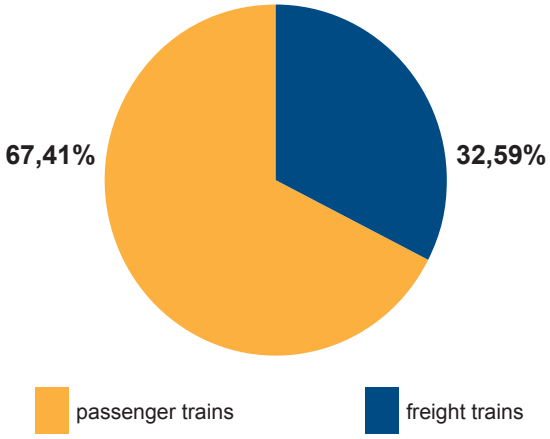
1. The Annual Timetable prepared on the basis of applications made by operators/applicants. It was updated during its validity period on pre-arranged dates – 1,663,785 train rides;
2. The Individual Timetable developed by PKP Polskie Linie Kolejowe S.A. when there is some throughput available, upon request made by individual operator/applicant for train routes allocation – 816,215 train rides;
3. The PLK catalogue in accordance with parameters adopted by the Company – 19 train rides.

In 2017, the Company made its railway lines available to 92 operators, including 18 lines for passenger services (11 lines for regular passenger services), 71 lines for freight services and 3 for passenger and freight services. 7 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 2017, 235.18 mln train-km were achieved, including: 158.53 mln train-km in passenger services and 76.65 mln train-km in freight services.

In 2017, PKP Polskie Linie Kolejowe S.A. recorded:

1. a 4.31% increase in total operating performance of its clients as compared to 2016 (passenger service segment witnessed an increase of 2.19%, while the freight service segment – an increase of 9.00%);
2. the share of freight operators from outside the PKP Group in transport services rendered in the entire freight transport segment, which remained at a similar level as in the previous year, i.e. 43.66%.

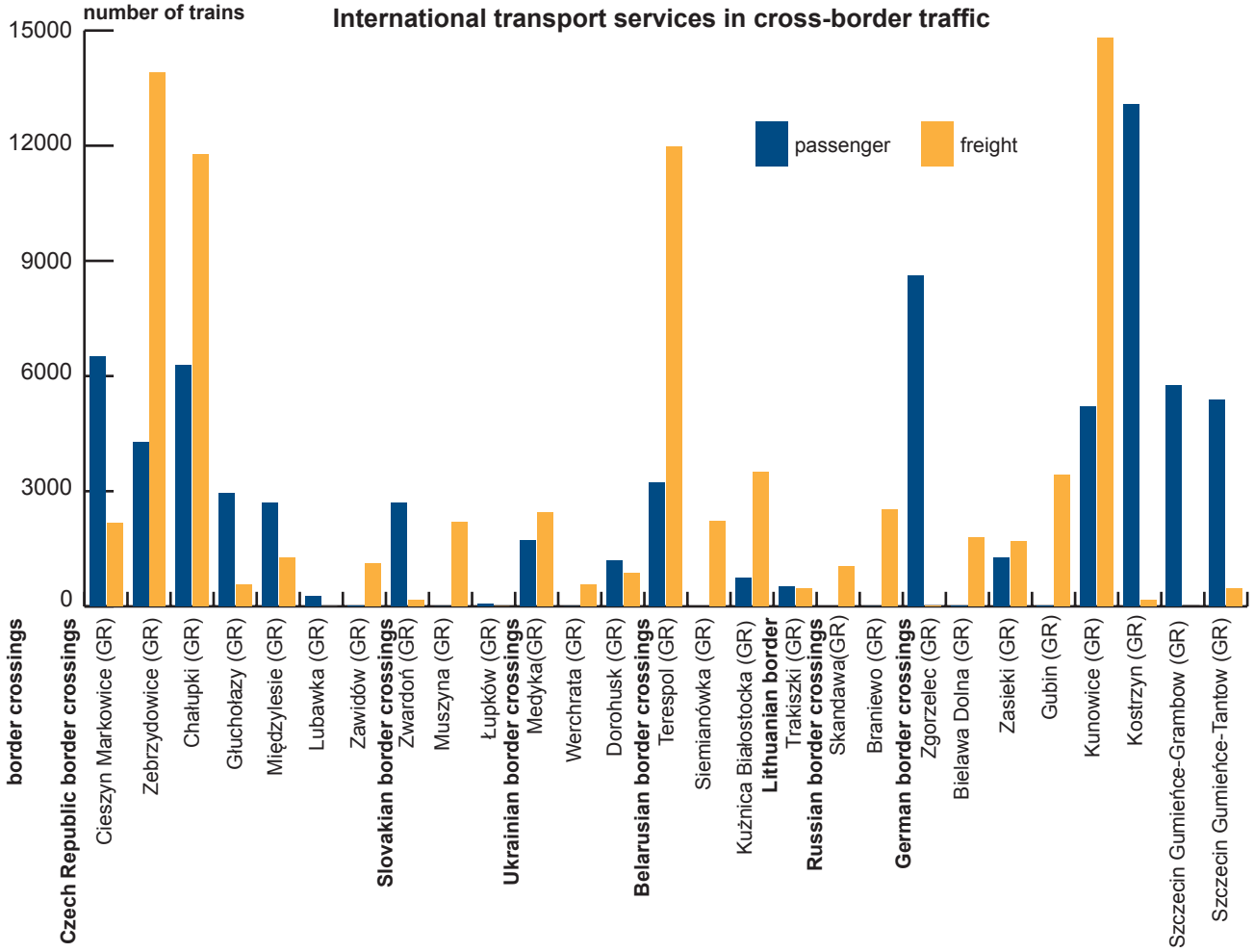
Structure of operational performance per train types in 2017



Data concerning completed international carriages

International transport services in cross-border traffic in 2017 were performed by 50 operators, who in most cases used the following border crossings:

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



In 2017, 153,603 rides of international trains were organised, of which 72,464 for passenger traffic and 81,139 for freight traffic. Rides across German border accounted for 40% (61,692) of international rides, the Czech border – 35% (53,795), Belarusian border – 14% (21,651), Ukrainian border – 4% (6,786), Slovakian border – 3% (5,144), Russian border – 2% (3,553) and Lithuanian border – 1% (982).

In 2017, within 24 hours, PKP Polskie Linie Kolejowe S.A. performed on average 420 rides of international trains as part of Individual Timetable and Annual Timetable.

To make it easier for the operators to use international train routes, the One Stop Shop (OSS) unit at PKP Polskie Linie Kolejowe S.A., which is a part of the international OSS network within the association of European railway infrastructure managers RailNetEurope (RNE), offers comprehensive information about the conditions that need to be met to obtain access to the RNE members' infrastructure as well as to the services and products they have on 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 RŻD (Russia), LG (Lithuania), BC (Belarus) and UZ (Ukraine) railways is based on bilateral agreements, while with DB Netz (Germany), SŻDC (the Czech Republic) and ŻSR (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 Polski Linie Kolejowe S.A. and DB Netz AG, SŻDC and ŻSR – 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.
Data collected in SEPE is used in the exploitation process on an ongoing basis. It is also used for analytical purposes and as basis for settlements with operators for using railway infrastructure and for the quality of services provided.

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 (CMC Map) application constituting the primary tool in crisis situations. The CMC Map is also used in the exploitation process on an ongoing basis. 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.

The TCCCom module (additional functionality of TIS), operating as a communicator, allows for an electronic exchange of information on train traffic and operation between the European Traffic Management Centres.

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.

A 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. Tests of basic application modules are planned for March 2018.

Infrastructure

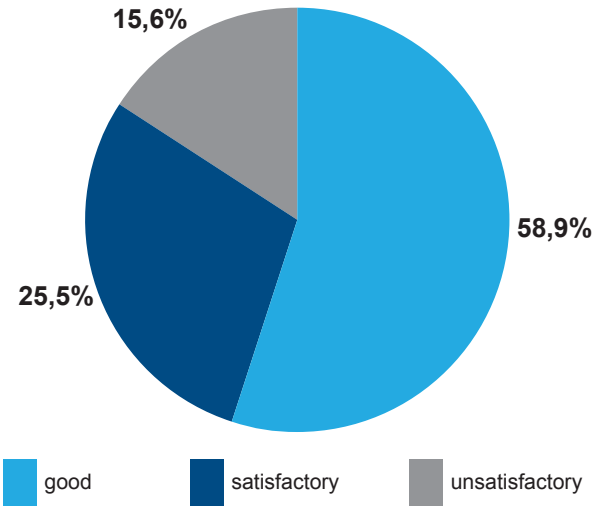
Rail roads

In 2017, the length of railway lines in use changed. 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 2017):

1. 18,513 km of railway lines (35,967 km of tracks), including:
   - 27,120 km of route tracks and main principal tracks at stations;
   - 8,847 km of station tracks;
2. 39,482 turnouts, including:
   - 17,950 turnouts in route tracks and main principal tracks;
   - 21,532 turnouts in station tracks;
3. 14,442 level crossings, including on active railway lines; a total of 12,354, including level crossings of cat.:
   - A - 2,392 items;
   - B - 1,192 items;
   - C - 1,386 items;
   - D - 6,343 items;
   - F - 562 items;
   - pedestrian crossings of cat. E - 479 items.
4. 25,324 engineering structures, including 6,375 bridges and viaducts;
5. 5,823 buildings;
6. 14,487 structures.

Road infrastructure technical condition

As a result of the maintenance and repair work as well as investment tasks performed in 2017, the length of railway line tracks graded as good in terms of technical condition (as at 31 December 2017) represented 58.9% of the total track length, which is a 3.8% increase in comparison to the status from 31 December 2016, 55.1% of tracks were good.



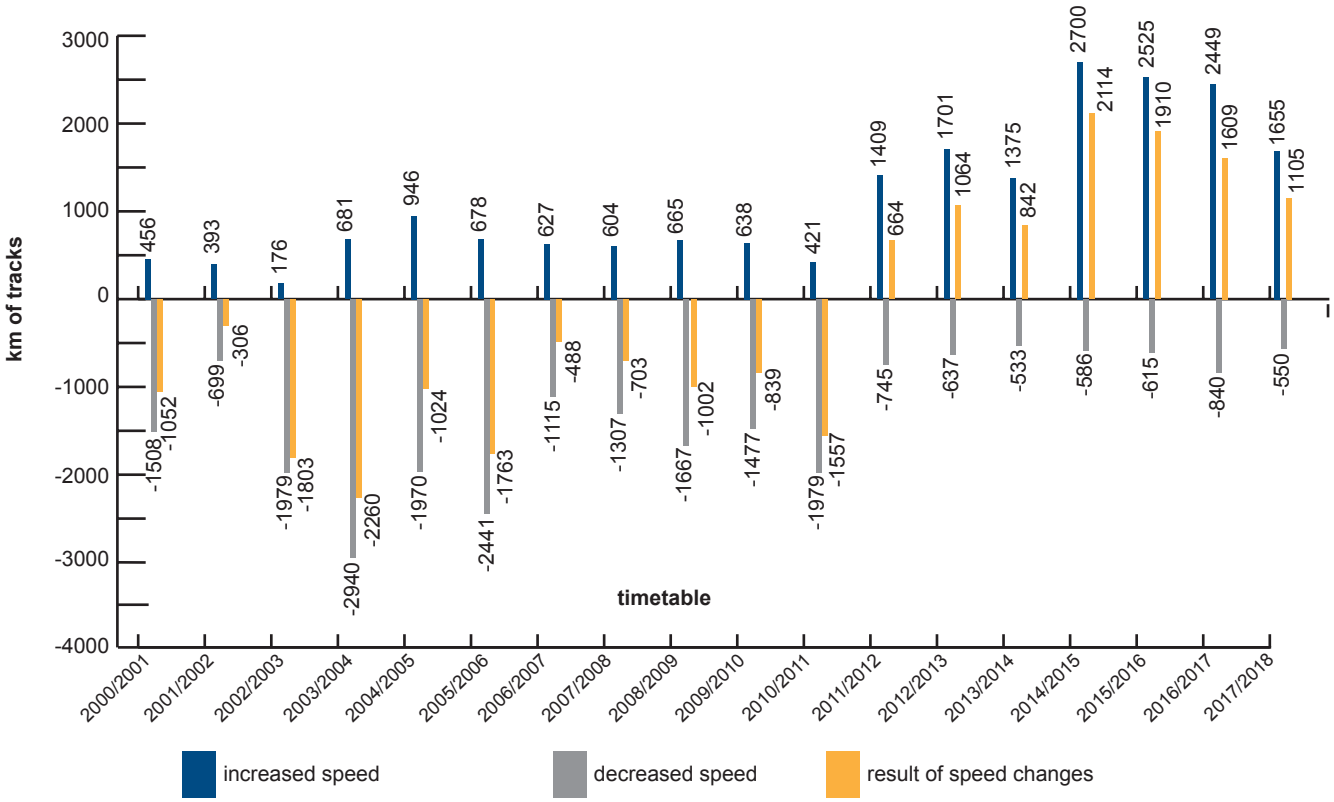
The diagram above was developed based on the following criteria:

1. good – railway lines operated in line with the assumed parameters, only maintenance work is required;
2. 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;

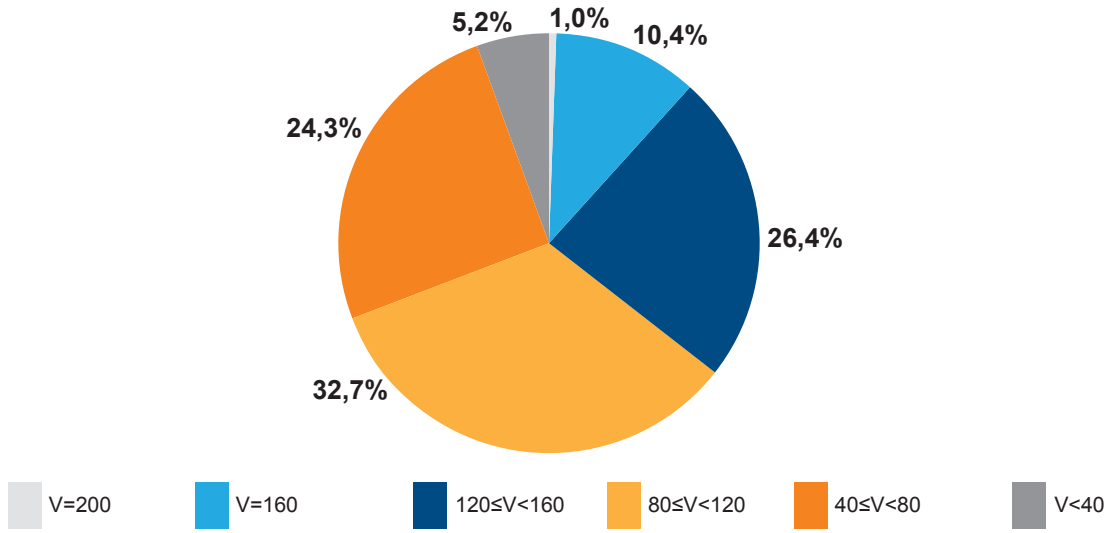
3. unsatisfactory – railway lines of significantly lower operation parameters (low timetable speed, large number of local speed limits, lower permissible loads), which qualify railway tracks for comprehensive replacement.

The effect of improved technical condition of tracks was the higher top timetable speed in the Train Timetable 2017/18 for passenger trains on 1,655 km of tracks, and decreased speed on 550 km of tracks.

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)



Percentage structure of top timetable speeds as at the day when the Train Timetable 2017/2018



The Company's successes also include the continuing stable growth in the length of tracks with a top timetable speed of Vmax > 160 km/h. As at the end of 2017, the length of such tracks amounted to 271 km, compared to 179 km as at the end of 2016.

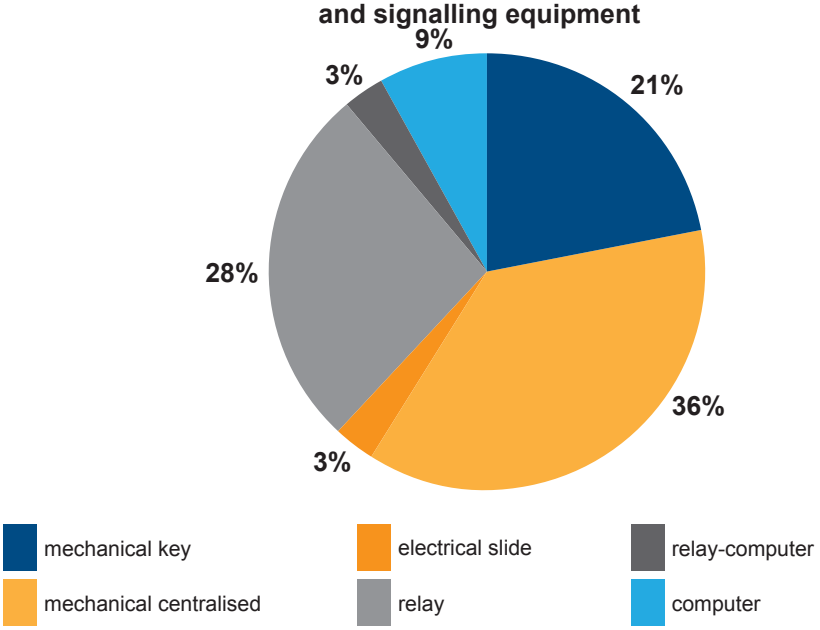
Automatics and Telecommunication

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

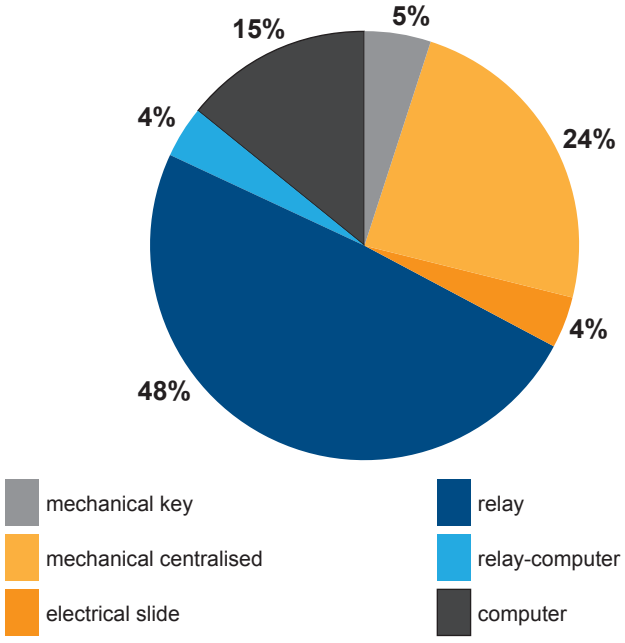
1. station equipment installed at operating control points;
2. wayside equipment controlling train traffic on railway routes;
3. traffic safety equipment at level crossings.

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 computer 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 2017, 30 Local Traffic Control Centres (LCS) with the CCS system were in operation as well as 5 LCS with the CCS system dedicated to light-weight lines and 27 sections of lines on which remote control takes place. In total, the remote control unit comprises 187 switch circles, controlling a total number of 3,651 switches and 4,647 signallers per 1,863 km of rail line.

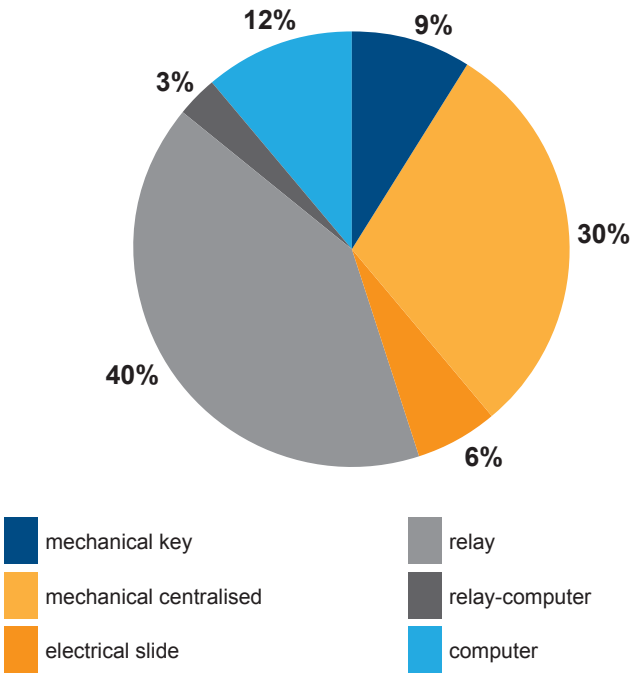
The signal box control areas are equipped in various types of station traffic control command and signalling equipment



Light signals in various types of station traffic control devices



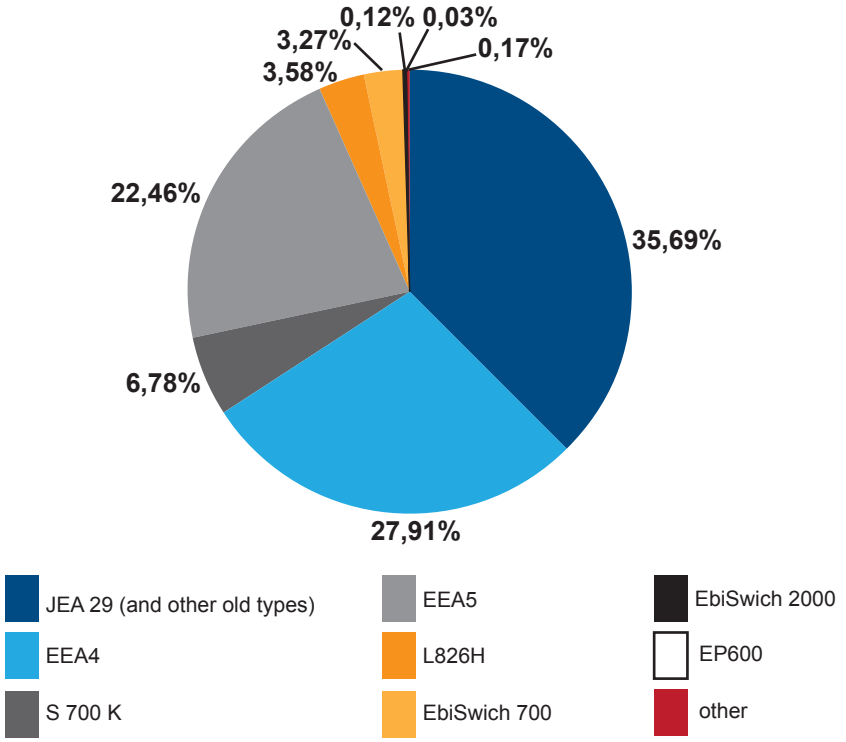
Switches in various types of station control command and signalling equipment



Point machines play an important role in safe and efficient rail traffic management. In 2017, as a result of modernisation works and purchase carried out as part of maintenance works on the PKP Polskie Linie Kolejowe S.A. network 187 new switches were introduced.

As at 31 December 2017, a total of 39,172 mechanical and electrical point machines (of which 76.5% represents electrical point machines and 23.5% 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 point machines in the total number of point machines has been presented in the chart below.

Type of point machines used

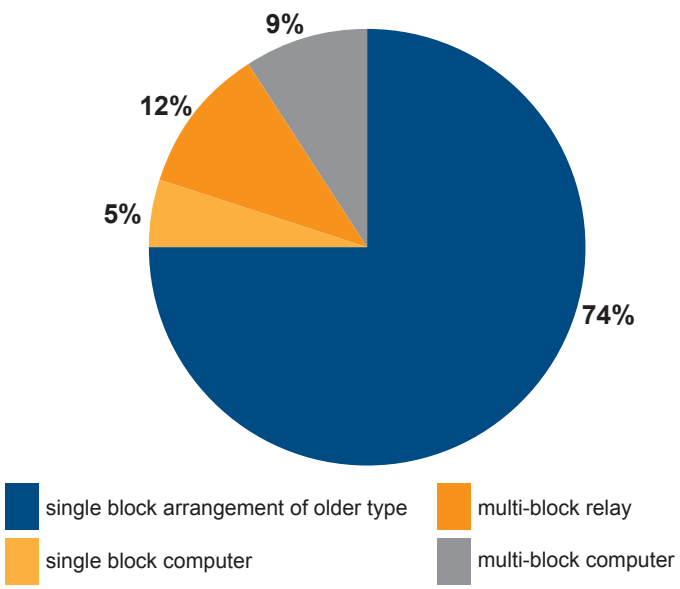


Groups of railway traffic control devices in numbers

station equipment	As at 31 December 2017		
	signalling centre control area	switch conversion	signalling device
mechanical key	620	4 096	2 180
mechanical centralised	1 052	13 723	11 147
electrical slide	91	2 885	1 955
relay	795	18 747	22 751
relay-computer	84	1 356	1 850
computer	252	5 599	6 876
In total	**2 894**	**46 406**	**46 759**

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 16,061 km of railway lines. Single-block systems are predominant on railway lines managed by PKP Polskie Linie Kolejowe S.A. – 12,746 km of railway lines have them, while 641 km have systems utilising latest computer-controlled technologies. Multi-block systems have been installed on 3,315 km of railway lines, of which 1,436 km are computer-based blocks, featuring integrated remote diagnosis systems, controlling and recording technical and operational parameters of the system.

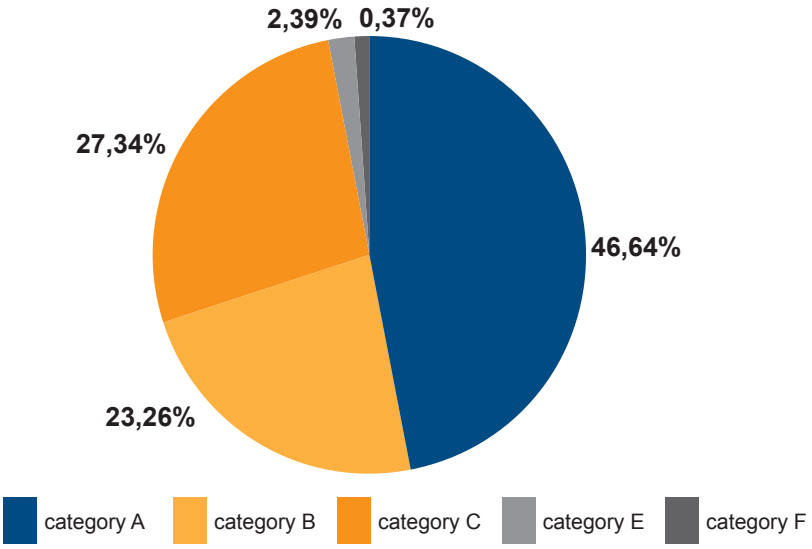
Types of signalling block systems



The railway line network managed by PKP Polskie Linie Kolejowe S.A. features 12,331 level crossings, with 5,180 crossings equipped in traffic safety equipment, which represents 42% of all level crossings.

The computer technology is also used in traffic safety equipment installed on level crossings. The new generation of 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. The intersections of railway lines managed by PKP Polskie Linie Kolejowe S.A. and public roads are equipped with 1,626 sets of such modern technical solutions, installed on category A, B, C and E crossings, which represents 31,3 % of all types of crossing equipment used.

Division of level crossings equipped in traffic safety equipment by individual categories

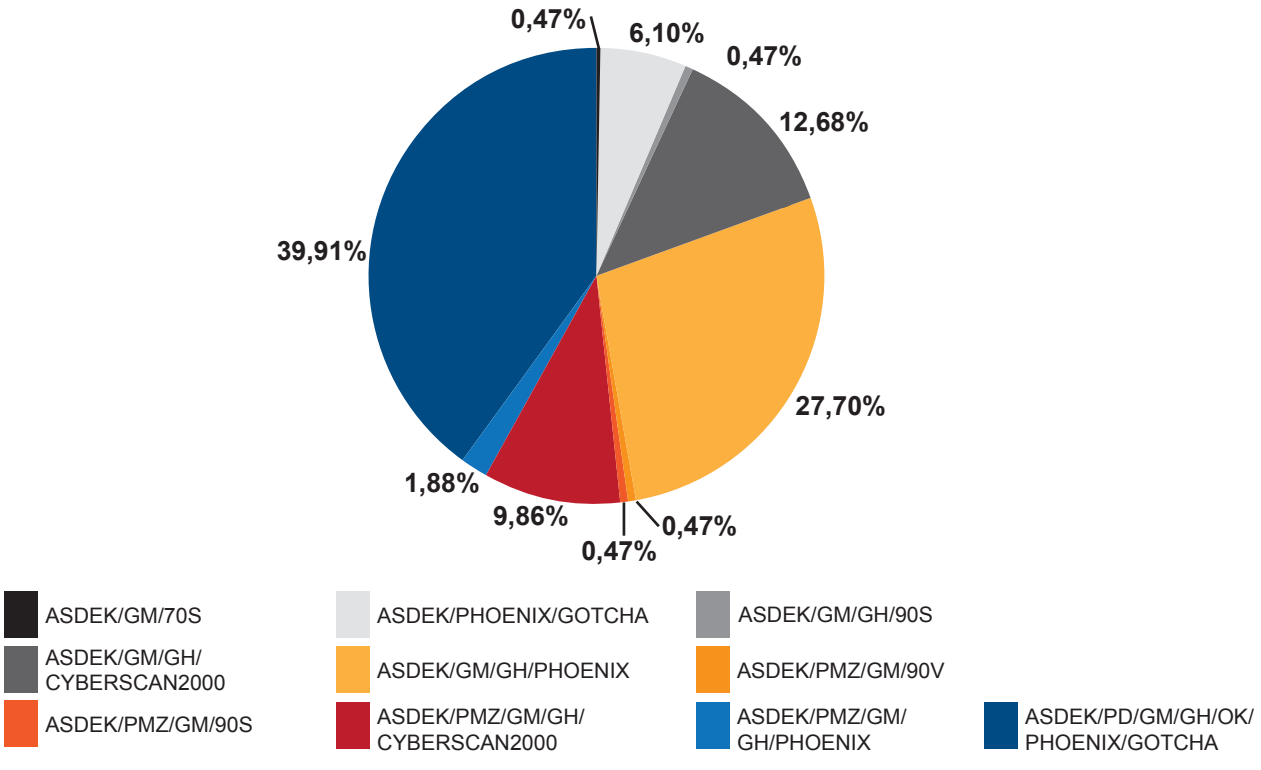


In order to ensure a constant and high level of operating safety, the modernised railway lines were equipped with defect detectors (dSAT). These systems, depending on their diagnostic configuration, can detect remotely (while the train is in motion):

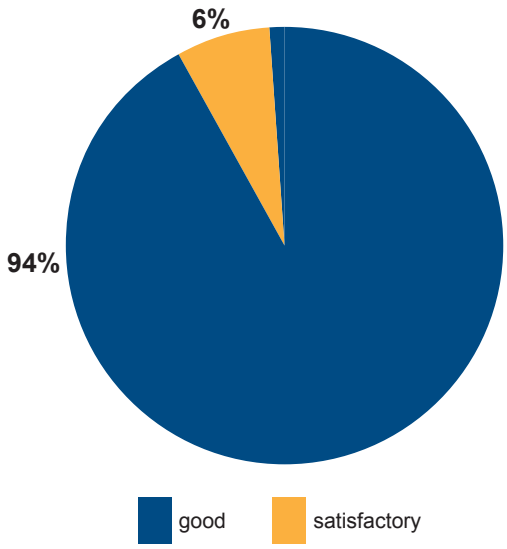
- failure of axle bearings (GM function);
- failure of block and disc brakes (GH function);
- deformation of wheel rims (PM function);
- dynamic overload (PD function);
- excessive axle and line loads (OK function).

In 2017, in relation to the modernisation works carried out by the Company, 9 new defect detectors (dSAT) have been constructed, thus increasing the total number of these detectors operating on the network from 204 in 2016 to 213 at the end of 2017, thus contributing to a higher level of railway infrastructure safety on key railway lines. The remaining modernisation activities of dSAT devices carried out in 2017, consisted in replacing used and technically obsolete older generation devices existing in 8 locations.

Percentage share of types of defect detectors used



Technical conditions of defect detectors used



In June 2017, a document entitled “National Implementation Plan of Technical Specification for Interoperability of ‘Control-command and signalling’ subsystems”, replacing the “National Implementation Plan of the European Rail Traffic Management System” of 2007, was published. The plan specifies the strategy for the implementation of the European Rail Traffic Management System (ERTMS) on the national network, and the current and future activities of the Company in the field of system implementation must be subordinated to the provisions of the above-mentioned document.

Moreover, also the activities related to adapting of the Central Railway Trunk Line on the north section in order to allow the trains to travel at the speed of 200 km/h, were completed. To this end, the ETCS (European Train Control System) level 1 system was reprogrammed. At present, trains run at a timetable speed of 200 km/h on the Grodzisk Mazowiecki - Idzikowice section. The works on the implementation of the ERTMS/ETCS level 2 system on the lines: E 65 (design and construction of the ERTMS/ETCS level 2 system and ERTMS/GSM-R together with the rail traffic control devices of the override layer for 8 LCS on the line E-65 Warszawa - Gdynia), 1 and 17 (design and execution of LCS Skierniewice and ERTMS/ETCS level 2/GSM-R on the Warszawa Zachodnia - Koluszki at 3.900 - 104.918 km of the line no. 1 and on the section Koluszki - Łódź Widzew at 26.400 - 7.200 km of the line no. 17) and 132 (modernisation of the E 30 railway line, Stage II. Deployment of ERTMS/ETCS and ERTMS/GSM-R in Poland on the Legnica - Wrocław - Opole section) were continued.

Moreover, the implementation of multi-sectoral tasks in the Design and Build formula, including the development of 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”, was commenced. Preparation of the task “Development of ERTMS/ETCS on TEN-T lines of the base network” has also begun. As part of the above, the first tendering procedures were initiated for the following projects: “Development of ERTMS/ETCS level 2 system on the E30 Podłęże - Rzeszów line”, “Development of the ERTMS/ETCS system on the line no. 278 Węgliniec - Zgorzelec”, “Development of the ERTMS/ETCS level 2 system on the line E 59 on the Wrocław - Poznań section” and “Development of the ERTMS/ETCS level 2 system on the line E20 Kunowice - Terespol (excluding the Warsaw junction)”.

In 2017, a tender procedure for the “Design and construction of the ERTMS/ETCS level 1 devices for the railway line no. 226 Pruszcz Gdański - Gdańsk Port Północny”, as part of the project “Improvement of railway access to the Port of Gdańsk”, was carried out.

The works related to the construction and acceptance of GSM-R system (Global System for Mobile Communications) continued within the framework of the modernisation of the railway line Warszawa - Łódź – OPI&E 7.1-24.1 and 7.1-24.3 projects and modernisation of railway lines E65/C-E65 on the Warszawa - Gdynia section in the framework of the OPI&E 5.1-1 – “Modernisation of the railway line E 65/C-E 65 on the Warszawa - Gdynia section in the scope of the override layer LCS, ERTMS/ETCS/GSM-R, DSAT and power supply of the traction system – Phase II.”

Important achievements in the field of research and technological development

1. The process of operational tests and certification of the ACC-M/PL and the Automatic Marshalling System (AMS) was successfully completed. Both systems have been granted an indefinite approval for operation issued by the Office of Rail Transport (UTK).
2. The following were approved in accordance with the SMS PW-17 Safety Management System procedure:
   - MODEST GEMINI computer-controlled station CCS system by Prvni Signalni a.s.;
   - ACC-M/PL computer-controlled station CCS system by Sirti S.p.A.;
   - LEXISPL computer-based automatic pass-through system by Prvni Signalni a.s.;
   - ME electronic flasher by P.W. KOLBUD Radom;
   - base for UN-65 point machines by KZN "Bieżanów" Sp. z o.o.;
   - PZ-TK/01 point machine transducer by Telekom Oleszno Sp. z o.o.;
   - SD-3002 signalling device by P.W. KOLBUD Radom;
   - special B2s and BT plug-in fuses (production and regeneration) by PPH.U ELEKROL;
   - a group of ZI-T switching-mode power supplies by Telekom Oleszno Sp. z o.o.;
   - RWS-1 electronic indicator by RAMATECH-INSTAL S.C.

Electrical power devices

Material situation

Electrical power devices managed by PKP Polskie Linie Kolejowe S.A. in 2017 in comparison to 2016

Item	Unit of measure	year	
		2017	2016
Traction network devices:			
length of electrified railway lines	km	11 816	11 826
length of traction network	tkm	24 697	24 742
traction network disconnector	items	20 151	19 908
including controlled	items	13 354	12 901
Direct current devices 3 kV (leased by PKP Energetyka S.A.):			
traction substations/sectional cabins	items	11	11
modernised traction substations/selectional cabins	items	26	26
Electric heating of turnouts (eor):			
single turnouts, including locking devices	items	32 299	32 681
External lighting and power systems in buildings:			
points of external lighting	items	203 065	197 634
installation points and internal lighting	items	193 560	188 757
MV distribution lines:			
non-traction lines (NTL)	km	749	710
Electric power delivery points:			
number of electric power delivery points	items	16 178	16 351
contracted capacity	kW	363 839	359 872

Traction network

Assessment of the technical condition of the traction network devices and the external lighting

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:

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 traction network devices (percentage)

Item	Technical condition	2017	2016	2017 vs. 2016
		%	%	%
Traction network	Good	23,2	22,6	+0,6
	Satisfactory	48,6	43,8	+4,8
	Unsatisfactory	25,1	29,1	-4,0
	Inadequate	3,1	4,5	-1,4

Technical condition of the traction network devices (quantitative)

Traction network	Technical condition			
	Good	Satisfactory	Unsatisfactory	Inadequate
Number of tkm	5 730	12 003	6 199	765

Traction network 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 network broken down by speed

Traction network	160 <V≤200 km/h	120 <V ≤160 km/h	V ≤120 km/h
Number of tkm	3 458	7 162	14 077
Share expressed in %	14	29	57

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	2017	2016	2017 vs. 2016
		%	%	%
External lighting devices	Good	35,2	33,3	+1,9
	Satisfactory	32,5	32,0	+0,5
	Unsatisfactory	15,5	16,5	-1,0
	Inadequate	16,8	18,2	-1,4

The year 2017 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, 2,046 fixtures were replaced with power efficient units along with 937 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;
   - equipment that has the technical and operational parameters that are complaint with the standards and requirements established for such equipment;
   - devices require replacement of worn elements as part of scheduled repair/renovation work.
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	2017	2016	2017 vs. 2016
		%	%	%
Electrical heating of turnouts	Good	49,3	48,4	+0,9
	Satisfactory	49,5	49,9	-0,4
	Unsatisfactory	0,6	1,7	-1,1
	Inadequate	0,6	0	+0,6

Electrical heating of turnouts (eor) is being systematically equipped with weather stations, which streamline their proper utilisation. This results in significant reduction of energy consumption. At present, 67% of eor is controlled automatically, whereas the rest is controlled manually.
Another way to raise the efficiency and reliability of eor is to replace old transformer boxes which, due to the high rate of separating transformer thefts had to be regenerated or welded on multiple occasions. However, reconstruction does not fully restore their tightness and durability, 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.

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 2017, the purchase of electric power has been carried out through 16,178 electrical power delivery points for which 363,839 kW of electric power has been ordered (see table below). Compared to 2016, the number of delivery points decreased by 173, while the installed capacity increased by 3,967 kW. 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. Another factor influencing power consumption are the unfavourable weather conditions in January, February and December in 2017. Overlapping of the above-mentioned factors (i.e. increase in the number of devices, power increase, impact of adverse weather conditions) resulted in 2017 in the second occurrence in the history of power consumption in the amount of 286.7 GWh, which has been monitored by the Company since 2002. Forecasts for power consumption assume a further increase in this indicator and, thus, in energy costs (assuming a year-on-year increase in the installed capacity).

No.	Tariff group	Data of electrical connections in the Company	
		Number	Power
		[pcs]	[kW]
	1.	2.	3.
1.	C11	1 849	23 533
2.	C12a	10 904	153 299
3.	C12b	1 394	16 175
4.	C12w	2	26
5.	C21	942	72 024
6.	C22a	689	56 150
7.	C22b	285	24 209
8.	B11	47	464
9.	B21	11	2 319
10.	B22	6	3 812
11.	B23	12	11 586
12.	G11	1	4
13.	Lump sum	36	218
	In Total	**16 178**	**363 839**

Equipment lease

In 2017, an agreement was in force between PKP Polskie Linie Kolejowe S.A. and PKP Energetyka S.A. for rendering access to the supporting structures, which regulates issues related to the use by PKP Energetyka S.A. of supporting structures of the traction network belonging to the Company. The Company obtained the net amount of PLN 2,849,880.00 for the performance of the aforementioned agreement.

Moreover, in 2017 the Company leased from PKP Energetyka S.A. electrical power processing and switchgear equipment (885 assets) based on the concluded agreement. The Company obtained the net amount of PLN 12,613,442.64 for the performance of the aforementioned agreement.

As regards the lease of some premises in buildings managed by PKP Polskie Linie Kolejowe S.A. in 2017, an agreement was in force, on the basis of which the space for USb2 local control cabinets was leased to PKP Energetyka S.A., used to control traction network disconnectors (863 facilities on which 2,065 USb2 cabinets were installed). The Company obtained the net amount of PLN 368,788.35 for the performance of the aforementioned agreement.

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

Having regard to the development of the energy sector in 2017, the following works were carried out:

1. updated databases in SQL environment and algorithms for assessing the technical condition of the traction network and outdoor lighting equipment;
2. the Company's energy audit was carried out in accordance with the Energy Efficiency Act of 20 May 2016. Upon its completion, a notification was drawn up in accordance with Art. 38 of the Act together with information on possible energy savings. The notification was submitted to the President of the Energy Regulatory Office (ERO), thus fulfilling the statutory obligations;
3. The Company has joined the cooperation with the National Centre for Research and Development (NCBiR) under the programme entitled "BRIK – Research and Development in Railway Infrastructure", which consists in supporting scientific research and development works in the area of railway infrastructure in the scope of the following issues:

    - "Development of innovative methodology of lighting infrastructure management on the network managed by PKP Polskie Linie Kolejowe S.A.";
    - "Development of innovative methodology of building photovoltaic panels in acoustic screens on the network managed by PKP Polskie Linie Kolejowe S.A.";
    - "Development and implementation of the anti-theft system of the road network in rail transport";

Moreover, a scenario of activities to improve the energy efficiency of buildings and outdoor lighting resulting from the energy audit has been developed and the first steps have been taken for its implementation through an inventory of buildings. The activities planned to improve the efficiency of outdoor lighting are in line with the scope of the project submitted under the BRIK programme. The success of the contest results will guide the course of action to improve the efficiency of outdoor lighting.

4. On 13 March 2017, the Power Delivery Points Management System (SZPPEE) was put into operation. The system created with the help of own resources allows for:
    - automation and optimisation of the energy cost reporting process;
    - access to the documentation of individual electrical power delivery points (ppe) for all authorised persons;
    - unification of creating BATCHMAN files by linking it to the Electronic Invoice Flow (EOF) and SAP,
    - e-invoicing service for billing and consumption analysis;
    - facilitation of the process of changing suppliers based on the TPA (free-market electricity purchase) principle,
    - comparison of distribution and sales data;
    - reporting of cost and technical data concerning electrical power delivery points.

The data collected at SZPPEE also allowed for an efficient implementation of the procedure of changing the electrical power supplier in 2017. Moreover, the created system replaces most of the reports and registers in the scope of electrical power at the Company.

5. 14 sites testing new equipment before its deployment at PKP Polskie Linie Kolejowe S.A. were launched and 20 approvals for new equipment were issued;
6. a research work was carried out in cooperation with the Railway Institute defining technical aspects of the guidelines for the design and acceptance of the return traction network with operating currents of up to 3200 A;
7. an expertise of the 2C120-2C-3 traction network was carried out, developed on railway line no. 4 – the Central Railway Trunk Line, determining the top operating speed, after carrying out dynamic tests, at the level of 240 or 250 km/h.

Other important events having a significant impact on the Company's operations that occurred in 2017 or are anticipated in the following years

1. A four-year comprehensive contract for the maintenance of external lighting, installation of electrical heating of turnouts (eor), as well as electrical installations and internal lighting in the premises and external lightning protection installations;
2. Replacement of traction network for composite insulators of traction network;
3. Continuation of the programme of exchange of lighting poles and fittings (especially for fittings in LED technology);
4. Continuation of the programme for the replacement of load anchors with load-free tensioning devices for the traction network;
5. Continuation of activities aiming at the maintenance services for non-traction power equipment;
6. 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. The network of minimum cross-section of 420 mm^2, 450 mm^2

(contact wire material made of copper alloy with added silver or magnesium – CuAg or CuMg) will be developed in route tracks and main principal tracks;

7. Negotiating the new agreement concerning the rules of connecting the traction network to the distribution network of PKP Energetyka S.A., which was concluded on 2 January 2017;
8. Developing solutions protecting railway infrastructure against electric discharges and those caused by electric traction vehicles;
9. Signing an agreement on the purchase of electric power for the Company for the years 2018-2019 by 9 August 2017;
10. As part of the Energy Efficiency Improvement Programme adopted by the Company's Management Board on 9 September 2014, energy efficiency improvement measures are being implemented in all possible areas of activity, in terms of power consumption and energy costs. In 2017, a total of PLN 500,000 was earmarked for activities under the programme, implementing the following exemplary activities:
    - the thermal modernisation of buildings (3 structures);
    - purchase of energy infrastructure of external lighting (composite poles) after operation observed in connection with the SMS-PW-17 Security Management System in force;
    - reconstruction of power supply at the Suchedniów and Grzybów stations in order to reduce fixed costs;
    - reconstruction of control of eor devices at the Sitkówka Nowiny and Kostomłoty stations;
    - division of circuits into heating importance groups.
11. As at 31 December 2017, PKP Polskie Linie Kolejowe S.A. operates 13 photovoltaic installations (including 4 new ones, constructed in 2017 on the premises of Railway Lines Plants in Siedlce and Rzeszów) with a total installed capacity of 170 kW. In addition, the Company has 10 installations constructed in 2017 located on the premises of Railway Lines Plants in Lublin and Szczecin with a total capacity of 63 kW, the commissioning of which is planned for the first quarter of 2018. Gross production of electric power generated by photovoltaic installations in 2017 amounted to 84.53 MWh (compared to 32.517 MWh in 2016), and thereby increased by 52 MWh compared to 2016;
12. Continuation of works on specifying the technical parameters for the Pantograph Emergency Detection System (DSAP).

Track Machinery Plant

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

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 into up to 210 m long sections. 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 profile of the rail head is restored and then rails are welded into a 210 m long rail.
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 9001:2008 certificate.

Operation of track machines from the Track Machinery Plant in Kraków in 2017

Machine	Quantity	Unit of measure
AHM 800 R	31 750	mb
P-93 i P-95	240 159	mb
OT-800 i RM 80	154 874	mb
CSM 09	207 281	mb
ZTU 300	99 885	mb
DGS 62 N	247 770	mb
UNIMAT [j.r.]	645	j.r.
UNIMAT [m.b.]	34 760	mb
USP [m.b.]	427 193	mb

Diagnostics

Diagnostic measurements and tests are the basis for assessing the technical condition of railway infrastructure and planning maintenance and repair processes.
During these processes current technical parameters of infrastructure components are determined to analyse their compliance with prescriptive standards and established safety tolerances. Diagnostics and assessment of the technical condition of railway infrastructure are handled by:

1. diagnosticians employed at Railway Lines District Units who – using portable tools and devices

– make measurements and tests of subgrade, track superstructure, engineering structures, railway buildings and structures as well as power and railway traffic control command and signalling equipment and networks;

2. Diagnostics Centre in Warszawa – a specialist unit carrying out measurements and diagnostic tests using specialised equipment on bogies, rail vehicles and rail-road vehicles.

In 2017, 259 employees of 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		46 991	km of tracks
2.	Inspection of internal rail structure in a track using a track defect detection wagon		13 520	km of tracks
3.	Inspection of internal rail structure in a track using a track defect detection bogie		42 045	km of tracks
4.	Defect detection test on railway track elements	Welds	1 781	items
		Padding welds	130	items
		Turnouts crossings	1 804	items
	Specialist test on railway track elements	Longitudinal rail profile	171 727	items
		Transverse rail profile	1 388	metres
		Running surface coarseness	1 932	items
		Rigidity of rails and crossings	150	items
		Measurement of straightness of rail connectors	1 187	
		Eddy current testing of rails	22 503	
5.	Control of operation of axle welding sensors using defect detection wagon (DSAT) which simulates an axle-box breakdown		141	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		149	structures
7.	Lab tests of rail welding joints		31	reports
8.	Field tests of rail welding joints		8	reports
9.	Tests of rail welded joints on open testing sites for welded joints (2 tests per year)		18	reports
10.	Training and courses in rail welding and welding supervision		83	people
			9	courses
11.	Periodic and certification exams in rail welding		194	people
12.	Instruction and issuing of competence certificates, identification cards for welding supervision		162	items
13.	Gauge measure calibration		1079	items
14.	Technical acceptance of railway track elements	Turnouts	818	sets
		Various components for turnout production	666	items
15.	Technical acceptance of railway track elements in the field (e.g. with a digital rod)	Thermite welds and welds	1187	items
16.	Relay maintenance	Own units	46 586	items
		External units	35 746	items

The Diagnostics Centre in Warszawa ensures railway traffic safety of the network managed by PKP Polskie Linie Kolejowe S.A. by making measurements and analysing the technical condition of railway infrastructure in six areas:

1. diagnostic measurements of track superstructure (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 superstructure (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 signalling and train control systems.

Gaining information about railway infrastructure parameters is the basic activity of the Diagnostics Centre; its tasks are planned on an annual basis in compliance with obligatory regulations and demand from the Company's maintenance units. In 2017, numerous undertakings and initiatives related to the development of the Diagnostics Centre were continued to be implemented, taking into consideration the pursuit of technological progress in the field of railway infrastructure diagnostics in order to ensure technical safety for passenger and freight transport. These undertakings and initiatives included, among others:

1. the consultation and supervision of a contract with the Polish-Italian consortium for the construction, delivery and implementation of a multi-function, self-propelling rail measuring vehicle for measuring the geometry of tracks, rails, traction network, as well as inspecting railway superstructure and track-side devices; carrying out technical acceptances of the vehicle and measuring systems. It is planned to continue to accept and commence its operation in 2018; obtained results will expand the scope of currently performed diagnostic tests performed on infrastructure by measurements from the energy and railway automatic control industry;
2. the supervision of the agreement for the construction, delivery and implementation of a self-propelling diagnostic vehicle for rail defect detection. It is planned to accept the vehicle and commence its operation in the middle of 2018. Upon completion of the project, the vehicle with a defect detection system will significantly increase the effectiveness and efficiency of diagnostics of used rails in tracks and turnouts;
3. the Diagnostics Centre, as every year, was a promoter of modern methods and technologies by organising a number of presentations of measurement equipment addressed to the representatives of Railway Lines District Units and maintenance companies;
4. modern measuring and testing equipment was bought:
   - 2 portable eddy current devices for testing contact and fatigue defects, detecting dangerous defects arising as a result of rolling surface material fatigue (mainly HCH) at the point of wheel-rail cooperation;
   - the perthometer for measurement of waviness of rails – longitudinal profile of rails, to carry out control tests and acceptances as well as widely planned and cyclic rail grinding works on lines managed by PKP Polskie Linie Kolejowe S.A;
   - professional spectrometer for determining the chemical composition of steel and identifying metal alloys. The results of chemical composition tests obtained in this way are used both as a supplement to many years of lab tests of rail welded joints of rails regenerated using arc welding methods as well as in other situations requiring an opinion of the Diagnostic Centre in Warsaw (also in the field – the device is portable and has its own power supply);
   - device for measuring the thickness of the removed layer of steel material. This device is used for measuring (verifying) the thickness of metal removed from the course of railway rails by means of mechanical processing (grinding, milling or planing). The difference between the two values determines the thickness of the removed rail steel material. Moreover, the rail breaker was modernised to perform static strength tests.

Due to the necessity to perform the planned diagnostic tasks as well as to achieve effective supervision over the maintenance of a very high level of work carried out in the railway infrastructure, among others by external contractors selected through tender and other procedures, the Diagnostic Centre is continuously being equipped with modern and specialised testing and measuring equipment.

Consistent activities in the form of continuous monitoring, inspection and commissioning of works in railway infrastructure and the continuous diagnosis of its condition, increase the quality of the works performed, raise the level of safety and increase the comfort of the passengers of railway journeys.

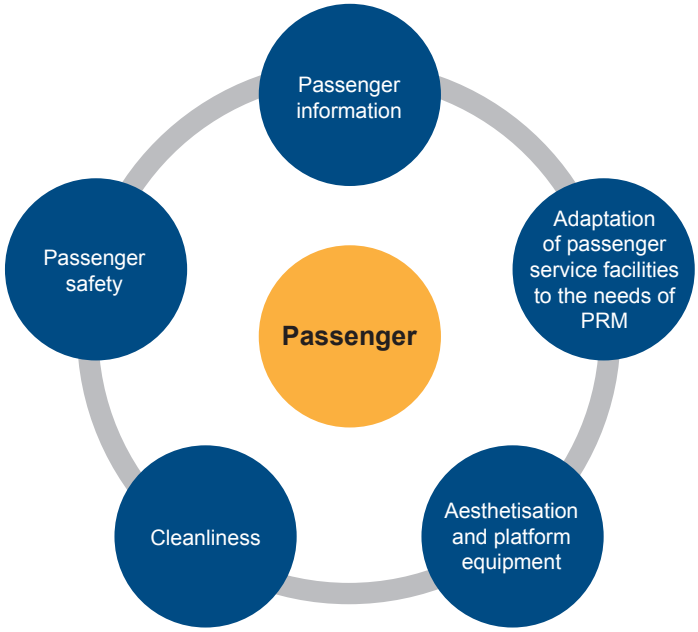
For the management and staff of the Diagnostic Centre the year 2018 will also be very intensive as regards acquisition and implementation of new technologies, equipment, vehicles and measuring systems, completion and training of staff, measuring teams and operators of diagnostic equipment.

Passenger Service Facilities

PKP Polskie Linie Kolejowe S.A., having regard to the need to ensure appropriate access to information by passengers, safe and comfortable conditions in which passengers may wait for the train to arrive as well as safe and comfortable travel conditions, undertakes a number of initiatives to ensure a high standard of passenger service facilities, understood as the platform area and platform access routes at stations and passenger stops that are open for passenger traffic.
These initiatives are undertaken mainly in the following areas:

1. passenger information;
2. platforms and platform access route equipment and improvement of the aesthetics of infrastructure with which passengers come into contact on a daily basis;
3. adaptation of passenger service facilities to meet the needs of disabled persons and persons with reduced mobility, (Persons With Reduced Mobility – PRM);
4. maintenance of order and cleanliness at stations and passenger stops;
5. ensuring the safety of passengers present at stations and passenger stops managed by the Company.

Tasks implemented in relation to passenger service facilities

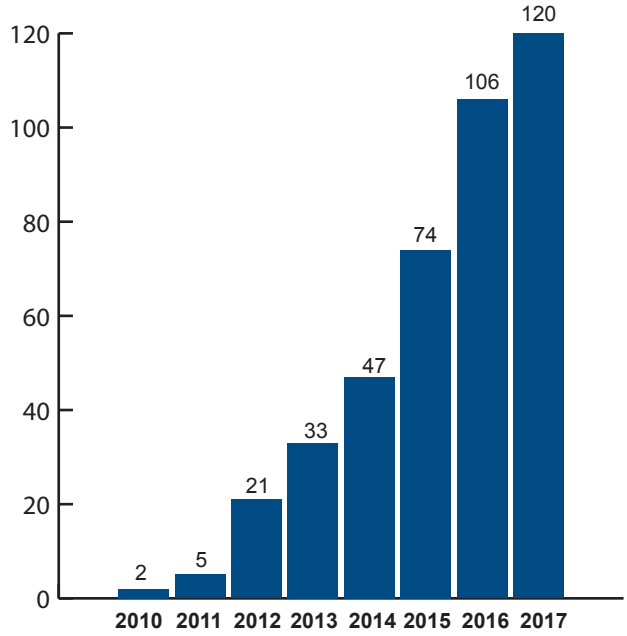


Passenger information

In 2017, the obligation imposed on passenger station operators to prepare and make available the “Regulations on the use of passenger stops by travellers”, in the form of announcements on information boards, resulting from Art. 36 of the Act on Railway Transport of 28 March 2003, was fulfilled. The Regulations were developed in cooperation with the largest railway station operator, i.e. PKP S.A. and other interested parties. The content of the “Regulations on the use of stations and passenger stops by travellers” was prepared using the provisions of the “Regulations of the PKP S.A. railway station” and supplemented with the provisions required by law, i.e. among others, elements of railway infrastructure accessible and inaccessible to passengers at the passenger stop, information on accessibility and assistance provided to disabled persons and persons with reduced mobility (PRM) as well as information on visual monitoring have been specified. The Regulations have been displayed at all stations and passenger stops.
The process of improving standards concerning the publication of train timetables has been continued, so as to develop a uniform method for presenting information on the timetable at all stations and passenger stops and ensure proper access to this information.
More than 600 information boards have been purchased and installed at approx. 530 locations, in order to ensure the best possible availability of information.
In 2017, the instruction “Guidelines for fixed markings of stations and passenger stops Ipi-2” was introduced by resolution no. 100/2017 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 7 February 2017. The guidelines provide a handbook for the design and arrangement of static information boards for passengers at stations and passenger stations, within platforms and their access routes. By means of the Resolution No. 1284/2017 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 27 December 2017, a new version of the above-mentioned guidelines was introduced, in which selected provisions were updated/amended.
PKP Polskie Linie Kolejowe S.A. implements the process of standardising static information for passengers to the standards adopted by the Company, consisting in the successive replacement of fixed markings: signs with passenger stop names, platform and track numbers,

directional signs, pictograms. In 2017, the new markings have been installed in more than 600 locations.
The voice announcement service (megaphone announcements) is provided at more than 1,330 locations with 2,491 structures handling passenger traffic. In more than 300 locations, megaphone announcements are made using automatic systems, whereas in the remaining locations with a broadcast system – directly by the train dispatcher or operator.
More than 160 locations, apart from broadcast systems, is additionally equipped with systems for presenting visual information on train traffic, in more than 120 of which these are newer generation systems – dynamic visual information systems. As part of the ongoing modernisation of railway lines operated by the Company, it is planned to install another systems in 2018.

Number of stations and passenger stops equipped with newer generation Dynamic Passenger Information Systems (SDIP)



Having regard to the obligation to ensure a uniform high standard for the presentation of information and, in consequence, raise the quality of passenger service, the Company developed and is currently testing a central application controlling dynamic passenger information (CASDIP) which will allow to manage all planned dynamic passenger information systems.
One of the key components of CASDIP is the central voice announcement server which makes it possible to provide pre-made, high-quality announcements in four languages to all megaphone-based broadcast system through speech synthesis.
At the turn of 2016 and 2017, dynamic passenger information systems controlled by CASDIP application were implemented at Jelenia Góra and Zielona Góra stations and their functionalities were intensively tested in 2017 in order to eliminate possible irregularities and optimise their operation.
In 2017, the Company carried out an investment consisting in connecting selected, already functioning passenger information systems to the Web Portal for Passengers (PDP), which enables current updating of timetable data in these systems, improves their operation and the quality of data entered into passenger information systems. This was the next stage of improving the functioning of passenger information systems belonging to PKP Polskie Linie Kolejowe S.A. and further stages are planned. This improvement to the systems carried out in 2017 covered 196 locations where the passenger information service is provided. In total, more than 250 locations, including earlier stages, have already been improved.
Moreover, the installation of visual dynamic passenger information systems in areas where previously only voice announcements were made will significantly facilitate travel:

1. for hearing-impaired passengers;
2. foreigners for whom it is practically impossible to understand even a small part of the voice announcement made in Polish;
3. other passengers, due to the “transient” nature of voice announcements.

Visual monitoring

In recent years, public transport has become exposed to various threats, such as: terrorism, theft and vandalism. The railway services sector faces a problem consisting in the need to ensure the safety of passengers, employees, goods, infrastructure and assets against possible threats. Facing this problem is a serious challenge due to the variety of areas subject to monitoring: platforms, underground passages and railway station buildings.
The Company carries out activities aimed to ensure the safety of passengers at stations and passenger stops through visual monitoring systems and responding to alerts made by passengers by ensuring communication between passengers and services responsible for maintaining order and cleanliness and providing support.
At present, 265 locations are equipped with the visual monitoring system, of which 233 are equipped with a visual monitoring systems owned by PKP Polskie Linie Kolejowe S.A. (which include: 3,765 cameras, 181 video recorders). The number of locations equipped with visual monitoring system owned by the Company has increased by 31% compared to the previous year.

Names of passenger stops

In 2017, 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 20 new passenger stations, i.e: Warszawa Koło, Warszawa Powązki, Gorzów Wielkopolski Wschodni, Subkowy Centrum, Rzeszów Zachodni, Markuszowa, Jelenia Góra Zabobrze, Jelenia Góra Przemysłowa, Ostrów koło Radymna, Huta Komorowska, Majdan Królewski Podlasek, Kraków Podgórze, Radziszów Centrum, Grabniak, Poznań Podolany, Złotniki Grzybowe, Złotkowo, Bogdanowo, Nysa Wschodnia, Goszczowice.

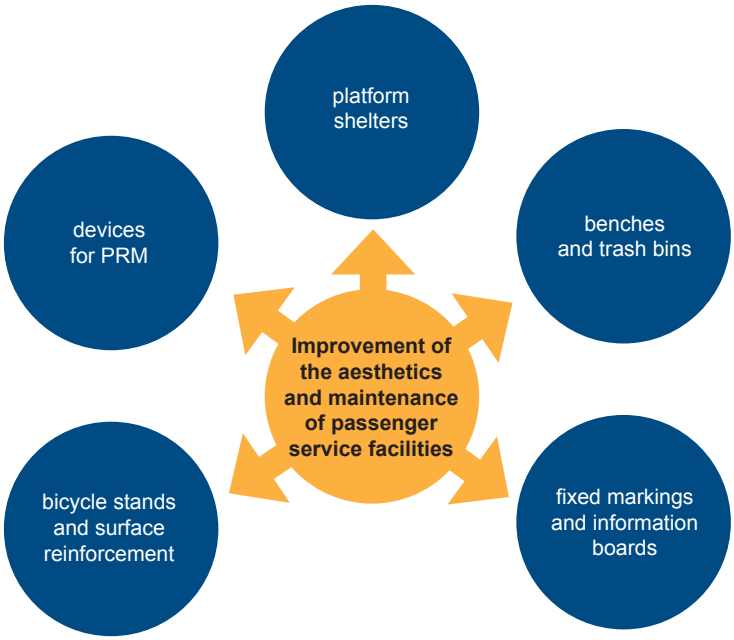
In addition, names of 11 passenger stations have been changed:

- Sucha Beskidzka Zamek (formerly Sucha Beskidzka Rynek);
- Warszawa Wola (formerly Warszawa Kasprzaka);
- Warszawa Młynów (formerly Warszawa Koło);
- Kielce Słowik (formerly Słowik Przystanek);
- Kielce Ślichowice (formerly Kielce Czarnów);
- Opole Borki (formerly Borki Opolskie);
- Opole Czarnowąsy (formerly Czarnowąsy);
- Opole Chmielowice (formerly Chmielowice);
- Nowa Ruda Zdrojowisko (formerly Zdrojowisko);
- Twardogóra (formerly Twardogóra Sycowska);
- Kraków Podgórze (formerly Kraków Krzemionki).

In 2017, the procedure concerning the names of passenger stops was updated by introducing “Guidelines for the names of passenger stops Ipi-5” adopted by resolution no. 750/2017 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 12 July 2017. The guidelines are a handbook of rules on giving names to and renaming of passenger stops.

Equipment and maintenance of platforms and platform access routes

Tasks implemented as part of improving the aesthetics and maintenance of passenger service facilities



In 2017, the instruction "Architectural guidelines for railway passenger service facilities Ipi-1" was introduced by resolution no. 41/2017 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 18 January 2018. The guidelines constitute a handbook of design principles and indicate the most important architectural and construction aspects for passenger service facilities. By means of the Resolution No. 1283/2017 of the Management Board of PKP Polskie Linie Kolejowe S.A. of 27 December 2017, a new version of the above-mentioned guidelines was introduced, in which selected provisions were updated/ amended, and new recommendations concerning the elements of passenger service facility were added.

PKP Polskie Linie Kolejowe S.A. has implemented standards in the area of planning, designing and constructing railway infrastructure used to manage passenger traffic by ensuring:

1. high functional and utility standards, including availability to persons with reduced mobility (PRM);
2. efficient maintenance and repair of components comprising passenger service facilities;
3. aesthetic structures comprising passenger service facilities;
4. respect for the surrounding area, in particular cultural heritage sites;
5. high quality and durability of components comprising passenger service facilities;
6. respect for the natural environment;
7. solutions of a standardised and foreseeable nature, having regard to persons using rail transport.

Actions undertaken by the Company are aimed to ensure that passenger service facilities are characterised by high aesthetic, technical and functional standards.

In 2017, 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. 200 platform shelters have been purchased and installed in over 140 locations;
2. approx. 100 platform shelters have been restored or renovated in over 70 locations;
3. approx. 700 trash bins have been purchased and installed in over 300 locations;
4. approx. 800 platform benches have been purchased and installed in over 400 locations;
5. approx. 600 bicycle stands have been purchased and installed in over 150 locations.

Adaptation of passenger service facilities to meet 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 2017, an agreement was signed between PKP S.A. and PKP Polskie Linie Kolejowe S.A., constituting a continuation of the cooperation between the above-mentioned Companies in the scope of settling the costs of providing assistance to disabled persons and persons with reduced mobility at railway stations and within station areas by employees of personal and property physical security employed by PKP S.A. Under this agreement, assistance is provided to persons with reduced mobility at 61 passenger stations.
As part of the modernisation of railway lines and investment projects carried out by Railway Lines Plants in 2017, over 70 platforms were reconstructed, taking into consideration their adaptation to the needs of people with reduced mobility.
Last year, i.e. 43 elevators, 10 platform lifts situated near stairs, 9 escalators and over 100 platforms with ramps leading to the platforms have been installed. In addition, the elements of the surface marking system have been constructed on more than 200 platforms.
A summary list of activities undertaken to adapt passenger stations managed by the Company to the needs of disabled persons and persons with reduced mobility is as follows:

- 1,084 platforms were modernised;
- elevators were installed on 174 platforms;
- vertical platforms were installed on 61 platforms;
- platforms situated near stairs were installed on 113 platforms;
- 37 escalators are leading to 17 platforms;
- 8 moving belts are leading to 4 platforms,
- more than 500 platforms are equipped with tactile warning strips;
- more than 700 passenger stations are equipped with ramps leading to platforms;
- more than 60 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 attractiveness of railway infrastructure.

Maintenance of order and cleanliness at stations and passenger stops

In 2017, the implementation of the common project with PKP S.A. concerning cleanliness at the stations and stops was continued. This initiative resulted in commissioning the service in areas managed by both Companies to a single contractor, setting out a quality standard and standardisation of procedures applicable for this area in both Companies. It resulted in a significant increase in the cleanliness of the passenger service facilities, which was the justification for the decision to continue the project in the 2018-2020 perspective.

In the entire area covered by the project of mutual maintenance of order and cleanliness the "Book of Standards for Maintaining Railway Stations and Stops Managed by PKP in Clean Order" is in force. The Book describes in detail the required standard of cleanliness for each element of passenger service facilities. It stipulates that the service must be performed in accordance with the SLA (Service Level Agreement) method, i.e. the agreed quality of services being provided must be maintained on a continuous basis and systematically improved.

The performance of the service consisting in maintaining cleanliness includes, among others:

1. mechanical and manual washing of passenger service facilities;
2. sweeping and vacuuming flat surfaces and stairs, including handrails and guardrails;
3. washing benches and tables;
4. maintaining walls and information boards in clean order;
5. washing all windows and glazings;
6. removing graffiti, stickers, gums, trash, stains, waste, sand and dust;
7. keeping drainage grates unobstructed;
8. emptying trash bins;
9. maintaining tracks and intertrack space in clean order;
10. removing excrement;
11. clearing of snow and removing slippery surfaces from platforms and access routes;
12. removing snow overhangs and icicles;
13. maintaining green areas, including mowing lawns.

In the process of controlling the quality of provided services, an audit structure comprised of approx. 100 auditors of PKP Polskie Linie Kolejowe S.A. is used on the premises of 23 Railway Lines Plants. In the audit process, mobile devices with dedicated applications are used that enables ongoing, i.e. on the ground, control of cleanliness together with its evaluation and immediate provision of information to the contractor. This makes it possible to respond quickly to the identified deficiencies. In 2017, all auditors and coordinators of agreements were included in a programme of replacing tablets used for carrying out audits of cleanliness maintenance service with new more efficient equipment.

In 2017, preparations for the winter period were coordinated and supervised, including for the use of special measures to de-ice and clear snow from platforms. There was also the intensification of quality control measure with regard to the service being provided in periods of higher passenger traffic flow, especially during the winter holiday break and holidays.

Commercial development of passenger infrastructure

The year 2017 saw the continuation of works related to the development of commercial and service space at the passenger railway stations in accordance with the document entitled "Guidelines on the coordination of passenger service facilities managed by PKP Polskie Linie Kolejowe S.A.".

Audit of cleanliness and condition of passenger service facilities

In 2017, a team of field auditors conducted 4,650 audits at 2,635 passenger stations within own resources of PKP Polskie Linie Kolejowe S.A. in order to improve the condition of service facilities and increase the quality of services provided to passengers. The audits consisted in assessing the areas of passenger service facilities, including in particular:

- maintenance of elements of passenger station equipment, including devices enabling access for persons with reduced mobility;
- maintenance of order and cleanliness at stations and passenger stops;
- the quality of static and dynamic information;
- compliance of elements of passenger service facilities with guidelines in force at the Company.

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.

Safety

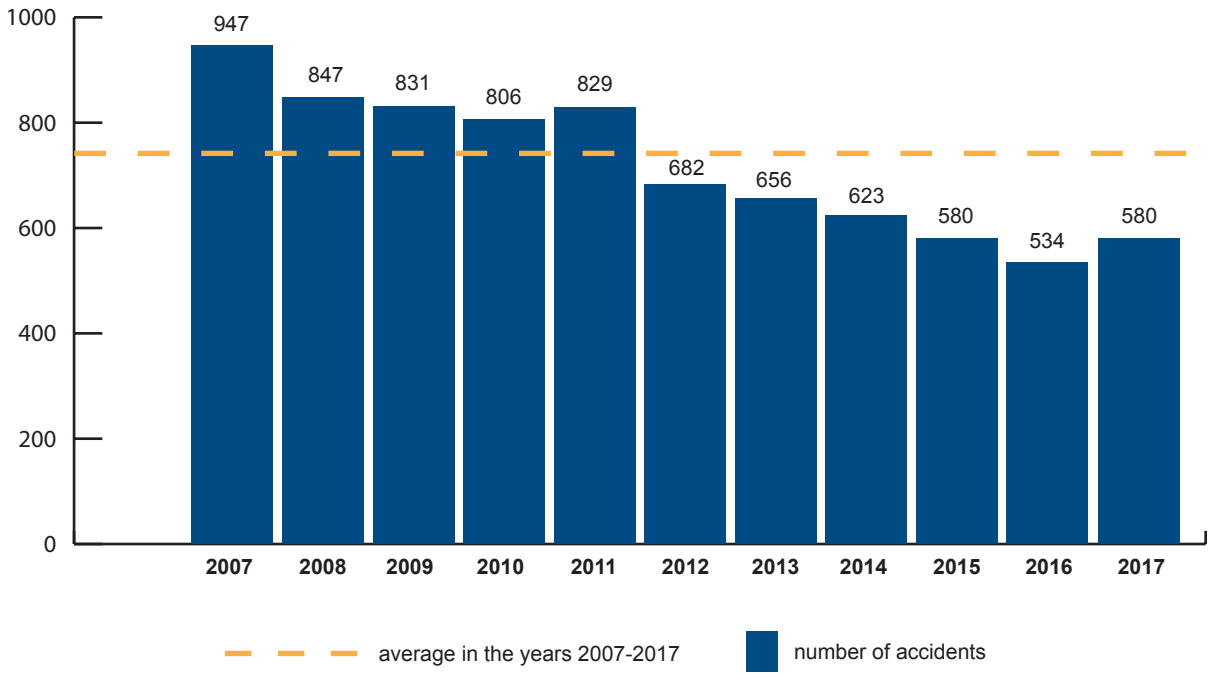
Statistics of railway events

(As at 14 May 2018)

Railway events by category

535 accidents (excluding suicides) occurred on the railway line network managed by PKP Polskie Linie Kolejowe S.A. between 1 January to 31 December 2017. In comparison to 2016, the number of events increased by 46.

Comparison between the numbers of events that took place on the railway lines managed by PKP Polskie Linie Kolejowe S.A. in 2007-2017

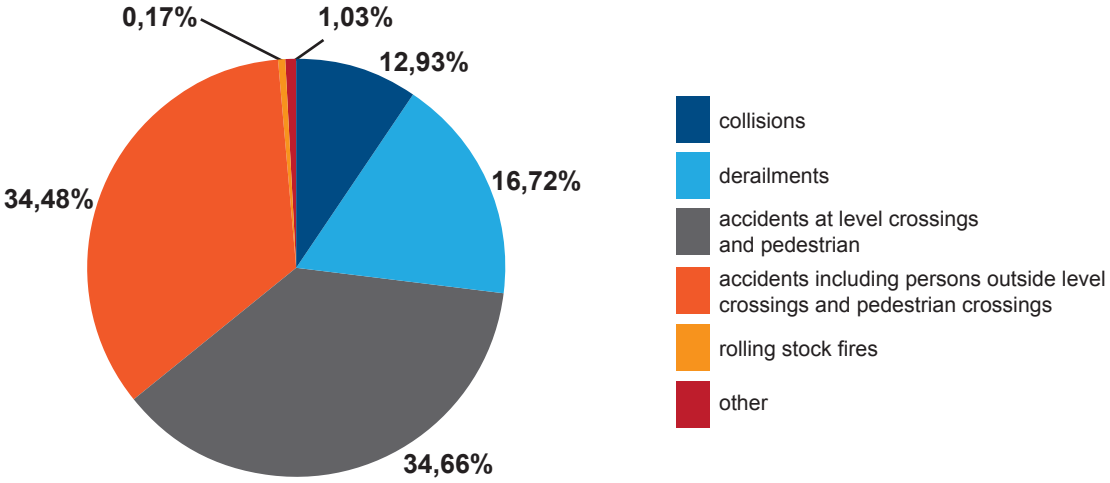


Accidents and serious accidents by type

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 2017, by type:

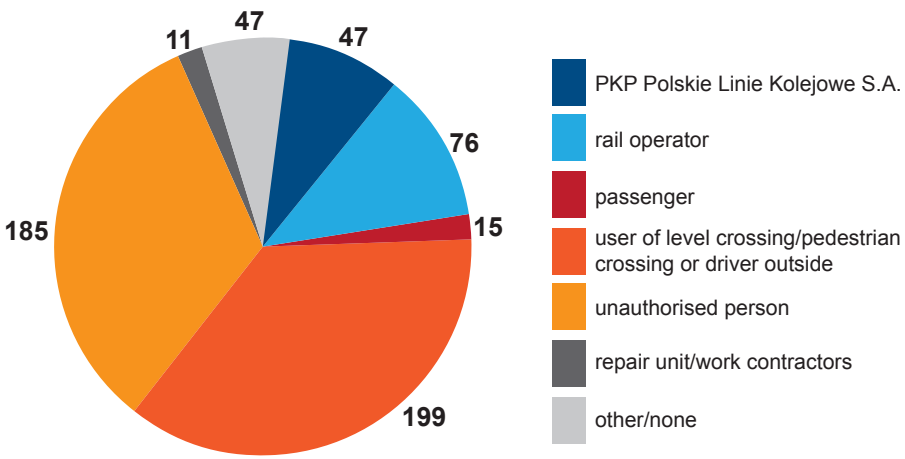


The diagram above shows that the most numerous group of accidents that took place on the network managed by PKP Polskie Linie Kolejowe S.A. were the accidents that involved persons outside level crossings and pedestrian crossings (persons who were on railway premises and were hit by trains, or who attempted to jump on/off trains) as well as accidents on level crossings and pedestrian crossings. Collisions and derailments accounted for less than 30% of all accidents in 2017. 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 2017 was 253, with 167 fatalities and 86 severely injured.
In comparison to 2016, the number of fatalities increased by 1 while the number of severely injured dropped by 3.
The largest group of fatalities that resulted from accidents that occurred in 2017 comprised persons with no authorisation to be present on railway premises (123 fatalities – more by 9 than in 2016) as well as users of level crossings and pedestrian crossings (42 fatalities – fewer by 6 than in 2016). As regards persons that were severely injured in railway accidents, the largest group (36 people – fewer by 8 than in 2016) 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 (25 people – fewer by 12 than in 2016).
The accidents that caused fatalities in the group of passengers (1) were caused by jumping on/off the train (with doors automatically locked).

Entities responsible for accidents 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 pedestrians outside level crossings and pedestrian crossings in the general statistical results related to accidents.

In 2017, 47 accidents were attributable to PKP Polskie Linie Kolejowe S.A. (fewer by 12, i.e. 20% than in 2016), including: 10 collisions, 35 derailments and 2 accidents on level crossings. The most frequent cause of events attributable to the Company was damaged track superstructure or its inadequate condition as well as poor condition of engineering structures.

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 or service difficulties 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. 534 turnouts on the network managed by the Company have been modernised in 2017.

In addition, tender procedures for a separate investment project were carried out in 2017 to exchange railway turnouts at the selected locations, which is a continuation of the project implemented in previous years. The project “Improvement of safety through the development of new railway turnouts with a higher design standard – stage II” was included in the National Railway Programme (KPK) until 2023 under item no. 1.147. The task is to replace 245 turnouts with accompanying works in the total amount of approx. PLN 208 mln.

In addition, one of the tasks to be implemented under the Company’s Investment Action Plan in 2017 related to the improvement of safety and operational parameters of trains was to provide turnouts at selected stations with universal switch locks for emergency closing of needles and moving beaks of crossings. The planned amount of PLN 5 mln enabled the purchase of over 3,000 locks – the contractor also provided over 90 special units to lock keys.

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 2017, the investment activities covered a total of 182 journeys, where in various locations the scope of modernisation covered: automatic crossing signalling devices, installation of CCTV equipment and/or replacement of driving superstructure. In addition, 39 grade-separated junctions were built or modernised.

In 2017, preparatory works were also carried out for a separate investment project involving level crossings and track passages in selected locations, which is a continuation of the projects carried out in previous years. The project entitled “Improvement of safety at crossroads with railway roads” was included in the KPK under item no. 1.066. In the detailed implementation plan, the project was divided into two stages: stage I – the crossing part, including works on selected 182 railway and road crossings for the total amount of approx. PLN 256.7 mln, and stage II – the viaduct part includes the construction of 5 grade-separated junctions for a total amount of approx. PLN 195 mln.

In the second half of 2017, contracts were awarded and agreements were signed (in October 2017) with the contractors of stage I (the so-called “crossing part”) in the Design and Build formula. Stage II of the project (the

so-called “viaduct part”) will be implemented in 2018 in the form of a separate design, and then the execution of construction works.

Current and planned investments on the railway network managed by PKP Polskie Linie Kolejowe S.A. include the installation of additional defect detectors (dSAT) which detect malfunctions of gear elements and malfunctions of loading while driving. The dSAT devices (and the procedures for dealing with an emergency situation in a rail vehicle) reduce the risk of derailment and significant damage to rolling stock and infrastructure as well as preventing excessive degradation of the superstructure. In 2017, the Company provided 9 new locations with new devices, and as a result, there were 213 pieces of them at the end of the year. In addition, the used older generation equipment, existing in 8 locations, was replaced.

Increasing safety during investment implementation and other track work

The implementation of investments 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, also changes in train timetables. Under some disadvantageous conditions this may be an additional risk factor. In 2017, there was a total of 53,689 track closures on the network of PKP Polskie Linie Kolejowe S.A. (22% more than in 2016), including 3,645 closures that lasted the whole day (31% more than in 2016).

The performance of investment work and other track works in the vicinity of active tracks on which train traffic is operated requires the application of appropriate risk control measures. In the recent years, the Company took 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 2017 in this area included, among others:

1. increasing personnel at operating control points during the implementation of investments on the station/route (a total of 38,580 hours); including the following positions: supporting train dispatchers, signallers, points operators and crossing keepers;
2. performing thematic audits of the Safety Management System (SMS) concerning railway traffic safety during the performance of investment works (9 audits have been carried out in 2017 and it will be continued in 2018);
3. inspections concerning railway traffic safety management in locations where investment works are performed – in 2017 inspectors (on behalf of the Company’s organisational units) have carried out a total of 39 inspections in terms of organisation, including 31 inspections in terms of organisation and completion of closures that lasted the whole day, taking into account: means of securing and signalisation of the places of investment works, maintaining railway traffic safety during the investment works and correctness of the development and application of temporary regulations for railway traffic and 8 inspections in terms of correctness of the preparation and application of temporary regulations for railway traffic;
4. 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.” Ibh-105.

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 2017 continued, the activity consisting in the installation of track occupancy control systems at the railway stations which haven't yet been equipped with such devices.
As part of the preparation of the project, a list of stations without track occupancy control systems was created, which includes the names of the stations and the number of tracks required for the development of such systems.
The year 2017 saw the continuation of works on the installation of track occupancy control systems – they were installed on 88 tracks of 37 stations – within the area managed by the Company.

In 2017, the activities related to the installation of track occupancy control systems were continued under the project entitled "Reconstruction of traffic control devices in order to improve safety at selected points of the railway network" by Railway Lines Plants in: Bydgoszcz, Częstochowa, Gdynia, Olsztyn, Skarżysko-Kamienna, Szczecin and Zielona Góra. The tack occupancy control systems have been installed on 10 stations (branch points).
Moreover, own tasks of Railway Lines Plants in this area and activities within the project entitled "Improving safety and eliminating operational risks on the railway network" were also carried out.

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

The new investment activity undertaken in 2017 in the framework of the improvement of the SMS System was the equipment of semaphores at the selected operating control points with the W 24 indicators "Reverse direction indicator" using non-incandescent light sources (LED). This measure is a continuation of a project implemented in 2016. 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 2017, 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 amount of PLN 5 mln estimated in the investment plan provided for the purchase, delivery and assembly of 1,111 indicators, which replaced the existing indicators based on incandescent light sources (signal bulbs).
The project aims to improve railway traffic safety by improving the visibility of indicators which are an important element of signalling and train control systems (CCS) and reducing the risk of incorrect reading of messages of semaphores with the W 24 indicator chamber.

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 promote safety-oriented attitudes among its employees, contractors and other people related to the railway system. It should be borne in mind that the formation of the required safety-oriented attitude is a challenging and long-term process. For this reason, the Company is involved in activities performed on a continuous basis by implementing, among others, the following initiatives in 2017:

1. participation in the competition entitled "Safety culture in the rail transport" organised by the Office of Rail Transport (UTK);
2. participation of the Company's employees in "Twinning" – a project of international exchanges of experts in the field of European railway safety;
3. development of the so-called psychological profile of the train dispatcher in cooperation with an external contractor;
4. discussing safety and safety circles;
5. organising the fourth edition of the knowledge contest "Safety First";
6. organising a cycle of trainings on a CCS and communications equipment simulator;
7. developing information bulletins concerning railway events that have occurred and distributing them to employees responsible for railway traffic safety;
8. implementation of internal security alerts;
9. providing all employees of PKP Polskie Linie Kolejowe S.A. with information concerning safety on the railway network under management on a semi-annual and annual basis;
10. on-the-job trainings (monthly training of 5 hours) in the organisational unit for railway traffic safety at the Company in the area of SMS system and safety culture;
11. running XIII edition of Safe crossing – "Risk Barrier!" social campaign.

As a signatory of the Declaration on the development of safety culture in rail transport (signed in 2016 and prepared by the Office of Rail Transport), PKP Polskie Linie Kolejowe S.A. participated in the competition entitled "Safety culture in rail transport" organised by the Office of Rail Transport (UTK). Activities undertaken in the area of safety culture gained recognition of the jury of the competition composed of, among others, the representatives of the Office of Rail Transport – the Company was awarded for the implementation of the Crossing Keeper Support System (SWDP), thanks to which the employees of crossing watchtowers were given access to current information on the timetable and the current traffic situation at their posts.

Monitoring the Safety Management System

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 (FMoU);
    - the implementation of post-inspection conclusions from inspections carried out by the Office of Rail Transport 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 organisation of training courses and periodic 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 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 consideration all internal regulations concerning the performance of controls at the Company, including decisions of Heads of Railway Lines District Units applicable to controls;
6. SMS inspections.

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

A total of 562 change significance assessments have been conducted in 2017, with 10 changes deemed to be significant – within the meaning of Commission Regulation (EC) No 402/2013 of 30 April 2013.
In addition, 307 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 2017 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 2017, laid down in Resolution No 1099/2016 of the Management Board of the Company of 8 November 2016.
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 were tasked with submitting quarterly reports from the implementation of the Programme in 2017. 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 2017 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 2017, 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 (...)". The total number of measures included in the schedule that were undertaken in 2017 was 88, including 24 technical measures, 44 organisational and operational measures, and 20 employee-related measures.

Railway technical emergency response service and fire protection

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 and fire prevention solutions. PKP Polskie Linie Kolejowe S.A. has a total of 20 technical emergency response units, including 10 Special Technical Emergency Response Trains available 24/7 as well as 10 Technical Emergency Response Trains deployed whenever necessary. These trains are equipped with:

1. EDK 750, EDK 1000 and EDK 2000 train cranes;
2. WZT-2 and WZT-1 multi-purpose crawler tractors on platforms;
3. road-rail vehicles;
4. self-propelled technical emergency response vehicles WM-15A/PRT;
5. hydraulic devices capable of re-railing heavy railway vehicles.

In 2017, the operational capacity of railway technical emergency response units has been increased through retrofitting the Special Technical Emergency Response Train in Poznań with a WM-15A/PRT self-propelled technical emergency response vehicle. In addition, state-of-the-art rail and road UniRoller vehicles were purchased for 10 technical emergency response units in order to replace run down rolling stock. These vehicles can be driven on roads at the speed of up to 90 km/h and on tracks at the speed of up to 50 km/h; where the changeover time from the road system to the train system or vice versa is only 2 to 4 minutes, and the payload of the vehicle (3,100 kg) makes it possible to carry more equipment than in existing vehicles. The operational capacity of railway technical emergency response units has also been enhanced by retrofitting them with 26 knapsack gas cutting devices and 20 electro-hydraulic shears.

The specialist equipment combined with highly competent technical staff guarantees an efficient restoration of proper traffic flow on railway lines and ensures safety by providing protection against the consequences of malfunctions, technological and environmental disasters.
Railway technical emergency response units are the only rescue units in the country with adequate human and technical capabilities to deal with incidents occurring on railway lines.

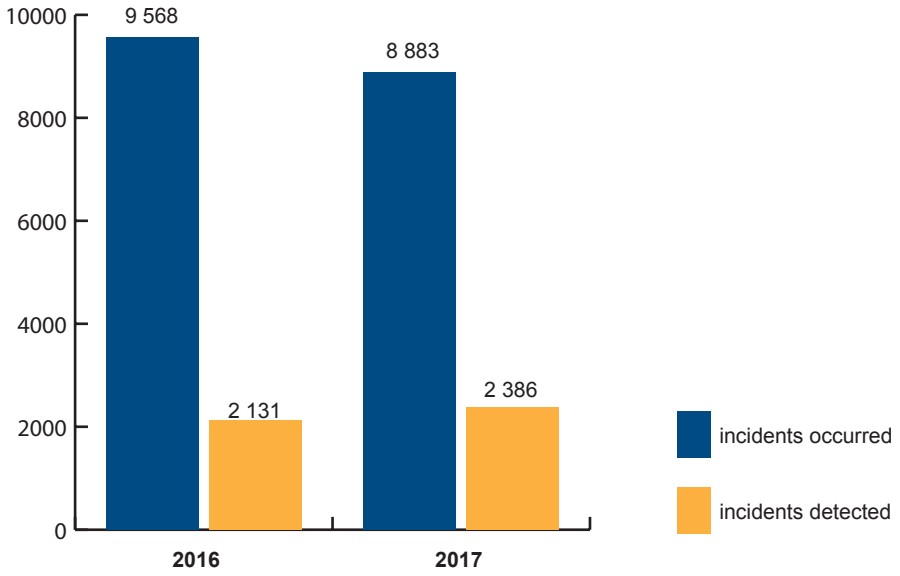
The above-mentioned inspections covered the state of documentation, technical condition of equipment, alerting the staff and education.
In 2017, railway technical emergency response units participated in the removal of the effects of 143 incidents that occurred on railway lines managed by PKP Polskie Linie Kolejowe S.A.
Apart from its primary activity, while maintaining full readiness to undertake emergency response measures,

railway technical emergency response teams provided services consisting in re-railing and hauling all types of rail vehicles on 137 occasions in 2017. In addition, they participated in a number of operational exercises on railway premises that involved the participation of rescue and fire-fighting units of the National Fire Service and other emergency response entities.

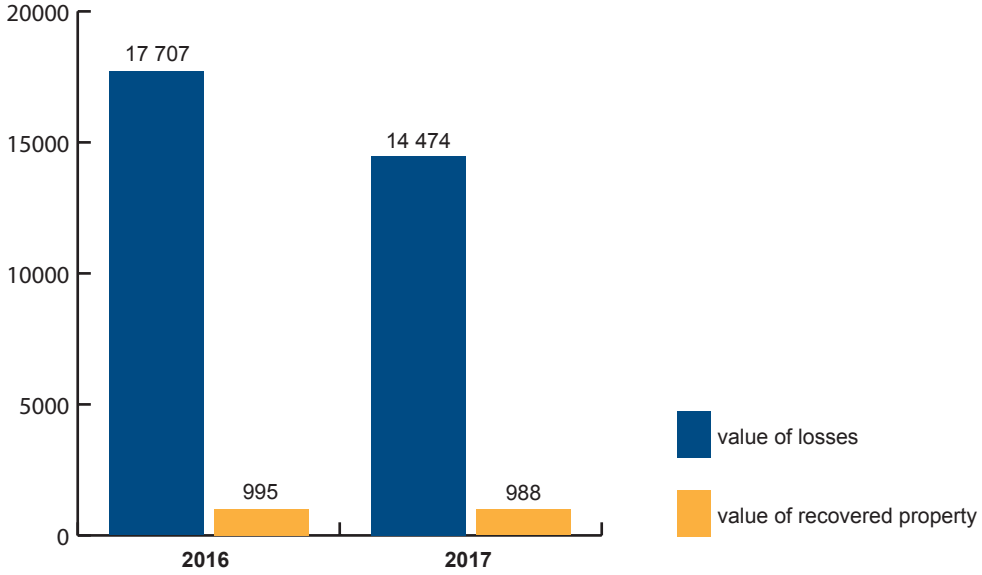
Railway Security Guard

Approximately 7.16% less dangerous events were noted by the Railway Security Guard (SOK) in 2017 in comparison with 2016. Effective preventive measures of officers are supported by the modern equipment and well-trained trained staff. Mobile monitoring centres operate in the field – vehicles equipped with cameras, portable and thermal, installed on masts.

Events recorded by the Railway Security Guard in the years 2016-2017



Losses resulting from the offences committed in the railway area in thousand Polish zlotys



Since 2015, the equipment of SOK officers has included camera traps, i.e. devices notifying officers when an unauthorised person appear in the protected area. As part of the activities undertaken, SOK also uses specially trained dogs and company cars that work in difficult field conditions.

Since 2016, the better efficiency of the Railway Security Guard during night activities is guaranteed by the use of night vision equipment and thermographic cameras.
Since 2017, the Railway Security Guard officers have been equipped with new uniforms, the quality of which is adjusted to the requirements of being on duty an is the feature of the Railway Security Guard and builds a positive image of the formation in the society.

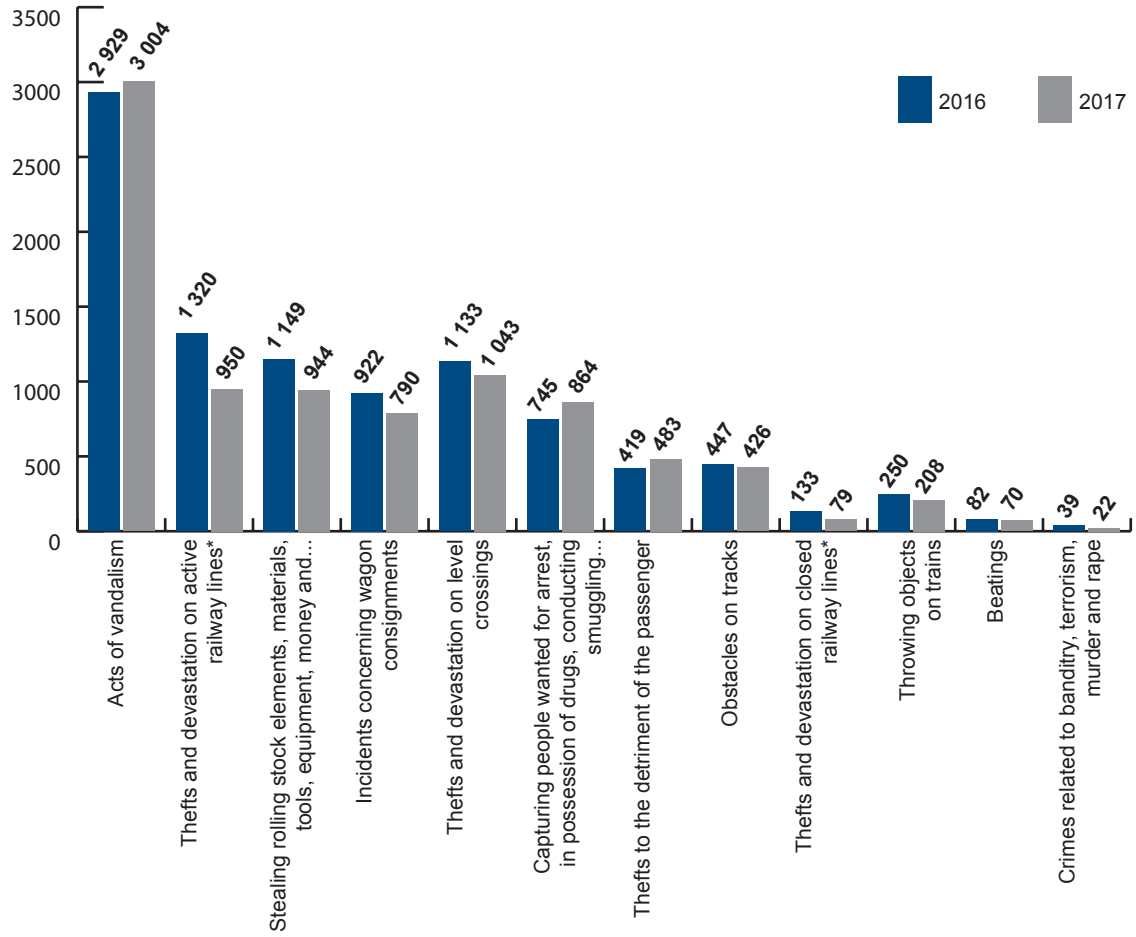
In 2017, the Railway Security Guard carried out more intensive preventive and anti-theft measures on trains, railway stations and railways. Due to the activity of officers of the Railway Security Guard, the number of offences committed in the railway area decreased by 7.16% (from 9,568 in 2016 to 8,883 in 2017, i.e. by 685 events). In 2017, the estimated value of losses resulting from offences committed in the railway area decreased by PLN 14,474 thousand (i.e. by 18.26 % less than in 2016), which is PLN 3,233 thousand less in comparison to 2016. In 2016, this value amounted to PLN 17,707 thousand.

Thanks to consistent and effective operations of the Railway Security Guard, 28.0% less of theft and devastations of equipment on active railway lines have been reported. Compared to 2016, the number of incidents recorded in this category has dropped by 370 cases (from 1,320 in 2016 to 950 in 2017).

The number of stolen items of the rolling stock surface, materials, tools, work items and unattended parcels was decreased by 11.8%. Compared to 2016, the number of incidents recorded in this category has dropped by 205 cases (from 1,149 in 2016 to 944 in 2017).
The effective protection of the officers of the Railway Security Guard has contributed to the improvement in the safety of goods transported by rail. In comparison to 2016, the number of events recorded in this category has decreased by 132 cases (from 922 in 2016 to 790 cases in 2017), representing a 14.3% decrease in theft of goods.

In addition, a 16.8% decrease in the number of the cases of throwing stones and other objects at trains (from 250 in 2016 to 208 cases in 2017). There was also less thefts and devastation of equipment on the closed railway lines. Compared to 2016, the number of events recorded in this category decreased by 54 cases (from 133 in 2016 to 79 in 2017), which represents a 40.6% decline.

Incidents in the railway area in 2015 and 2016 according to the division into incident categories



In 2017, the Railway Security Guard officers carried out 152,710 patrols of routes, 151,244 patrols of passenger stations and 56,984 patrols of freight stations. In addition, they carried out 56,984 patrols in passenger trains and monitored the railway area at 7,400 points, checked IDs of 91,647 people, cautioned 83,984 people, fined 39,014 people and caught 2,970 offenders who committed offences in the railway area.

Throughout 2017, anti-theft activities were carried out on the most endangered railway routes, freight stations and passenger trains. During their implementation, a total of 875 offenders of thefts in the railway area were caught.
In 2017, officers of the Railway Security Guard carried out 18,121 inspections at scrap yards. In 40 cases, they ended up disclosing the stolen railway property. As a result of the actions taken, 10 purchasers and 43 sellers of illegally acquired rail infrastructure elements were identified.

Safety of passengers during the passage of participants of mass events by railways is also of constant interest to officers.
In 2017, the Railway Security Guard officers secured the railway area during the passage of approx. 104,500 football fans in 838 trains.

In order to increase the effectiveness of activities in 2017, the area of operation of Regional Headquarters and the Railway Security Guard posts was adjusted to the administrative division of the country. This has led to an improvement and better coordination of joint security actions with governmental and local government agencies and police units.

Safe Crossing – "Risk Barrier!"

PKP Polskie Linie Kolejowe S.A. run a social-educational campaign Safe crossing – "Risk Barrier!" for over a decade. Its primary goal is to increase the awareness of the Poles in terms of safety within railway areas and thereby decrease the number of casualties of tragic accidents, e.g. on an intersection of railway with a road. This is a very important part of the Company's business, because regardless of the numerous investments – e.g. improvement of security systems and the modernisation of the railway infrastructure – what ultimately determines the safety of the railways is the respect for the rules and common sense of the traffic participants.

"Safe crossing..." is one of the biggest campaigns of this kind in Europe. In 2015, PKP Polskie Linie Kolejowe S.A. were awarded for improving safety at level crossings as part of the European Road Safety Charter (ESDC). In 2016, the Company became one of the laureates of the competition organised by the Office of Rail Transport (UTK) entitled "Safety culture in railway transport".

Campaign activities – through various channels of communication – are targeted at both children and young people as well as adults. Employees of PKP Polskie Linie Kolejowe S.A. and officers of the Railway Security Guard (SOK) conducted lectures in schools and at universities, organise preventive actions and simulations of incidents. The campaign is also present in the media community – on Facebook and YouTube. The most important activities undertaken within the framework of the "Safe crossing" campaign include "Safe Friday" and "October – the month of education". The "Safe Friday" campaign is being run on rail and road crossings of all categories and along the tracks where there are so-called "wild passages". The analyses of PKP Polskie Linie Kolejowe S.A. show that the most common offences committed by drivers are the lack of reaction to the STOP sign, an attempt to drive under the closing barriers or to bypass them (so-called slalom ride). Controls at the crossings of tracks and public roads shall be carried out by workers of PKP Polskie Linie Kolejowe S.A. in cooperation with Police officers (Road Traffic Department) and Railway Security Guard. Employees of the Company instruct users of rail-road crossings how to behave properly when crossing. Those who violate the rules of the Highway Code, apart from the warning, receive a fine.

In October each year, PKP Polskie Linie Kolejowe S.A., including officers of the Railway Security Guard, try to reach as many children as possible with the "Safe crossing" campaign by means of educational lectures at schools and kindergartens. The project "October: the Month of Education" concerns the appropriate behaviour within railway areas. During educational meetings, children learn the basic rules related to crossing rail and road crossings, learn signs, acquire knowledge considering what they must not do in the area of railways. Meetings are 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 students receive educational books, colouring books, items reflecting light and other mini gadgets. In 2017, the coordinators conducted 580 educational lectures attended by 27 thousand children.

Cyclic activities include also simulations of collisions, i.e. accidents of locomotives involving motorcycles, cars, and even buses. All those things aim at making the participants aware of what happens in the event of an accident, what force comes across the vehicle that is on the railway

track. The simulations are accompanied by demonstrations of rescue services (fire brigade, ambulance, police), which, have the possibility to perform their own procedures and thus prepare for a real event.

In 2017, the group of people to whom the message of the "Safe crossing" campaign reaches expanded by driving instructors. The Company organises – in cooperation with the Regional Driver Training Centres – specialised seminars for driving instructors. During these meetings, instructors receive knowledge that they can use during their classes with the students. An important aspect of the organisation of seminars is the possibility of exchanging experience with its participants, which brings mutual benefits. In 2017, 10 meetings were held: in Białystok, Katowice, Kraków, Rzeszów, Szczecin, Wrocław, Zielona Góra, Skarżysko-Kamienna, Poznań and Warszawa, and over 100 teachers of Regional Driver Training Centres took part in workshops, and nearly 1,300 Regional Driver Training Centres were equipped with educational materials.

In 2017, as part of the social campaign "Safe crossing...", a cyclical information and education campaign was conducted in the social media. The recipients of the message were able to familiarise themselves with numerous tips in the form of infographs on correct and safe behaviour at rail and road crossings.
It is worth noting that the campaign is also present during various events organised by other institutions or organisations, i.e. during picnics and outdoor events.

Summary of the activities implemented within the 2017 campaign:

- 994 educational lectures regarding railway safety (including 580 as part of the project "October: the Month of Education");
- more than 103,000 educational materials (educational books and colouring books) distributed to children;
- 609 leaflet and preventive actions on level and pedestrian crossings (including 545 as part of the project "Safe Friday");
- 228 defects reported via the "Report a defect" form;
- 75 open-air events;
- 10 seminars for driving instructors and lecturers on the rules of safe crossing of rail and road crossings;
- 6 simulations of a locomotive colliding with a motor vehicle;
- a radio program;
- 2 conferences on railway safety;
- the "Get excited about safety" competition to promote safety in the railway area;
- a knowledge quiz promoting safety on railway premises in social media;
- 3 campaign spots on LCD screens in post offices and trains of operators;
- an information and education campaign with tips for pedestrians and drivers, including 24 posts on Facebook;
- a campaign carried out in cooperation with the MaturaToBzdura.tv programme;
- 496,000 views of the safety section of MaturaToBzdura.tv;
- 11 railway operators engaged in a leaflet action in trains;
- 86,000 leaflets distributed to train passengers;
- nearly 170,000 leaflets and handbooks with tips distributed to drivers and pedestrians;
- 800,000 views of videos on YouTube showing inappropriate behaviour of drivers at a road-rail crossing in Czerwionka;

and as part of cyclic campaign projects:

1. "Safe Friday":
   - 545 leaflet and prevention actions on level and pedestrian crossings;
   - 44,321 distributed leaflets and educational materials with tips for drivers and pedestrians;
   - 379 fines given to drivers;
   - 1,466 cautions for inappropriate behaviour;
   - 393 sobriety controls;

2. "October: the Month of Education":
   - 580 educational lectures regarding railway safety;
   - 27,347 educated children young people;
   - 26,100 minutes of education, i.e. 18 days of continuous learning.

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)[1] 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." (KPK)[2] and a multi-annual programme for financing the costs of rail infrastructure management, including maintenance and renovations. 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, stability of financing and effective infrastructure management.
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 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)[3]. It shall be implemented in accordance with the guidelines laid down in the Implementing Document [4].
Key development activities in 2017 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 financial intervention necessary to launch the second – in addition to the KPK – pillar of railway transport development in the area of infrastructure is the support for the Company from the state budget and the railway fund in the total amount of PLN 23.772 billion, specified within the framework of the programme "Assistance in financing infrastructure management costs, including maintenance and renovations until 2023".

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 planned to improve the effectiveness of the Company's operations, improve the management system and the functioning of organisational structures. 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. 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 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 EU perspective 2021-2027 and in the framework of the next edition of the multi-annual programme for infrastructure management and maintenance.

[1] Document adopted by means of the Resolution No 9 of the Council of Ministers of 14 February 2017 (M.P. item 260)

[2] Document adopted by means of the Resolution of the Council of Ministers of 15 September 2015, amended by means of the Resolution No 144/2016 of the Council of Ministers of 23 November 2016 and by Resolutions No 106/2017 of 12 July 2017 and No 186/2017 of 4 December 2017 of the Council of Ministers

[3] Document adopted by the Council of Minister on 22 January 2013.

[4] Implementing Document to the Transport Development Strategy until 2020 (with perspective up to 2030), adopted by means of the Resolution of the Council of Ministers of 24 September 2014, amended by means of the Resolution No 201/2014 of the Council of Ministers of 13 October 2014.

National and EU legislation

Issues related to the introduction into practice of the provisions of the Act on Railway Transport [5], implementing Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (Directive 2012/34/EU), have and will continue to have a significant impact on the Company's operations. Consultations started at the end of 2017 on amendments to the regulation on technical conditions to be met by railway structures and their location will be continued in 2018, among others, in order to establish a legal basis for the possibility of operating trains at the speed above 200 km/h.

In 2017, two important legal acts were issued containing regulations directly related to the functioning of the railway infrastructure manager in the area of infrastructure allocation.

These include:

- Commission Delegated Decision 2017/2075 of 4 September 2017 replacing Annex VII to Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area – concerning the schedule for the allocation process;
- Commission Implementing Regulation 2017/2177 of 22 November 2017 on access to service facilities and rail-related services – specifying facilities and services as well as access procedures and criteria.

Preparations for the new EU financial perspective for 2021-2027

Planning works concerning investment projects to be implemented in the next EU financial perspective started in March 2017. In accordance with the adopted methodology, internal consultations were conducted in the Company and with external stakeholders regarding project proposals to be undertaken in the new perspective for 2021-2027. 413 entities – passenger and cargo operators, transport organisers, industry organisations, widely understood "industry", i.e. production plants, container terminals, ports, airports, special economic zones – were approached. As a result, approx. 140 responses were received. The conclusions of the consultations were used to create a database for the initial list of projects and for the railway network in the long term. The database specified 200 projects, and within them 425 investment tasks – each of them was assigned key assumptions (i.e. objective, area coverage, scope of work, preliminary estimation of expenditure).

The next step will be to verify the legitimacy of the contemplated investments using of the traffic model tool by preparing the network-based forecasts, after the completion of the KPK implementation and then – network forecasts for the following years. The assessment of the railway network designed for the future will make it possible to identify the sections recommended for implementation in the first instance – giving the greatest benefit to railway transport. These sections will be ranked, creating a proposed list of investment projects to be implemented in the new EU perspective for 2021-2027. The criteria for creating the ranking will include the results of traffic forecasts, the current technical condition of the railway line, the state of advancement of preparatory documentation, requirements resulting from the Transeuropean Network - Transport (TEN-T).

[5] Act of 16 November 2016 amending the Railway Transport Act and certain other acts, Journal of Laws of 2016, item 1923, as amended.

Interoperability

In 2017, the "Strategy for the Implementation of Interoperability on the railway network managed by PKP Polskie Linie Kolejowe S.A." was updated in terms of adopting railway lines to the requirements of the technical specification for interoperability. The update included changes to projects eligible for financing from CEF sources (Connecting Europe Facility) and EC verification certificates of structural subsystems obtained through the investment process.

The document is designed to assist decision-making in the field of railway investments planning and execution as well as the appropriate order and maintenance of chronology in the scope of implementation of interoperability requirements on the railway network managed by PKP Polskie Linie Kolejowe S.A.

In 2017, in the process of negotiating tender materials and giving opinions on the documentation[6] 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 requirements 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.

The Company was involved in works on the National Implementation Plan of Technical Specification for Interoperability relating to the accessibility of the European Union rail system for disabled persons/persons with reduced mobility (TSI PRM) and the National Implementation Plan of Technical Specification for Interoperability of 'Control-command and signalling' subsystems".

At the EU forum, work was carried out in the EIM expert groups (EIM PRM Working 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 Railways (ERA).

Research and development activities

One of the most important activities undertaken in 2017 by PKP Polskie Linie Kolejowe S.A. was the development of cooperation with the National Research and Development Centre (NRDC).

On 18 September 2017, PKP Polskie Linie Kolejowe S.A. concluded with the NRDC the so-called Executive Agreement for the implementation of the Joint Undertaking entitled "Research and Development in Railway Infrastructure – BRIK". The total budget of the BRIK project is PLN 50 mln (PLN 25 mln from each party), and its scope includes 24 projects specified by PKP Polskie Linie Kolejowe S.A.

On 29 September 2017, a competition for the implementation of the R&D projects in question was announced. The call for applications for co-financing under the BRIK competition will end on 12 January 2018.

The results of the competition will be published by the NRDC in 2018.

[6] Description of the subject of the contract, Feasibility studies, pre-design and design documentation, etc.

Building Information Modelling methodology – 3D design (BIM)

In 2017, activities related to the analysis of conditions of application of the BIM methodology in the Company's operations were carried out. In this context, consultations with external entities/stakeholders were carried out in the scope of: legitimacy of the application of this methodology and its impact on the implementation of investment tasks and related risks, possible legislative and organisational changes, as well as practical possibilities of providing project services under BIM on the Polish market. The consultations showed that the use of BIM by PKP Polskie Linie Kolejowe S.A. is justified, while experience in the field of line infrastructure on the Polish market is limited, therefore it is advisable to carry out a pilot project. Therefore, an analysis of the conditions for the selection of the location for the pilot project was carried out. In order to exchange good practices, a workshop was also organised with a BIM expert with many years of experience in this field on the British market. Work related to the implementation of the BIM methodology will continue.

Traffic model

The obligation to implement the Traffic Model was imposed on the Company by the Implementation Document to the Transport Development Strategy until 2020 (with a perspective until 2030). At the beginning of 2017, work on version 1.0 of the tool was completed. The model was built with own resources of PKP Polskie Linie Kolejowe S.A. It also received a positive opinion of external verifiers, and in the last quarter of 2017 it was formally adopted by a resolution of the Management Board of the Company, as a tool for carrying out analyses of passenger and freight traffic in PKP Polskie Linie Kolejowe S.A.

It is planned that traffic forecasts in the pre-project documentation carried out in preparation for the new EU perspective will be based on the Traffic Model. This will allow the network aspect of rail transport to be taken into account and the accuracy of forecasts to be improved.
It should be noted that the implementation of the Traffic Model is of crucial importance, first of all, for making future investment decisions, which is important in the context of the economic and financial situation and conducted operations. So far, the Company has not had a system enabling it to assess potential reactions of the passenger and freight transport market to changes in traffic parameters introduced on the railway network. In addition, the higher quality and reliability of forecasts made using the Traffic Model will also have an impact on the assessments of these forecasts made by the institutions involved in the allocation of investment funds.

Micro-simulation and Analytical Model of Track-way System (MAMUT)

MAMUT is a specialised IT tool for testing the capacity of railway lines, based on precise mapping of the infrastructure (with accuracy to the position of, for example, single turnouts and semaphores). On the basis of traffic forecasts made in the Traffic Model and in the MAMUT model, train traffic on the railway network is simulated. In this way, it is possible to identify future operational problems and capacity constraints on the railway network and to develop proposals for improvements to the railway infrastructure.

In 2017, the Rules for the use of micro-simulation models in PKP Polskie Linie Kolejowe S.A. were developed and approved by the Company's Management Board on a directional basis. The construction of a model in the Masovia region was also continued – the railway network covering approx. 2,900 km of railway lines was mapped, as of 2017 and 2023. MAMUT was also used for current analyses supporting the Company's investment process – e.g. an analysis of the possibility of increasing the capacity of the suburban diameter line in Warsaw to 24 trains at the peak hour was prepared. The micro-simulation modelling was also used in feasibility studies to support the identification of technical solutions beneficial for rail traffic.

The implementation of the Traffic Model and the MAMUT model for demand and supply-side operational analyses strengthens the Company's institutional capacity, allowing for the improvement of the quality of preparatory documentation as well as the performance of own analyses.

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, 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 good conditions for the provision of rail freight services and to optimise the use of the rail network in Europe. 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, international 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 (EEIG) on each of them. Up-to-date information is available on the corridor websites: www.rfc5.eu i www.rfc8.eu.

In January 2017, the European Commission issued a positive decision on the establishment of the Amber Commodity Corridor no. 11, which is expected to be launched in early 2019. It will connect the industrial and commercial centres in Poland, Slovakia, Hungary and Slovenia with a single offer in terms of capacity allocation for international freight trains. The corridor will join the European network of freight corridors and complement the system of freight corridors running through Poland.

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), the United Nations (UN) 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).

There was also active bilateral cooperation with railway infrastructure managers and railways from neighbouring countries, consisting in contacts with institutions and entities representing the railway sector from Romania, the Netherlands, Finland, Sweden, Turkey, the United States of America, Kazakhstan, Serbia and Italy.

In terms of multilateral cooperation, the Company was involved in the work of the team of railway experts operating within the Visegrad Group, as well as in the work of the team of experts (2 working groups), acting under a seven-lateral agreement (cooperation with railway representatives from 7 countries, i.e. 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 on 2-4 August 2017 in Odessa. The Company's representatives continued to participate in the work of the tripartite ministerial team for railway line no. 346 Hradek over Nisou-Zittau.

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 continued its activity, whose task is, among others, to support key investment projects carried out at the border and to carry out activities related to the growing volume of railway traffic across the Polish-Belarusian border.

Information Technology

Infrastructure area

In 2017, in the area of infrastructure, activities aimed at increasing the satisfaction of service users by increasing the stability and the availability of critical ICT services were intensified. Actions were also taken to identify in the infrastructure layer: distribution of services on servers in the context of georedundancy, analysis of high availability mechanisms used, as well as single points of malfunction.
As part of the works, the network of the Data Processing Centre in the server rooms in Warsaw and Sosnowiec was modernised. The changes included the implementation of VXLAN technology, thanks to which a logical connection of two server rooms was achieved. The next step was to implement devices balancing the network traffic to servers. Such a network infrastructure solution allows to build and implement IT systems in the Company, which must be highly accessible and efficient, established in two physically different processing centres.
Under a new agreement with a telecommunications operator for the provision of data transmission services in the corporate network, the implementation of back-up lines to the Railway Lines Plants was acquired. It is an initiative whose implementation ensures uninterrupted operation of the units in case of failure of the basic link. In addition, network devices responsible for communication in smaller units such as Sections or Warehouses of sections have been replaced, eliminating unreliable linear technology. The new devices use GSM technology to establish a connection within the corporate network. The use of an innovative solution has further increased network efficiency and reduced maintenance costs. A pool of public addresses (long-term lease) and two independent Internet access services were obtained.
In the area of server infrastructure, due to the growing number of operations and the size of processed data, the computing power and disk space were increased by expanding the blade server farm and all flash disk arrays. Additionally, servers dedicated to the development of virtual desktops (VDI) and time servers (NTP) for the entire environment were modernised. The system of the public key infrastructure and the e-mail system were completely reconfigured, ensuring high availability (based on the new configuration of the network georedundancy). The reconstruction of the logic of the central monitoring system from the internal and external IT infrastructure and notification of service status to service coordinators has been commenced.
Additionally, in 2017, a solution for the needs of securing banking operations, based on virtual positions, was prepared for implementation in a group of targeted tasks.
Moreover, within the synergy of IT potential of subsidiaries of PKP Polskie Linie Kolejowe S.A., a concept of IT stream consolidation was developed, i.e. guidelines related to the architecture of basic systems such as: directory services, e-mail, file services, security, server and network infrastructure.

Systems area – railway domain

1. In the area of systems of railway domain, in 2017 new systems and IT applications were developed and adapted to the requirements of the Act on Railway Transport amended in November 2016;
2. New modules have been developed and implemented to meet the requirements of the “Regulation on the provision of railway infrastructure” concerning the submission, monitoring and management of applicants’ applications, ordering, monitoring and authorising the provision of services in the area of manoeuvres, stoppages of railway vehicles requested by operators. New modules have been created: Statutes of the railway network, Network Regulations, Objects of service infrastructure (OIU), Register of manoeuvring distances. Modules for settlement of throughput utilisation in Timetable 2017/2018 were developed and implemented;
3. Systems for the construction of train timetables and operational work records have been modernised, providing new functionalities to streamline and automate the work of users;
4. Traffic situation visualisation systems have been developed on the network managed by PKP Polskie Linie Kolejowe S.A. by new layers concerning visualisation of operation areas of Local Control Centres (LCS), Railway Security Guard posts (SOK). The application users have been provided with station operating rules and station diagrams;
5. In the area of passenger information, the Passenger Portal has been modernised with a new function “Buy IC ticket” for connections with a change of trains. The dictionaries of services provided by train operators have been modified. The Passenger Portal in version 3.0.0.0 containing adaptation to the needs of disabled persons (implementation of WCAG 2.0 standard) was developed and submitted for acceptance tests. In 2017, access to a service providing a timetable for local dynamic passenger information systems

(implementation in more than 80 locations) was implemented. The availability of Poster Timetables and Network Timetables (SRJP) was optimised.

6. In the area of the Geographical Information System (GIS), integration with, among others, systems for investment projects and railway line codification was performed, as well as a new functionality ensuring support for the TERYT code. A pilot import of plot geometry was also carried out. In the area of automation of work on developed, implementation works on a new application supporting work of train dispatchers and enabling the maintenance of an electronic traffic log. The training environment of the system was prepared as well as the user training phase and the gradual implementation of the application on the railway network has started. In 2017, implementation works on a new system for recording operational work were also continued. Five main dispatching modules have been completed and submitted to acceptance testing.

Systems area – business domain

In January 2017, a new payroll and HR system built on the basis of SAP HCM software was launched, which allowed to record working time, calculate salaries, employee self-service, service of the Company's Social Benefits Funds (CSBF), travel allowances, Employee Benefit and Loan Fund (EBLF), issuing and registering powers of attorney, training management and maintenance of the organisational structure. In July 2017, an additional service for delegations was launched.

In 2017, tender procedures were conducted and the following agreements were signed: "Functional development of the SAP ERP system in the scope of the process of issuing and flow of sales documents, creation of the Central Register of Revenue Agreements SPOD, as well as in the scope of "Implementation of a system supporting planning, forecasting and reporting on plan execution" and "Implementation of a new Purchase Platform".

As part of the development of the SAP system, the following were implemented:

1. the iBreConnect solution for the execution of transfers from SAP, functionality supporting the settlement of transfer prices, Register of Engine Drivers, EKO functionality enabling waste management on a company-wide scale, a number of reports in SAP ERP, SAP HCM and traffic station technology have been SAP BusinessObjects, the implementation of a managerial and employee self-service portal for mobile devices with the use of SAP FIORI technology has launched;
2. as part of the development of the Electronic Invoice Flow (EOF) system, the functionalities of notification via e-mail of overdue invoices to superiors were prepared and implemented, solutions for receiving invoices in the form of pdf files were prepared and implemented;
3. as part of the development of SWZPI/EPM 2013 project management software, an application for cyclic project views and an application for cyclic confirmation of project validity were prepared;
4. as part of the MS SharePoint technology, new websites supporting business processes were created, including, among others: SAP HCM satisfaction survey, access to e-banking services, department websites.

In addition, the following systems were maintained and developed: HERMES, INTRANET, JIRA, LEX Legal Platform, LEGALIS Legal Platform, PŁATNIK, WAP – Internal legal acts, SOWA Library System, BHP – register of accidents, Pri – investment premiums, Complaints and applications, KWZ – Tasks performed sheet, Controls and audits, EPN – Register of non-durable goods, SWR – Work valuation system.

Architecture and international cooperation area

1. In terms of TAF/TSI (i.e. the interface with TAF/TAP operating at PKP Polskie Linie Kolejowe S.A. for information exchange, among others, with Train Information System (TIS) – an application used to monitor international train traffic), the interface version was upgraded to the latest version on a new virtual machine. The necessary programming work has been carried out in order to correctly send train traffic information to TIS (including plan, execution and delay codes – causes of delays). In terms of TAF, the version of the Primary Location Points (PLC) database with GPS coordinates in the CRD database in RNE (Association of European Railway Infrastructure Managers and RailNetEurope) has been ordered and upgraded – codes are assigned to all points in the infrastructure visible in external systems, i.e. international systems;
2. In terms of RINF (National Register of Railway Infrastructure), the interface for the Office of Railway Transport (UTK) has been developed. PKP Polskie Linie Kolejowe S.A. is one of the few national infrastructure managers to provide current data.

Data transmission security area

In 2017, the following systems were kept up to date:

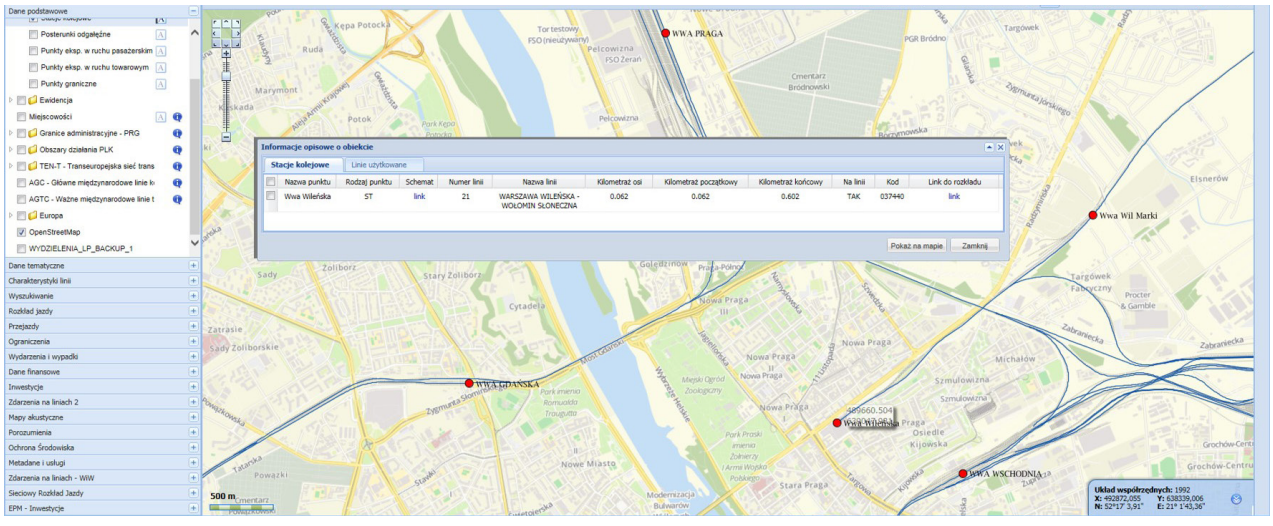
- McAfee modules, supporting protection of workstations, servers, e-mail, etc.;
- AirWatch services allowing to manage mobile devices;
- ArcSight services allowing to keep track of system logs and analyse deviations.

Geoinformation

The year 2017 was a time of implementing new functionalities in the Railway Line Information System (SILK). As part of the SILK4 Project, many new solutions have been delivered to system users. It has been made possible to maintain and present data on railway infrastructure, including level crossings in relation to route tracks and main principal tracks.
As part of the project, a pilot presentation of data on rides on additional tracks was also carried out.

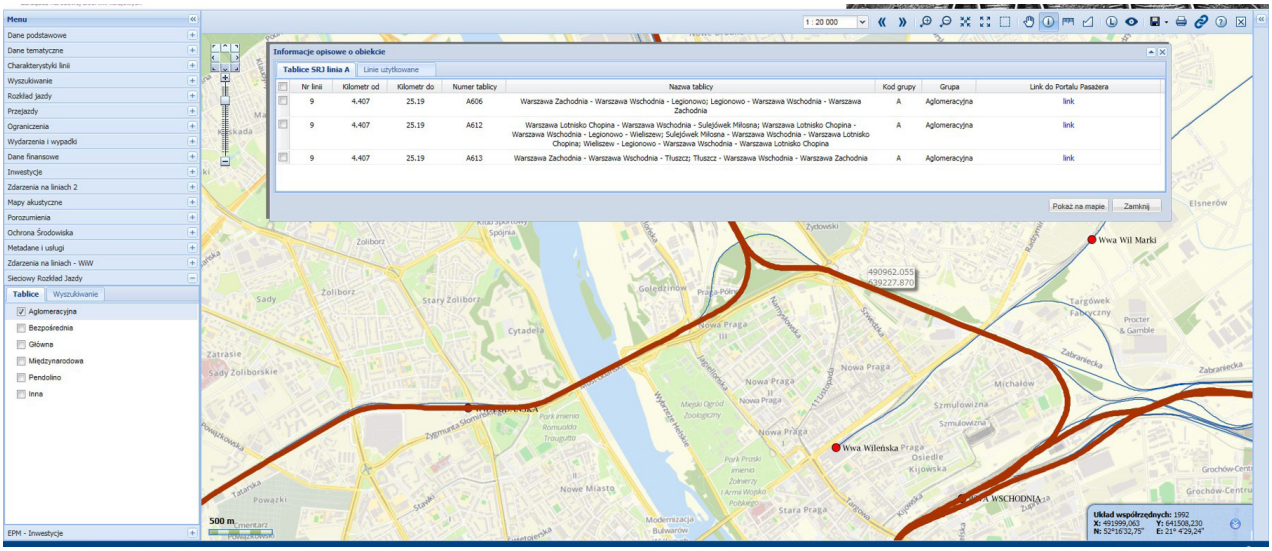
Visualisation from the SILK System – presentation of rail and road crossings on tracks

Users of the Interactive Map of Railway Lines (MILK) were provided with the possibility of presenting data on the map in the scope of Network and Poster Timetable. Each station or stop where passenger traffic is carried out has received additional information with a link to the Passenger Portal, from which a poster timetable can be downloaded directly.



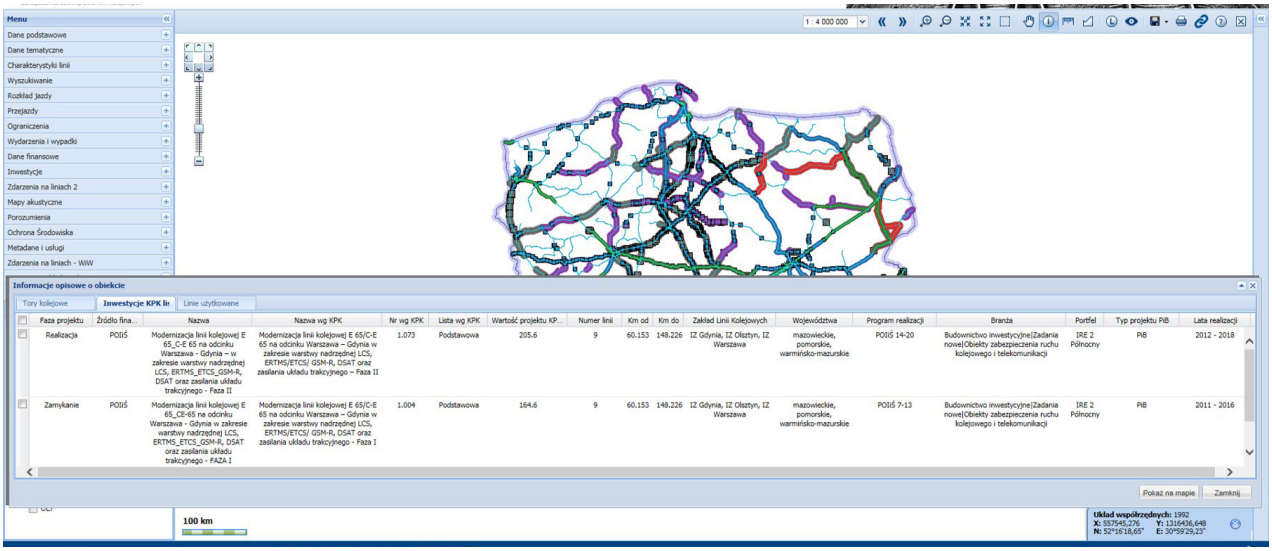
Visualisation from the SILK System – poster timetable

The network timetable has been divided into layers enabling the user to visualise train paths by categories of the network timetable, i.e. agglomeration, direct, main, international, EIP (Pendolino) and others.
By selecting the categories, the user receives an interactive network timetable. In addition, in order to get more information about a train path, the user can mark the path of the train, thus receiving detailed information. In the last column of the map there is a direct link, which redirects the user to the appropriate location of the Passenger Portal.



Visualisation from the SILK System – network timetable

A new, implemented functionality is the ability to present investment data from the Enterprise Project Management (EPM) system on the MILK map. In addition to displaying the course of investment and the presentation of the source of financing, users can receive detailed information about the selected project.



In 2017, in addition to the implementation of new functionalities, the priorities for further development of the SILK system were defined. It was decided to start work on visualisation of track closures and speed limits on railway lines and new analytical solutions for the needs of passenger infrastructure.
Moreover, on 19 July 2017, PKP Polskie Linie Kolejowe S.A. signed the Framework Agreement with 8 contractors

for “Development of geodetic and cartographic documentation for design purposes for railway investment projects carried out by PKP Polskie Linie Kolejowe S.A. from the perspective 2014-2020”.
The Framework Agreement was concluded for a period of 48 months and according to its provisions the products of the agreement will be:

1. preparation of a situation and elevation map for design purposes;
2. verification of the course of boundaries of cadastral plots;
3. execution (specification) of the surveying grid.

Moreover, in 2017, as part of the “Railway Line Codification” project carried out by PKP Polskie Linie Kolejowe S.A. with the use of specialist tools installed on the EM120 measuring draisine, data was collected in the form of a point cloud, photographs and a detailed trajectory for a total of about 17,000 kilometres of railway lines. At present, work is focused on data processing in order to determine the codes of the maximum permissible gauge on scanned sections for the purpose of carrying out the transport of exceptional consignments.

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, environmental documentation is prepared under the framework agreement. In 2017, 14 new executive agreements were concluded (for the net amount of PLN 2,212,4 thousand) and 21 agreements were performed. In the period from the conclusion of the agreement in question (November 2015) to the end of 2017, executive agreements with a total net value of PLN 3,769,8 thousand were signed.

From the experience gained during the operation of the framework agreement in question and in connection with the amendment of the provisions on environmental impact assessments, i.e. the Act of 3 October 2008 on the provision of information on the environment and its protection, public participation in environmental protection and on environmental impact assessments (Journal of Laws of 2017, item 1405), it was stated that the existing formula of the framework agreement requires extension, flexibility and adjustment to the current needs of the Company. Therefore, in 2017, a tender procedure was initiated in order to conclude a new framework agreement extending the scope of environmental protection services provided, adjusting the agreement to the current needs of the Company.

In 2017, PKP Polskie Linie Kolejowe S.A. obtained 56 decisions on environmental conditions and 2 decisions amending the decision on environmental conditions, as well as 29 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.

With regard to decisions on environmental conditions, in many cases obligations are imposed concerning the performance of post-execution analyses or environmental monitoring after the completion of investment projects and commissioning of railway lines for use. In 2017, 27 studies were started for 19 investment projects, including 17 concerning acoustic impact or vibrations, and 7 concerning the impact of railway lines on selected animal groups.

In order to broaden the knowledge on the environmental impact of railway lines, an “Expert opinion on the impact of railway lines on fish and lampreys and recommended minimising solutions” was prepared in 2017 at the request of PKP Polskie Linie Kolejowe S.A. The aim of the study was to analyse the impact of railway lines on fish and lampreys together with a catalogue of possible solutions minimising the impact of investment projects implemented from the EU financial perspective 2014-2020. The results of the expert opinion allowed to determine the factors influencing fish and lamprey in connection with the existence of railway infrastructure, including the identification of particular elements of infrastructure causing the threat. Knowledge of these factors will facilitate proper planning of activities minimising the impact of modernised railway lines and, as a result, will allow for optimisation of costs of investment implementation and advance preparation for implementation of the requirements of environmental protection authorities. This study completes the cycle of works conducted by the Company from 2013, aimed at examining the impact of railway lines on particular components of the environment.

In 2017, the Company’s Management Board adopted “Guidelines for calculating the amount of rainwater and snowmelt water in the railway area” Is-2 for application. The purpose of the guidelines is to lay down general principles for the calculation of rainfall and snowmelt water

in a railway area. The guidelines will be used for the calculations necessary for the correct dimensioning of the drainage system in the railway area. The document should be used during preparation of pre-design and project documentation, as well as documentation for applications for administrative decisions (including decisions on environmental conditions and permits required by Water Law Act).

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. In recent years, there has been a significant increase in the number of citizens' complaints about noise from railway lines. The most important activity of PKP Polskie Linie Kolejowe S.A. is to perform 5-year cycles measurements of environmental noise and acoustic maps. This measure results from the provisions specified in Article 179 of the Environmental Protection Law (Journal Laws of 2017, item 519) and in Art. 7 point 2 of Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 on the assessment and management of environmental noise, according to which EU Member States are required to take the measures necessary to ensure that, every five years, strategic noise maps showing the situation in the previous calendar year and the approval of such maps by the competent authorities, are drawn up for all agglomerations and all major roads and major railway lines within their territory.

In 2017, PKP Polskie Linie Kolejowe S.A., as part of the third cycle of developing acoustic maps, made a new one, which takes into consideration the traffic on railway lines according to the data for 2016. The acoustic map concerns sections of railway lines in Poland with a traffic volume higher than 30,000 trains per year, which corresponds to a daily traffic volume of 83 trains per day. This condition was fulfilled by 113 sections with a length of approx. 1,372 km, within 35 railway lines located in 73 poviats in 11 voivodships of Poland. The project entitled "Preparation of acoustic maps for sections of railway lines with a traffic volume exceeding 30,000 trains per year" was completed in two parts, including one part by commissioning external entities to collect input data. The above data constituted the basis for the preparation of an acoustic map, in accordance with the regulations specified in the Regulation of the Minister of the Environment of 1 October 2007 on the detailed scope of data included in acoustic maps and their layout and manner of presentation (Journal of Laws of 2007, No. 187, item 1340). On the basis of the obtained data, the Acoustic Laboratory operating at PKP Polskie Linie Kolejowe S.A. made an acoustic model covering 1,361 km2 of the area, which was the basis for the acoustic calculations. Acoustic maps were prepared on the basis of calculations, i.e. emission maps, immission maps, area noise sensitivity maps, maps of areas threatened by noise, maps of proposed directions of spatial development changes, maps of spatial distribution of the value of the M index (characterising the value of exceeding the permissible noise level and the number of inhabitants in a given area), maps showing the number of people exposed to noise and prognostic maps. In the text part of the document entitled: "Acoustic mapping of sections of railway lines with a traffic volume of more than 30,000 trains per year" includes such information as: characteristics of the area to be assessed, characteristics of spatial data systems and tools for their application, basic methods used for the preparation of the acoustic map, input data bases used, measurement results specification and tabular result specification. The above documents have been submitted to the Chief Inspector of Environmental Protection (GIOŚ), relevant voivodship environmental protection inspectors, voivodship marshals and starosts, and have also been placed on the company website of PKP Polskie Linie Kolejowych S.A. In 2017, the project entitled "Guidelines for designing solutions for minimising acoustic impact of railway lines", on the basis of which contractors will be able to design acoustic protection adequate to the scale of exceedances, was also performed.

Noise protection is also about planning the use of areas close to noise sources. Locating acoustically protected buildings in the immediate vicinity of railway lines increases the number of people exposed to excessive noise. Therefore, the Company actively participates in issuing opinions on 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 nearly 950 planning documents were analysed in 2017.

Investments

Financial framework 2014-2020

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.
The year 2017 was the fourth year of the financial framework 2014-2020 in which the Company continued investment projects included in the National Railway Programme until 2023 (KPK). The programme was adopted in September 2015, and then updated in 2016 and 2017 (the last update adopted by means of the Resolution No 106/2017 of the Council of Ministers of 12 July 2017).
The purpose of the update of the KPK in 2017 was in particular:

1. taking into account the signing by the Company of the Grant Agreement (GA) for the projects from the second call for the Connecting Europe Facility (CEF) and the applications submitted in the third call of CEF;
2. adjustment of the programme to the actual progress of the preparatory work;
3. determining the actual value of projects resulting from completed tender procedures.

The main objective of the implementation of the KPK is to strengthen the role of rail transport in the country's integrated transport system by creating a cohesive and modern railway network, which stems directly from the provisions of the "Transport Development Strategy until 2020 (with a perspective until 2030)" in terms of rail transport. The KPK specifies investment tasks involving railway infrastructure managed by PKP Polskie Linie Kolejowe S.A. and assumes the maximum utilisation of EU funds for financing projects under: Operational Programme Infrastructure & Environment (OPI&E) for the years 2014-2020, CEF, Operational Programme Eastern Poland (OP EP) for the years 2014-2020, and the Regional Operational Programmes (ROP) for the years 2014-2020. The programme also provides for continuing works under projects included in the Multi-Annual Railway Investment Programme (MPIK) that were not implemented by the end of 2015. Apart from EU funds, the implementation of the National Railway Programme is also to be financed using national public funds (state budget, Railway Fund), the Company's own resources and funds obtained from the issue of bonds. An important source of financing of the Company's investment expenditures are funds obtained from loans granted by the European Investment Bank (EIB) to partially cover the national share of

Planned expenditure of the KPK in years by target sources of financing (in PLN billion)[1]

No.	Programme	Expenditures
1.	Cohesion Fund	49,3
1.1	CEF	17,9
1.2	OPI&E 2014-2020	28,3
1.3	OPI&E 2007-2013	3,2
2.	OP EP	2,2
3.	ROP	4,8
3.1	ROP 2014-2020	4,7
3.2	ROP 2014-2020	0,1
4.	National	10,1
5.	Programme of non-military defence preparations	0,1
	In total	**66,4**

[1] In accordance with the KPK of 12 July 2017

non-eligible expenditures and partial pre-financing of eligible expenditures.

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[2]. 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.

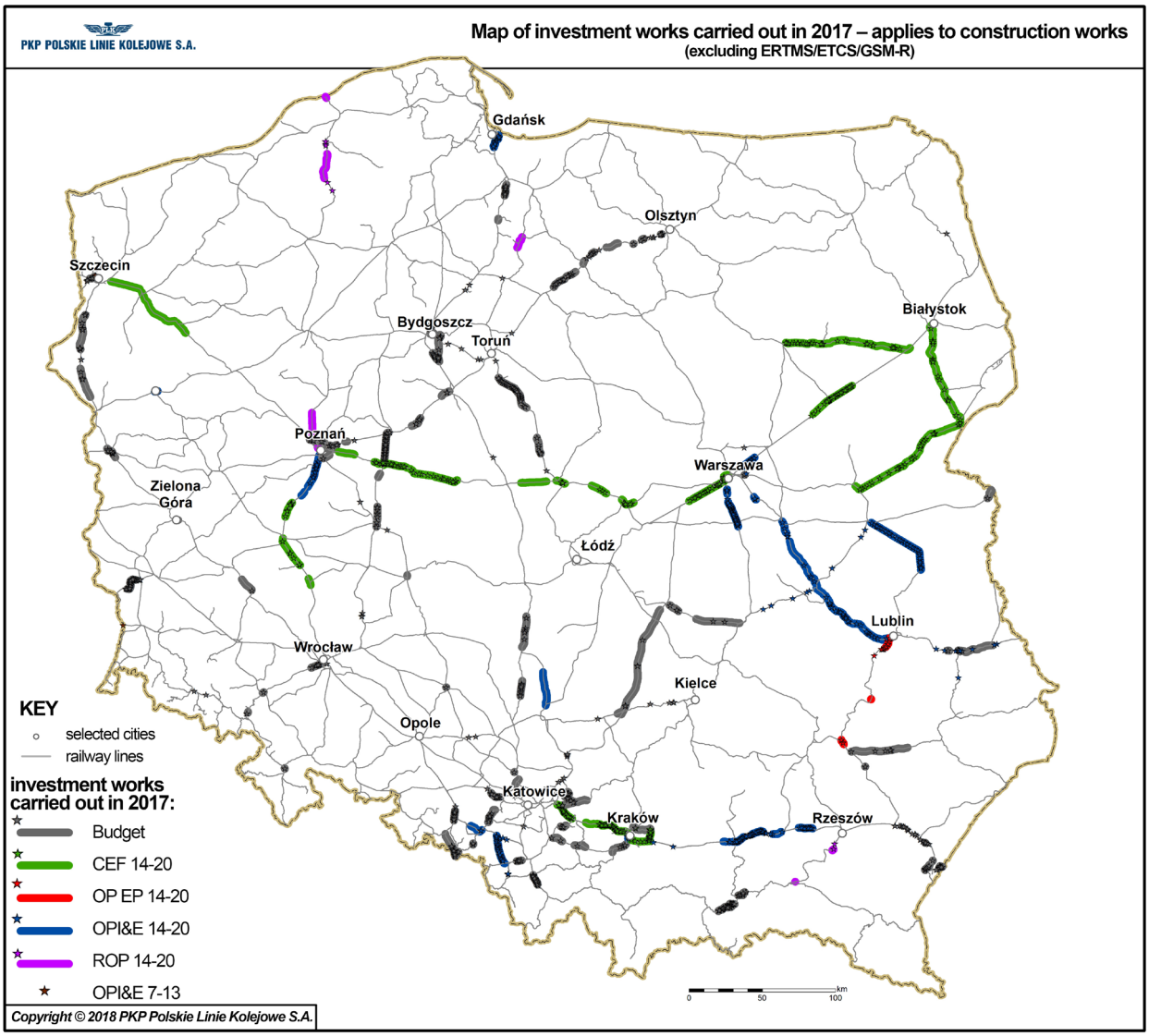
The objectives of the KPK include:

1. strengthening the role of rail transport in the integrated transport system of the country;
2. improving the efficiency of rail transport;
3. enhancing the rail transport safety;
4. improving the quality of passenger and freight transport.

It is assumed that the performance of objectives indicated in the KPK will raise parameters of the network managed by PKP Polskie Linie Kolejowe S.A. in such a way, so as to satisfy the needs of passengers and operators as well as consignors and consignees of cargo carried by rail. It will also lead to shorter travel times, raise the safety of rail transport, improve the comfort of travel and remove barriers to freight transport.

One of the main objectives of the works planned under the financial perspective 2014-2020 is also to improve the safety of rail transport, including railway traffic. It is expected that the improvement of the parameters and condition of railway lines resulting from investment works will translate directly into the improvement in safety. This is particularly due to the modernisation of revitalisation of railway superstructure, the replacement of traction network equipment and the modernisation or development of modern computerised rail traffic control devices. These actions will increase the reliability of the security systems and will contribute to minimising the likelihood of potentially dangerous situations.

Investment works carried out in 2017 broken down by implementation programmes



[2] Eligibility period for call for applications under CEF I and II ends on 31.12.2020

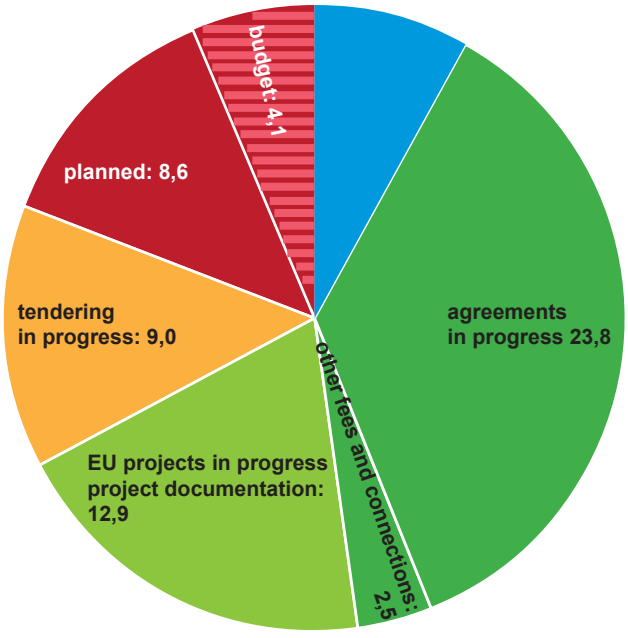
The implementation of the European Rail Traffic Management System (ERTMS) consisting of the European Train Control System (ETCS) and the Global System for Mobile Communications – Railways (GSM-R) has a significant influence on the increase of rail transports safety and the increase of the speed of trains over 160 km/h. As part of the investment projects co-financed by the EU budget 2014-2020, it is planned to continue the process of implementing the ERTMS system on the Polish railway network. The construction of animal passages or the adaptation of existing facilities and the installation of equipment for the deterrence of animals outside the railway line by means of acoustic or light signals (reflective) will also contribute to the improvement in safety.

Implementation of the National Railway Programme

In 2017, the key activities related to the projects included in the KPK were connected with conducting tender procedures in order to select contractors for project implementation and signing agreements with contractors. In 2017, the execution of agreements/contracts concluded in previous years was also continued. In order to ensure efficient implementation of the programme, project monitoring tools were improved in 2017. Comprehensive monitoring covered all KPK projects from the basic list in the scope of key issues, such as: tender procedures, execution of works under signed contracts, forecast execution of expenditure and invoicing, timely execution of milestones from the schedules. Cyclic analyses of the progress of individual projects were also carried out.

Status of implementation of projects from the basic list of the KPK as at the end of 2017

TOTAL: PLN 66.4 bln



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

Tendering in progress – the value of tender procedures (estimated net value of contracts), i.e. from the moment of announcing the procedure and before signing the agreement

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

Planned – agreements before the announcement of the contract award procedure

Budget – value of SW 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.

completed: 5,5 mln PLN

agreements in progress: 26,3 mln PLN

EU projects in progress project documentation : 12,9 mln PLN

tendering in progress: 9,0 mln PLN

planned: 11,9 mln PLN

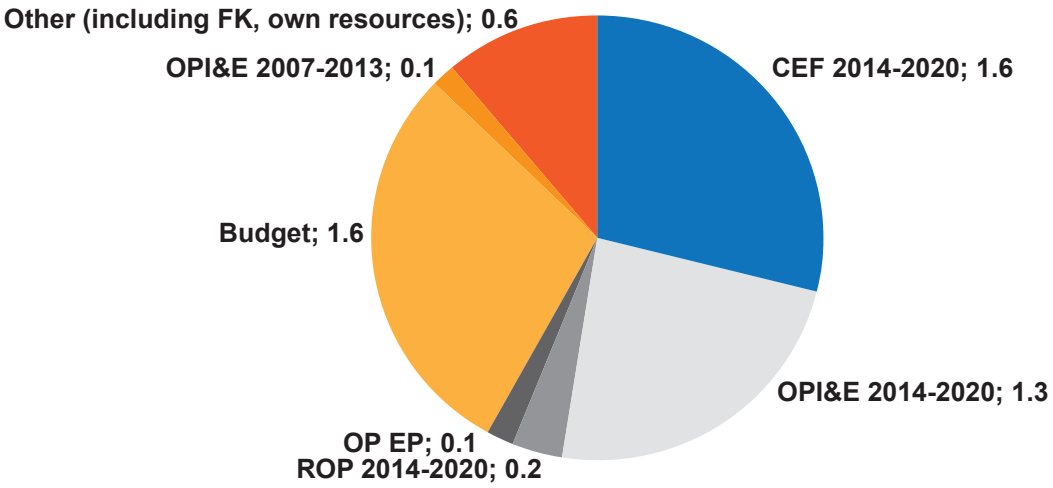
At the end of 2017, out of more than PLN 66.4 billion earmarked for the implementation of investments included in the KPK, more than PLN 26 bln was under construction and PLN 5.5 bln were completed. Moreover, at the end of 2017, tender procedures worth PLN 9 bln were in progress.

Investments in 2017

The basis for the investment activity carried out by PKP Polskie Linie Kolejowe S.A. in 2017, as in previous years, was the Company's Investment Plan (IP 2017) 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.
As part of the Company's Business Plan, the Investment Plan 2017 was adopted by the Management Board of PKP Polskie Linie Kolejowe S.A. by means of the resolution no. 132/2017 of 14 February 2017 and included investment projects with a total value of PLN 5.5 bln. The most important group in IP 2017 were projects financed under CEF 2014-2020 (more than 30% of the plan's value). The plan also provided, to a small extent, for outlays on projects implemented under the Operational Programme Infrastructure and Environment 2007-2013 (OPI&E) and the ROP 2007-2013.

As part of PI 2017, over 200 investment projects were accepted for implementation, 66 of which were tasks for which the first significant investment expenditure were in 2017. The largest project in terms of expenditure included in IP 2017 was the project concerning the modernisation of the E75 Sadowne - Czyżew line implemented under the CEF 2014-2020 programme, for which the total value of expenditure for 2017 amounted to approx. PLN 370 mln.
IP 2017 was implemented at the level of PLN 5.5 bln. It should be emphasised that a high level of mainly post-tender savings had a significant impact on the implementation of the Plan. The value of savings achieved in 2017 amounted to PLN 507.4 mln and were allocated by the Company for the financing of additional investment tasks.

The implementation of IP 2017 according to implementation programmes (in PLN bln)



In terms of value, over 53% of the value of the IP 2017 was generated by 10 key projects (planned expenditures on each project for 2017 in the amount exceeding PLN 100 mln). These were included:

1. works on the line E75 in the section Sadowne - Czyżew along with other works in the section Warszawa Rembertów - Sadowne – CEF 2014-2020 (PLN 372.3 mln);
2. works on railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Otwock - Dęblin - Lublin section, stage I – OPI&E 2014-2020 (PLN 347.6 mln);
3. works on the E75 line on the Czyżew - Białystok section – CEF 2014-2020 (PLN 345.3 mln);
4. modernisation of railway line E 30, Zabrze - Katowice - Kraków section, stage 2b – CEF 2014-2020 (PLN 285,0 mln);
5. modernisation of railway line no. 8, Warszawa Okęcie - Radom section (LOT A, B, F), Phase II – OPI&E 2014-2020 (PLN 236,3 mln);
6. works on the E 20 railway line on the Warszawa - Poznań section – other works, the Sochaczew - Swarzędz section – CEF 2014-2020 (PLN 225.8 mln);
7. modernisation of the E30 C-E30 railway line Kraków - Rzeszów section, stage 3, Phase II, OPI&E 2014-2020 (PLN 225.6 mln);

8. modernisation of the railway line no. 4 – Central Trunk Line, stage II – Budget (PPLN 171,7 mln);
9. works on the E59 railway line on the Wrocław - Poznań section, stage IV of the Lower Silesia voivodeship boarder - Czempiń – CEF 2014-2020 (PLN 156.2 mln);
10. works on the E59 railway line between Poznań Główny - Szczecin Dąbie – CEF 2014-2020 (PLN 120.4 mln).

Risk management

Railway investments cover almost all sectors of construction. Their conduct is regulated by a number of legal acts, instructions and guidelines, standards and other documents. The implementation of the projects is strictly conditioned by operational requirements related to the need to ensure the functionality of the transport network, while ensuring an appropriate level of safety. The specificity of railway investment projects is the main source of risk for the implementation of projects in accordance with the assumed scope, budget and schedule. This applies to all stages of project implementation, from planning and preparation, through implementation, to commissioning and handing over for use. As a result, one of the most important elements determining the effective execution of investment projects and, as a result, the execution of the Investment Plan is an effective risk management system. Among the types of risks monitored in 2017, most of them were events typical for the implementation of investment projects. Taking into account the scale and complexity of railway investments, especially those carried out while maintaining normal train traffic, poor management of such risks could significantly reduce investment outlays in 2017.

In 2017, tender procedures were resolved and as a result agreements worth PLN 18.6 bln were concluded with respect to the investments included in the KPK. The risks that were identified in 2017 were mainly related to the timely resolution of individual stages of tender proceedings. Both questions posed by tenderers as well as audits of the Public Procurement Office (PPO) and hearings before the National Chamber of Appeal (NCA) provided the Company with additional experience in the context of work on clarifying the Terms of Reference (ToR), as well as base documents addressed to the contractors' market.

At the end of 2017, modernisation works were carried out on over 60 construction sites across the country. 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. In particular, the question of contractors' compliance with contractual conditions in terms of ensuring capacity to perform both human and equipment tasks was relevant in this respect. The above area was the subject of particular attention of the Company. In 2017, activities related to field monitoring of investments were intensified and organisational changes were introduced, which influenced the possibility of central management of strategic issues on individual contracts.
The most significant risk areas which affected the course of project implementation in 2017 are presented below:

1. tendering procedures

The main reasons for the shifts in the investment implementation schedules at the stage of tender procedures included: appeals of tenderers to the NCA concerning, among others, pre-qualification results, provisions of the ToR (in particular, the part concerning the description of the subject matter of the contract (SMC), which has been repeatedly developed with the participation of external entities) and selection of contractors, as well as delays in the implementation of related contracts, e.g. for the preparation of pre-project or project documentation. In addition, there were frequent requests for supplementation of applications, numerous questions from tenderers to the tender documentation, resulting in the need to change the deadline for submission of bids, as well as submission of bids the value of which exceeded the investor's cost estimate. Not without impact on the timing of tenders was also the need for the Company to address calls to contractors to clarify and supplement documents, which consequently prolonged the stage of evaluation of submitted bids.

2. impact of the quality of project documentation on the implementation of the investment – the quality of documents and project documentation determines, on the one hand, the duration of the project preparation phase and, on the other hand, has a significant impact on the stage of investment implementation

Errors and deficiencies in the documents were the reason for the risk of delays in administrative proceedings related to obtaining decisions necessary for the implementation of investments. In addition, they often required the use of alternative design solutions or their modification already at the stage of works. This made it necessary to conduct additional arrangements with both the contractors and engineers responsible for supervising the investment.

3. the question of the provision of basic strategic materials, their supply and unloading

PKP Polskie Linie Kolejowe S.A. in view of the significant scale of simultaneous investments and the risk of

limited production and logistic capacities, has implemented actions aimed at ensuring basic strategic materials (i.e. sleepers, gravel, rails, turnouts) as well as railway automation equipment.
Contractors were allowed to collect materials on construction sites earlier, i.e. from the moment of signing the contract, on the basis of documentation (for investments carried out within the formula Build) and after preparation of design documentation (for investments carried out within the formula Design and Build), through appropriate provisions in contracts. In addition, in order to secure the storage of materials in the case of a large number of contracts, branch construction sites were created after the pre-handover of the construction site.

A large number of investments also has an impact on the throughput of transport routes. It is natural that the accumulation of investment works will reduce the efficiency of the railway network. In this context, track closures on lines in the vicinity of existing works may affect the ability to run trains and thus the time of cargo transport by rail (such as gravel, rails, sleepers) and their unloading. This risk area is closely monitored by the Company.

4. **unpredictable collisions with non-invasive foreign infrastructure and the existence of archaeological sites**

Despite careful preparation and acceptance of project documentation at the stage of project implementation, there are often unforeseen collisions between the railway infrastructure elements under construction and non-registered networks (e.g. gas, electricity, water supply systems) or other facilities (e.g. old foundations of functional facilities, deep-water wells). In addition, there are collisions of the built infrastructure elements with archaeological sites (e.g. graves, prehistoric ceramics) or objects under conservation protection (e.g. bunkers). In particular, the above risks relate to investments carried out in highly urbanised areas. The most frequent effects of materialisation of these risks include temporary suspension of construction works, which affects the failure to meet the original deadlines for the execution of the investment. Depending on the extent of discrepancies between the actual state of the construction site and the original project, the risk entails the necessity of incurring additional costs for carrying out necessary tests, introducing changes in technical solutions, or modifying the technology of works performance.

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 2017 on the railway network managed by PKP Polskie Linie Kolejowe S.A., investment works were carried out, including in particular the modernisation, revitalisation or construction of 1,037.45 km of tracks, 182 railway and road crossings, as well as 39 two-level crossings were built or modernised.
As part of modernisation and revitalisation works, which included the superstructure of railway roads, the elements sensitive from the point of view of the risk of derailments, i.e. 534 turnouts, were also replaced.

The implementation of selected material measures in 2017

No.	Name of the indicator	Unit of measure	Plan 2017	Execution 2017
1.	Modernisation of the railroad	km of tracks	687,95	1 037,45
2.	Underground passages	pcs	15	20
3.	Road overpasses	pcs	3	4
4.	Platforms	pcs	87	91
5.	Turnouts	pcs	525	534
6.	Dynamic Passenger Information System (including displays, sound system, etc.)	pcs	5	8
7.	Traction network	tkm	613	855

As part of the modernisation and revitalisation of railway lines, PKP Polskie Linie Kolejowe S.A. rebuilds railway and road crossings as well as track crossings, equipping them with additional safety and/or warning devices, as well as eliminating crossings and level crossings, replacing them with viaducts, footbridges or underground passages.

In 2017, 182 crossings were modernised on the network managed by the Company, including the automatic crossing signalling system (ACSS devices), closed-circuit television equipment (CCTV) was retrofitted and 69 railway and road viaducts were modernised.

Status of execution of public contracts

The year 2017 was an exceptional year in the history of the Company in the context of the scale of public procurement. Contracts were signed for projects included in the KPK with a total value of PLN 18.6 billion[3].

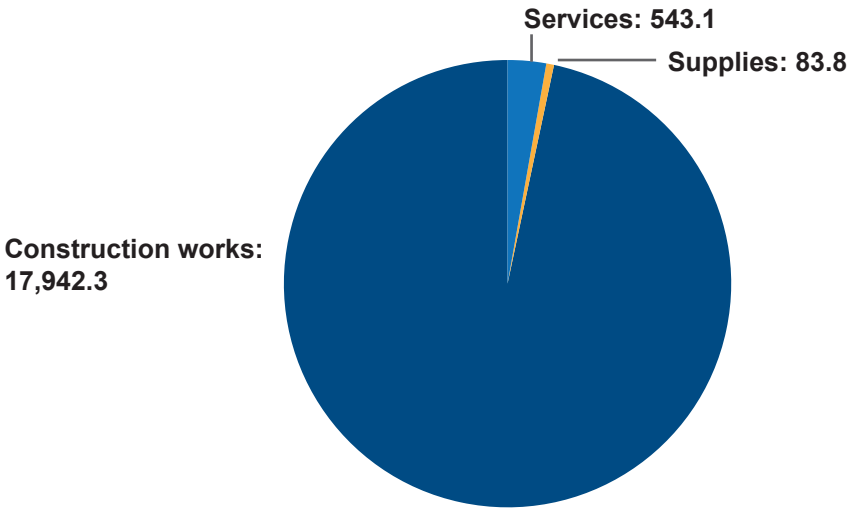
Among the agreements signed, the most important group were investment agreements for the implementation of EU projects (table below).

Project Name	Programme	Procurement name	Net value of the contract with the Contractor
Implementation of the Łódź Railway Junction TEN-T, stage II, the Łódź Fabryczna - Łódź Kaliska, Łódź Żabieniec section	OPI&E 2014-2020	Preparation of tender documentation and execution of construction works	1 293,0
E 30 Kraków Główny Towarowy - Rudzice together with the extension of the agglomeration railway line	CEF 2014-2020	Execution of construction works together with preparation of executive documentation	966,3
E 20 Warszawa - Poznań - other works, the Sochaczew - Swarzędz section	CEF 2014-2020	Execution of works in the area of LCS Konin - the Barłogi - Swarzędz section	837,8
Railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, stage I	OPI&E 2014-2020	"Work on the railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, the Otwock - Lublin section at km 26,050-175,850" LOT C	756,5
Railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, stage I	OPI&E 2014-2020	"Work on the railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, the Otwock - Lublin section at km 26,050-175,850" LOT B	597,4
E 30 Zabrze - Katowice - Kraków, stage IIb	CEF 2014-2020	Construction works under the Contract no. 2 Modernisation of the Trzebinia-Krzeszowice section (29.110 - 46.700 km of the line no. 133)	596,7
E 20 Warszawa - Poznań - other works, the Sochaczew - Swarzędz section	CEF 2014-2020	Execution of construction works in the area of LCS Kutno - Żychlin - Barłogi section	560,0
E75 Sadowne - Czyżew along with other works in the Warszawa Rembertów - Sadowne section	CEF 2014-2020	Execution of construction works on the Sadowne - Czyżew section from 71,800 km to 107,260 km (with control command and signalling equipment)	521,6
Railway line no. Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, stage I	OPI&E 2014-2020	"Work on the railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, the Otwock - Lublin section at km 26,050-175,850" LOT D	494,2
354 Poznań Główny POD - Chodzież - Piła Główna	ROP 2014-2020	Modernisation of railway line no. 354 Poznań Główny POD - Chodzież - Piła Główna	485,0

Among the agreements signed in 2017, the vast majority were works contracts – 97%.

[3] Net value of contracts

Agreements signed in 2017 with contractors broken down by type of contract (PLN mln)



Largest projects on which construction works started in 2017 (PLN mln)

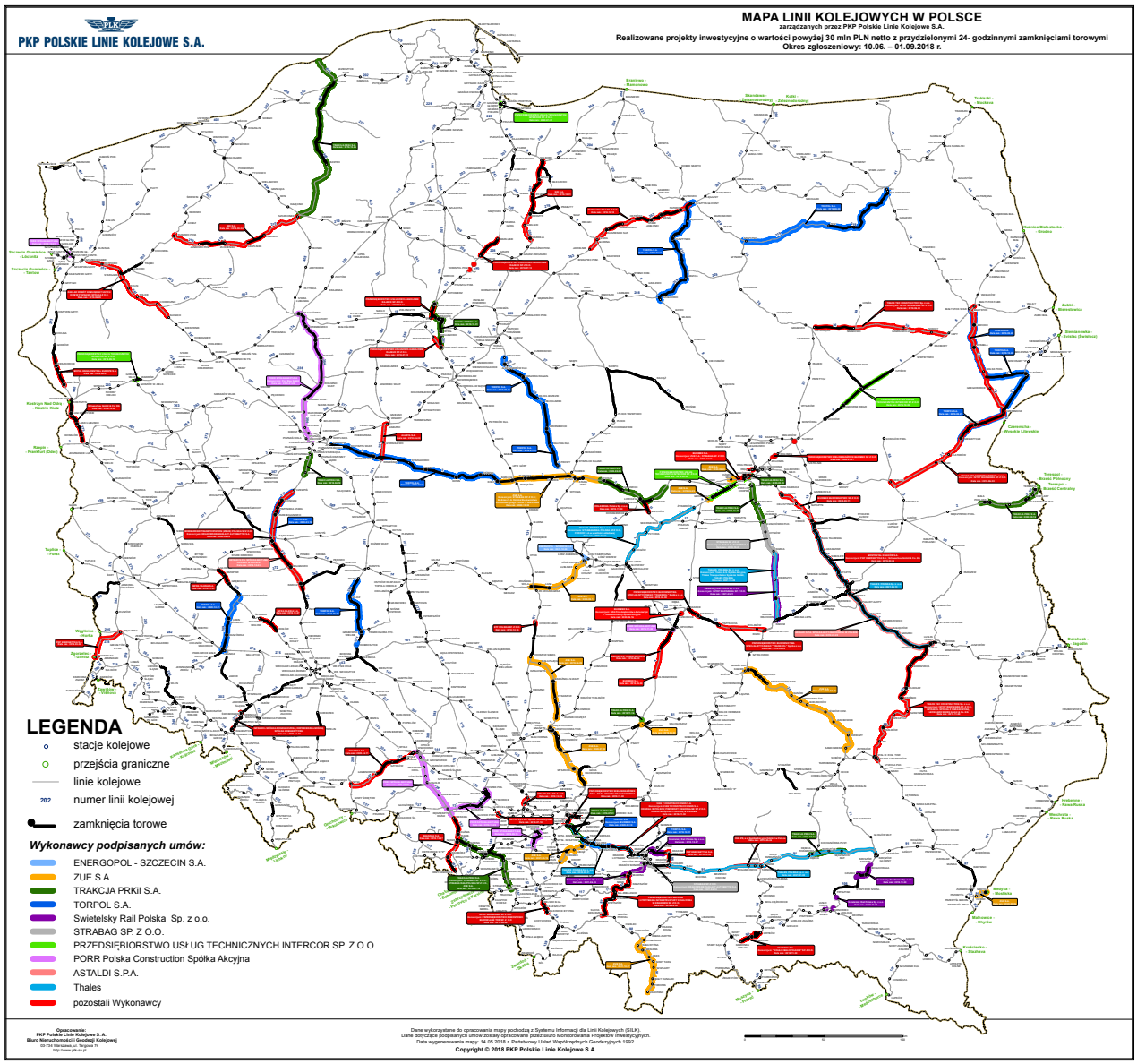
No.	Project Name	Estimated project value acc. to the KPK (07.2017)
1.	Works on railway line no. 7 Warszawa Wschodnia Osobowa - Dorohusk on the Warszawa - Otwock - Dęblin - Lublin section, stage I	2,954.7
2.	Works on the E59 railway line on the Poznań Główny - Szczecin Dąbie section (preliminary works)	2,236.0
3.	Works on E 20 railway line on the Warszawa - Poznań section - other works, the Sochaczew - Swarzędz section	2,017.1
4.	Modernisation of E 30 railway line, the Zabrze - Katowice - Kraków section, stage II b	1,825.7
5.	Works on the line E75 on the Czyżew - Białystok section	1,610.0
6.	Works on the E59 railway line on the Wrocław - Poznań section, stage IV, the Lower Silesia voivodship border - Czempiń section	1,287.7
7.	Works on the E 30 railway line on the Kraków Główny Towarowy - Rudzice section and the addition of the agglomeration line tracks	1,043.3
8.	Works on the line E75 in the Sadowne - Czyżew section along with other works in the Warszawa Rembertów - Sadowne section	1,025.2
9.	Works on the railway lines No. 97, 98, 99 on the Skawina - Sucha Beskidzka - Chabówka - Zakopane section	910.0
10.	Modernisation of railway line no. 4 - the Central Railway Trunk Line stage II	843.9

The significant scale of the signed construction agreements allowed for the opening of further construction sites in 2017 and the launch of fronts for works on many key railway lines, such as line number 7 (the Warszawa - Otwock - Dęblin - Lublin section), the E59 line (the Poznań Główny - Szczecin Dąbie section and the section from the border of the Lower Silesian Voivodship to Czempin) and the E20 line (the Sochaczew - Swarzędz section).

Agreements signed in 2017 broken down by programmes and types (PLN mln)

	Budget	CEF 2014-2020	OP EP 2014-2020	OPI&E 2014-2020	OPI&E 2007-2013	ROP 2014-2020	ROP 2007-2013	Total
Supplies		83,8						83,8
Con-struction works	2 217,4	6 564,0	1 548,5	6 575,1	2,2	1 033,9	1,2	17 942,3
Services	63,5	183,9	31,1	222,3	0,2	42,0		543,1
Total	**2 280,9**	**6 831,7**	**1 579,6**	**6 797,5**	**2,4**	**1 075,9**	**1,2**	**18 569,1**

Execution of signed agreements by Contractors



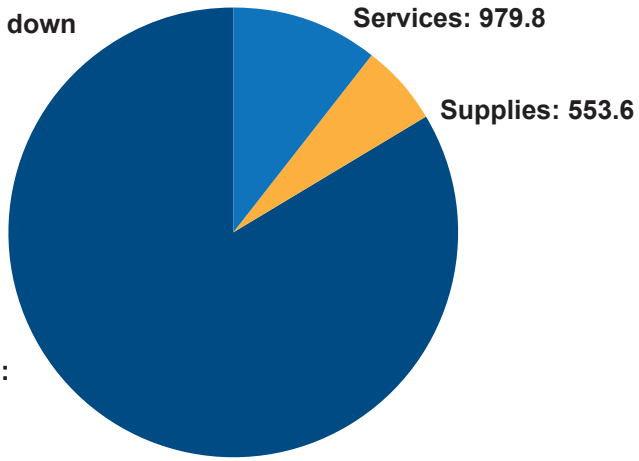
Apart from resolving previously announced proceedings, further proceedings were successively announced in 2017. Under the projects included in the KPK, tender procedures were initiated for a total amount of almost PLN 9.3 bln (estimated net value of contracts). The largest ones are listed in the table below.

The largest construction works proceedings announced in 2017 (PLN mln)

Project Name	Programme	Contract name	Estimated contract value (net)
C-E 65 Chorzów Batory – Tarnowskie Góry – Karsznice – Inowrocław – Bydgoszcz – Maksymilianowo	OPI&E 2014 2020	Preparation of design documentation and execution of construction works in the Design and Build formula for the task LOT C – Works on the railway lines no. 131, 686, 687, 704 on the Kalina section (66.800 km) – Rusiec Łódzki (137.500 km)	756.3
C-E 65 Chorzów Batory – Tarnowskie Góry – Karsznice – Inowrocław – Bydgoszcz - Maksymilianowo	OPI&E 2014 2020	Preparation of design documentation and execution of construction works in the Design and Build formula for the task LOT A – Works on the railway line no. 131 on the Chorzów Batory section (5.900 km) – Nakło Śląskie (29.000 km)	644.3
Railway line no. 93 Trzebinia – Oświęcim – Czechowice – Dziedzice	OPI&E 2014 2020	Preparation of design documentation and execution of construction and assembly works	414.0
C-E 65 Chorzów Batory – Tarnowskie Góry - Karsznice - Inowrocław – Bydgoszcz – Maksymilianowo	OPI&E 2014 2020	Preparation of design documentation and execution of construction works in the Design and Build formula for the task LOT B – Works on the railway line no. 131 on the Nakło Śląskie section (29.000 km) – Kalina (66.800 km)	342.1
Railway line no. 97, 98, 99 Skawina - Sucha Beskidzka - Chabówka – Zakopane	Budget	Tender 2 - Modernisation of the railway line no. 99 Chabówka – Zakopane	335.5
Railway line no. 93 Trzebinia - Oświęcim – Czechowice - Dziedzice	OPI&E 2014 2020	Preparation of design documentation and execution of construction and assembly works	324.8
C-E 65 Chorzów Batory – Tarnowskie Góry – Karsznice – Inowrocław – Bydgoszcz – Maksymilianowo	OPI&E 2014 2020	Preparation of design documentation and execution of construction works in the Design and Build formula for the task LOT D – Works on the railway lines no. 131, 542, 739 on the Rusiec Łódzki section (137.500 km) – Zduńska Wola Karsznice (170.212 km)	324.2
Construction of the Metropolitan Szczecin Railway	OPI&E 2014 2020	Task A: Modernisation of the railway line no. 406 on the Szczecin Główny – Police section	300.9
Railway line no. 289 Legnica – Rudna Gwizdanów	OPI&E 2014 2020	Preparation of design documentation and execution of construction works	242.3

Tendering procedures announced in 2017 broken down by type of contract (PLN mln)

The vast majority of proceedings announced in 2017 were construction works contracts – 83%. More than 56% were agreements financed under the Operational Programme Infrastructure and Environment 2014-2020.



Proceedings announced in 2017 broken down by programmes and types (PLN mln)

	Budżet	CEF 2014-2020	OP EP 2014-2020	OPI&E 2014-2020	OPI&E 2007-2013	ROP 2014-2020	ROP 2007-2013	Total
Supplies	-	86,0	-	467,7	-	-	-	553,6
Construc-tion works	2 289,6	641,4	-	4 400,4	69,0	330,4	1,2	7 732,1
Services	379,7	181,5	45,8	363,8	0,1	8,8	-	979,8
Total	**2 669,4**	**908,9**	**45,8**	**5 231,9**	**69,1**	**339,2**	**1,2**	**9 265,5**

Major issues related to changes in investments

1. Work of the High Level Group on Railway Investments

In 2017, the work of the High Level Group, which was established in December 2016 by the Minister competent for development and finance at the initiative of the European Commission, continued. The objective of this Group is to develop solutions that will allow for more efficient implementation of railway investments in Poland. Representatives of, among others, the European Commission, the Ministry competent for investment and development, the Ministry competent for infrastructure, railway companies, the Centre for EU Transport Projects, the Public Procurement Office and voivodship boards participate in the work of the committee. In 2017, 4 meetings of the Group were carried out, the main topics of which were the status of railway projects together with the project monitoring system, as well as the existing system and operational barriers with the presentation of proposals for remedial actions. Issues related to tender documentation and public procurement procedures, as well as legal solutions for railway investments were also discussed.

2. Visual monitoring using modern technologies

When analysing the possibilities of using modern technologies to monitor the implementation of investment tasks, a pilot project was carried out in 2017 using, among others, unmanned aircraft (drones). As a result of the application of the above-mentioned technology, a report containing a video, photographs and orthophotomaps was developed, which showed, among others, the progress of work or involvement of the contractor's resources.

3. Framework agreement for replacement execution

Taking into consideration the experience from the implementation of investments under the previous EU financial perspective 2007-2013 and the fact that the perspective 2014-2020 is implemented on a significantly larger scale (in terms of available financial resources), PKP Polskie Linie Kolejowe S.A. have decided to implement additional measures aimed at minimising the risk associated with the occurrence of difficulties for contractors in meeting the contractual conditions. For this purpose, in 2017, the Company initiated proceedings for the so-called substitute execution of construction works on the managed railway lines. As a result of such proceedings, framework agreements are concluded with selected contractors.
The framework agreement allows for quick selection (in accordance with the provisions of the PPL – Public Procurement Law) of a contractor who will be able to complete works commenced by another contractor, and with whom the agreement has been terminated for various reasons. The framework agreement shall also aim to establish the conditions governing construction works contracts which may be awarded during a given period, in particular the maximum unit prices for the execution of individual works. The framework agreements and the implementation agreements concern the projects included in the KPK, taking into consideration the sources of financing indicated in this document.

4. Proposals for further improvements in the area of legal changes, in particular the PPL Act

In 2017, the Company carried out activities related to taking initiatives in the area of legal changes, which would improve the investment process, and the current cooperation

with authorities issuing individual decisions was intensified in order to minimise delays in the schedules of tasks performed.
In 2017, based on the experience of conducting tender procedures carried out under the amended PPL Act, the Company developed a list of issues concerning recommendations for legislative improvements which have a potential impact on the process of preparing and awarding public procurement based on the PPL for ongoing and planned railway investments.

5. Project management and monitoring

In 2017, field monitoring was continued on the construction sites of the most important investments carried out within the KPK. The work of the monitoring teams during field visits consisted both in obtaining additional information, as well as indicating recommendations for further actions and systematically passing them to the project teams. In 2017, investment monitoring teams carried out over 120 monitoring visits.
In the first quarter of 2017, as part of the cooperation of PKP Polskie Linie Kolejowych S.A. with the Ministry responsible for infrastructure, the Ministry responsible for investments and development and CUPT, an additional report was implemented - i.e. a table showing the status of KPK projects implementation aimed at a comprehensive monitoring of individual investment projects included in the programme. It contains all projects included in the KPK with the breakdown into individual contracts and presents information on, among others, the status of tender procedures, material and financial advancement or milestones. The report is prepared on a monthly basis and submitted to the above mentioned Ministries and the Centre for EU Transport Projects.

Sources of financing

EU subsidy applications (SA)

In 2017, PKP Polskie Linie Kolejowe S.A. submitted 5 applications for co-financing under CEF (CEF financial instrument “Connecting Europe Facility”) – in accordance with the table below. Due to the limited allocation available, the INEA issued positive decisions for 4 projects and also in 2017 they were signed between the INEA Agency (Innovation and Networks Executive Agency) and the Grant Agreement Company (GA). The total value of projects for which the GA was concluded in 2017 amounted to EUR 996,818,2 thousand, including the CEF funding of EUR 816,284,3 thousand.

In total, as at the end of 2017, the Company signed the Grant Agreements for 21 projects with a total value of EUR 4,329,323,6 thousand, of which CEF funding will amount to EUR 3,444,456,200.00 (including annexes).

List of Grant Agreements signed in 2017 (EUR thousand)

No.	Project Name	Date of application	Date of signing the GA by INEA	Project value with the GA	Value of CEF co-funding under the Grant Agreement
1.	Work on the E 75 railway line on the Białystok - Suwałki - Trakiszki (state border) section, stage I Białystok - Ełk section	2017-02-06	2017-10-30	398 043,0	338 336,6
2.	Work on the E30 railway line on the Kędzierzyn Koźle - Opole Zachodnie section	2017-02-06	2017-10-30	142 384,6	90 015,7
3.	Work on primary passenger lines (E 30 and E 65) within the Śląskie Voivodship, stage I: the E 65 line on the Będzin - Katowice - Tychy - Czechowice Dziedzice - Zebrzydowice section	2017-02-06	2017-10-30	111 709,1	94 952,7
4.	Installation of the ERTMS/ETCS systems on the TEN-T core network lines	2017-02-06	2017-10-30	344 681,5	292 979,3
5.	Work on the C-E 20 railway line on the Skierniewice - Pilawa - Łuków section	2017-02-06	-	-	-
			In total	**996 818,2**	**816 284,3**

Thus, PKP Polskie Linie Kolejowe S.A. used all available allocation under CEF funds.
The GA sets out detailed conditions for the granting of financial aid, the activities eligible for support, as well as the rules and deadlines for the implementation of the projects.
In 2017, PKP Polskie Linie Kolejowe S.A. also applied for EU funds under the OPI&E (Operational Programme Infrastructure and Environment) and OP EP (Operational Programme Eastern Poland).

Within the framework of the Operational Programme Infrastructure and Environment, the Company submitted 7 applications for co-funding – according to the table below, the total value of which amounted to PLN 5,167,700,7 thousand, including PLN 4,066,898,5 thousand under the CF (Cohesion Fund) co-funding. Under the OP EP, the Company applied for EU funds for 8 projects – according to the table below, where co-funding from the ERDF (European Regional Development Fund) will reach the value of PLN 1,278,052.0 thousand.

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

No.	Project Name	Date of application	Total net project value with the SA	CF co-funding value in accordance with the SA
1.	Social campaign “Safe crossing”	2017-02-28	37 000,0	31 450,0
2.	Work on the railway line no. 289 on the Legnica - Rudna Gwizdanów section	2017-03-31	217 595,1	134 400,0
3.	Construction of the ERTMS/GSM-R system infrastructure on railway lines of PKP Polskie Linie Kolejowe S.A. within the framework of ERTMS NPW	2017-06-30	3 079 512,0	2 617 364,2
4.	Works on railway line no. 1 on the Częstochowa - Zawiercie section	2017-09-29	418 559,6	218 108,2
5.	Improvement of the technical condition of passenger service infrastructure (including adaptation to the requirements of TSI PRM), Stage I Szczecin Główny	2017-10-27	65 806,2	55 792,6
6.	Work on the railway line no. 93 on the Trzebinia - Oświęcim - Czechowice Dziedzice section	2017-11-22	610 755,6	480 317,5
7.	Work on the railway line no. 8, the Warka - Radom section (Lot C, D, E)	2017-12-01	738 472,2	529 466,0
		In total	**5 167 700,7**	**4 066 898,5**

List of submitted FAs within the framework of the OP IE (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.	Work on railway lines no. 25, 74, 78 on the Stalowa Wola - Tarnobrzeg/Sandomierz - Ocice/Padew section - design work	2017-03-31	13 681,6	11 629,3
2.	Work on railway line no. 68 on the Stalowa Wola Rozwadów - Przeworsk station - pre-design work	2017-05-05	2 160,0	1 836,0
3.	Work on the railway line no. 32 on the Białystok - Bielsk Podlaski (Lewki) section	2017-08-17	70 054,6	59 546,4
4.	Work on the railway line no. 25 on the Skarżysko Kamienna - Sandomierz section	2017-08-31	445 464,8	344 041,6
5.	Work on the railway line no. 31 on the voivodship border - Czeremcha - Hajnówka section	2017-08-17	193 650,3	164 602,8
6.	Work on the railway line no. 52 Lewki - Hajnówka	2017-08-17	86 464,5	73 494,8
7.	Work on the railway line no. 216 on the Działdowo - Olsztyn section	2017-08-31	427 978,8	363 782,0
8.	Work on the railway line no. 219 on the Ełk - Szczytno section	2017-12-29	304 846,0	259 119,1
		In total	**1 543 803,6**	**1 278 052,0**

Funding agreement (FA)

In 2017, the Company concluded with the Centre for EU Transport Projects (CEUTP) 11 agreements for co-funding within the framework of the OPI&E 2014-2020 for a total net amount of PLN 6,532,270 thousand, of which the co--funding from EU funds will amount to PLN 4,206,432,3 thousand – according to the table below. At the end of 2017, PKP Polskie Linie Kolejowe S.A. had contracted funds for 23 projects for the total amount of allocation of EU funds at the level of PLN 10,145,704,2 thousand.

Signed FAs 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. 146 on the Wyczerpy - Chorzew Siemkowice section	2017-03-31	250 140,9	250 140,9	207 617,0	176 474,4
2.	Social Campaign “Safe crossing”	2017-04-20	37 000,0	37 000,0	31 450,0	31 450,0
3.	Work on the railway line no. 140, 148, 157, 159, 173, 689 and 691 on the Chybie - Żory - Rybnik - Nędza/Turze section	2017-05-18	379 550,7	379 373,7	308 772,2	262 456,4
4.	The improvement of the technical condition of passenger service infrastructure (including adaptation to the requirements of TSI PRM), Stage II Gdańsk Główny	2017-06-23	59 640,0	59 640,0	59 640,0	50 694,0
5.	The improvement of the capacity of the E 20 railway line on the Warszawa - Kutno section, stage I: Work on the railway line no. 3 on the Warszawa - the LCS Łowicz border	2017-06-30	91 618,4	91 618,4	81 357,1	69 153,5
6.	The improvement of the capacity of the E 20 railway line on the Warszawa Rembertów - Mińsk Mazowiecki section, stage I	2017-06-30	138 741,2	97 776,8	84 303,2	71 657,7
7.	Work on railway lines no. 153, 199, 681, 682 and 872 on the Toszek Północ - Rudzieniec Gliwicki - Stare Koźle section	2017-06-30	282 667,1	282 667,1	282 667,1	240 267,0
8.	Work on the railway line no. 289 on the Legnica - Rudna Gwizdanów section	2017-10-03	197 836,5	197 586,5	143 744,1	122 182,5
9.	Restoration of traffic in the Łódź Railway Junction (TEN-T), stage II, section Łódź Fabryczna - Łódź Kaliska/Łódź Żabieniec	2017-10-03	1 914 986,7	1 914 986,7	1 914 986,7	1 627 738,7
10.	Construction of the ERTMS/GSM-R system infrastructure on railway lines of PKP Polskie Linie Kolejowe S.A. within the framework of ERTMS NPW	2017-12-29	2 799 580,0	1 595 385,7	1 595 385,7	1 356 077,8
11.	Work on the railway line no. 1 on the Częstochowa - Zawiercie section	2017-12-29	380 508,7	380 508,7	233 270,8	198 280,2
		In total	**6 532 270,0**	**5 286 684,4**	**4 943 193,9**	**4 206 432,3**

In 2017, the Company also concluded 7 FA within the framework of the OP IE for the total net amount of PLN 1,128,375,4 thousand, including the amount of EU funds at the level of PLN 907,111,3 thousand - in accordance with the table below. At the end of 2017, PKP Polskie Linie Kolejowe S.A. had contracted funds for 8 projects for the total amount of allocation of EU funds of PLN 1,274,163,700.00.

Signed FAs within the framework of the OP IE (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 railway lines no. 25, 74 and 78 on the Stalowa Wola - Tarnobrzeg/Sandomierz - Ocice/ Padew section - design work	2017-06-28	13 681,6	13 681,6	13 681,6	11 629,3
2.	Work on the railway line no. 68 on the Stalowa Wola Rozwadów - Przeworsk section - pre-design work	2017-06-30	2 160,0	2 160,0	2 160,0	1 836,0
3.	Work on the railway line no. 32 on the Białystok - Bielsk Podlaski (Lewki) section	2017-11-22	63 686,0	63 684,4	63 684,4	54 131,7
4.	Work on the railway line no. 25 on the Skarżysko Kamienna - Sandomierz section	2017-11-22	404 968,0	404 968,0	352 767,6	299 852,5
5.	Work on the railway line no. 31 on the voivodship border - Czeremcha - Hajnówka section	2017-11-22	176 045,8	176 043,8	176 043,8	149 637,2
6.	Work on the railway line no. 52 Lewki - Hajnówka	2017-11-22	78 762,4	78 601,3	78 601,3	66 811,1
7.	Work on the railway line no. 216 on the Działdowo - Olsztyn section	2017-11-22	389 071,6	380 251,0	380 251,0	323 213,3
		In total	**1 128 375,4**	**1 119 390,1**	**1 067 189,7**	**907 111,3**

Investment Forum

The Investment Forum (IF) serves as a platform for cooperation, dialogue and agreement on investment issues for the broadly understood railway sector (contracting party, contractors, public administration). 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 – in this respect, a risk matrix was developed. Some of the provisions after the presentation of postulates were reflected in the Terms of Reference (ToR), and some of the group's provisions 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. In 2017, 27 meetings of Working Groups were organised. In addition, regular meetings are held within the Board of Experts 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.

Topics worked out and effects achieved in 2017 within particular Working Groups:

Contractual Provisions Working Group

1. amendments to model agreements and basic documents were agreed, consisting in a reduction in the amount of contractual penalties for exceeding the offered number of hours of track closures and the introduction of gradation of penalties;
2. The following changes to the background documents have been agreed:

    - reducing the contractual penalty for withdrawal from the agreement from 30% to 10%;
    - reducing the amount of the contractual penalty for the delay in providing full insurance documentation from PLN 40,000.00 to PLN 20,000.00 for each day of delay;
    - modification of the contractual penalty for failure to meet the deadline for removing the defect specified in the take-over certificate up to PLN 3,000.00 for each day of delay, in the case of a defect causing difficulties in railway traffic and up to PLN 1,000.00 for each day of delay, in the case of other defect;
    - reducing the total amount of accrued contractual penalties from 30% to 20% of the Accepted Contractual Amount;
    - modification of the penalty for non-execution at the stage of the contract in the context of the postponement of the due date;
    - modification of the penalty for failure to perform or commencing Works without the Quality Assurance Programme;
    - modification of the penalty for commencing works without temporary traffic regulations while performing the works;
    - modification of the penalty regarding the material and financial schedule;
    - renouncement of the contractual penalty for the submission of an agreement with a subcontractor that does not comply with the provisions set out in Sub-Clause 4.4 of the TCA (Subcontractors);
    - renouncement of the contractual penalty for failure to meet the purchase and delivery dates of any of the items of equipment and materials whose purchase and delivery obligation results from Sub-Clause 14.5 and which are listed in the Annex to the Functional and Utility Programme (FUP);
    - development of a new definition of a Section (Sub-Clause 1.1.5.6 of the TCA).

Selection Criteria Working Group

Non-price selection criteria have been introduced, including:

1. completion date;
2. accessibility of the railway line (track closure duration);
3. experience of the Contractor's staff.

Technical Working Group:

1. during the Group's meetings, the producers pointed out the need for the contracting party to require the contractor to store materials and products close to the construction site, together with specifying the storage conditions. This need was justified by the possible future problems with the supply of materials and the ability of operators to do so. The legitimacy of earlier deliveries of materials and equipment has also been confirmed;
2. the assumptions of the SMS-PW-17 procedure were discussed (concerning the SMS Security Management System) and it was agreed on where is the "borderline" between the SMS-PW-17 procedure and certification.

In addition, the year 2017 marked the 5th anniversary of the IF's activity. It has been pointed out that it is necessary to continue the dialogue within the IF and that agreement in most areas is possible provided that the open and substantive approach of all parties involved in the work of the IF is maintained.

Engineer and Designer Working Group (working together in 2017)

The most important issues worked out by the group:

1. a change in the approach to the role of the engineer;
2. development of non-price criteria for the selection of a designer, including:

    - experience of the Contractor's staff;
    - methodology;
    - adaptation of the "methodology" criterion to the conclusions of the Company's experience and the indications of the Centre for EU Transport Projects (CEUTP).

However, these criteria need to be simplified and work is ongoing. It was also established that it was necessary to examine the possibility of using the current resources of the designer market, in the context of adapting to the requirements related to non-price criteria.

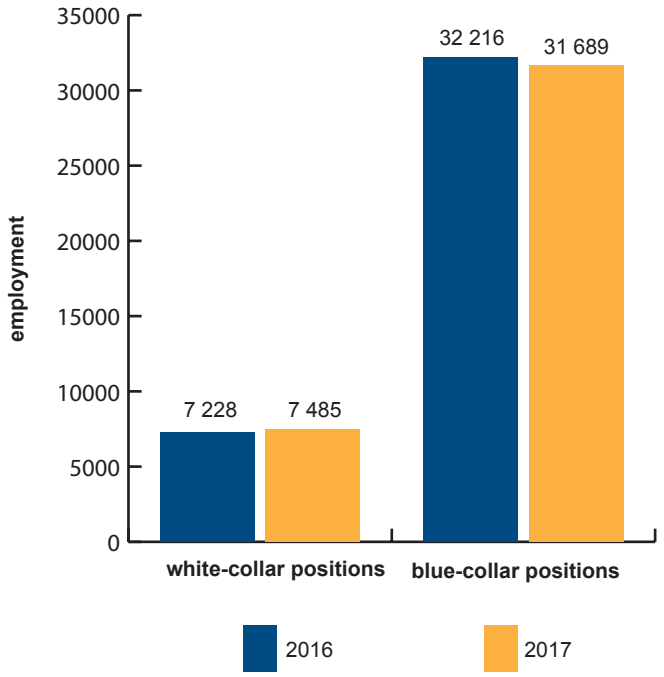
3. verification of the parties' approach to risks in contracts – a risk matrix is developed;
4. renouncement of the requirement of 5 years' experience in independent technical functions in the construction industry in the case of supervisory inspectors identified in the engineer's variable teams;
5. reducing the number of supervisory inspectors in permanent engineering teams;
6. minimising the requirements of the engineering office;
7. change in the provisions concerning the preparation of reports, so that daily reports are prepared only at the written request of the contracting party;
8. optimisation of the building permit requirements;
9. adaptation to market needs of requirements concerning the experience of an engineer, designer.

Human Resources

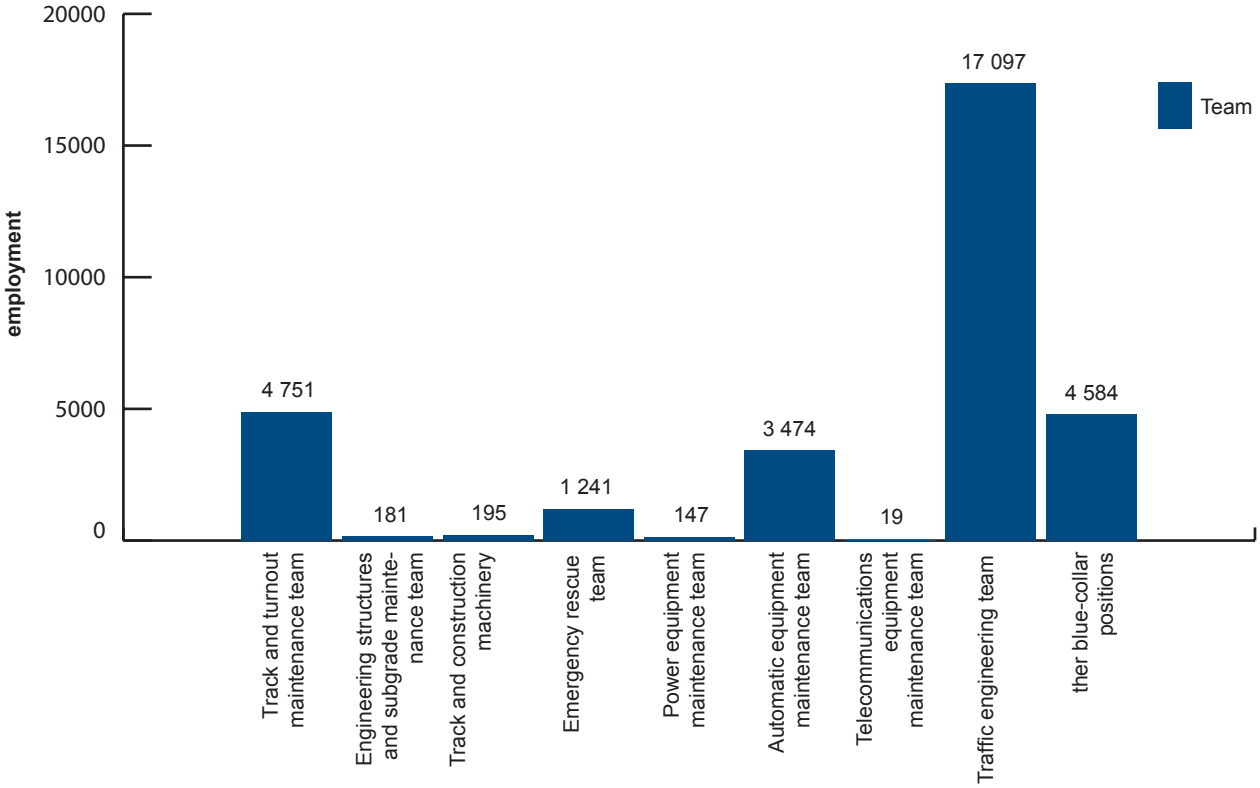
Employment analysis

In 2017, the employment level at PKP Polskie Linie Kolejowe S.A. amounted to 39,174 people and decreased by 329 compared to 2016. As regards the blue-collar positions, the employment level decreased from 32,216 employees (as of 31 December 2016) to 31,689 employees (as of 31 December 2017), i.e. the employment level went down by 527 people (1.64%). The decrease in the number of workers is due to the closure of traffic stations and the introduction of Local Control Centres (LCS) as a result of the completion of investment works. In 2017, the Company adapted the employment structure to the needs resulting from the implementation of investment processes, strengthening, among others, the teams implementing investments in the Investment Execution Centre. The above influenced the increase in the employment level of white-collar positions from 7,287 (as of 31 December 2016) to 7,485 employees (as of 31 December 2017), i.e. the employment level this group went up by 198 people (2.72%).

Employment by occupational groups as of 31 December 2017 – in persons

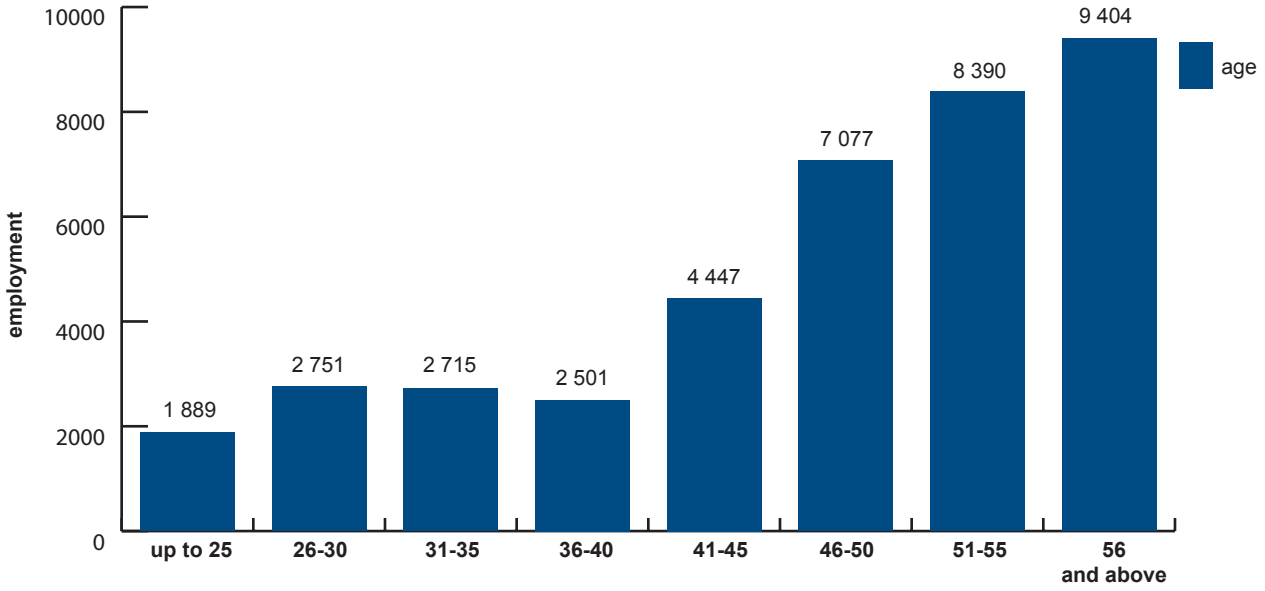


Employment by teams – as of 31 December 2017 – in persons



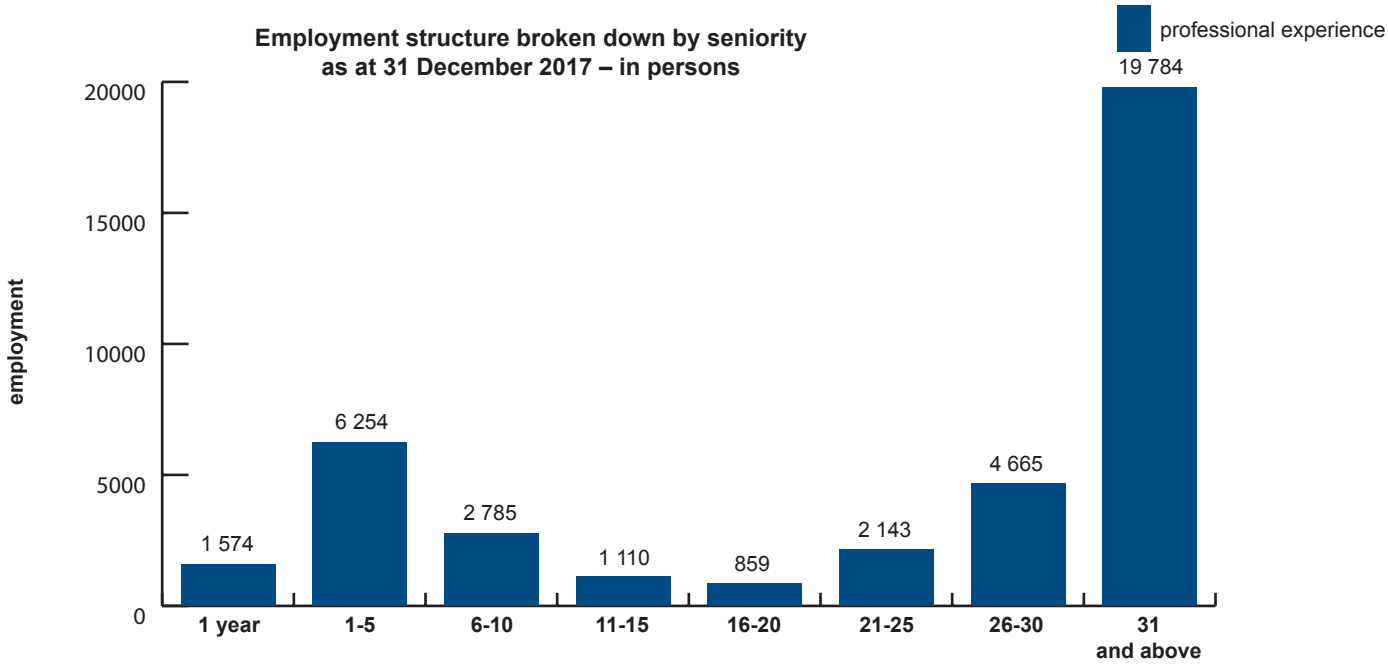
The employees aged 26-50, i.e. who are people in the period of their most intensive professional activity, are the largest group in the Company. In 2017, they comprised 49.76% of the entire workforce (19,491 employees). In relation to 2016, the employment in this group decreased by 298 employees, i.e. by 0.33%. The employees aged 25 and less comprised 4.82% of the entire workforce in 2017 (1,889 employees). Compared to 2016, the employment in this group decreased by 50 employees, i.e. by 0.09%. In 2017, employees aged 51 and more comprised 45.42% of the entire staff (17,794 employees). In this group, the employment level grew by 19 employees in comparison to 2016, i.e. by 0.42%.

Employment structure by age as at 31 December 2017 – in persons



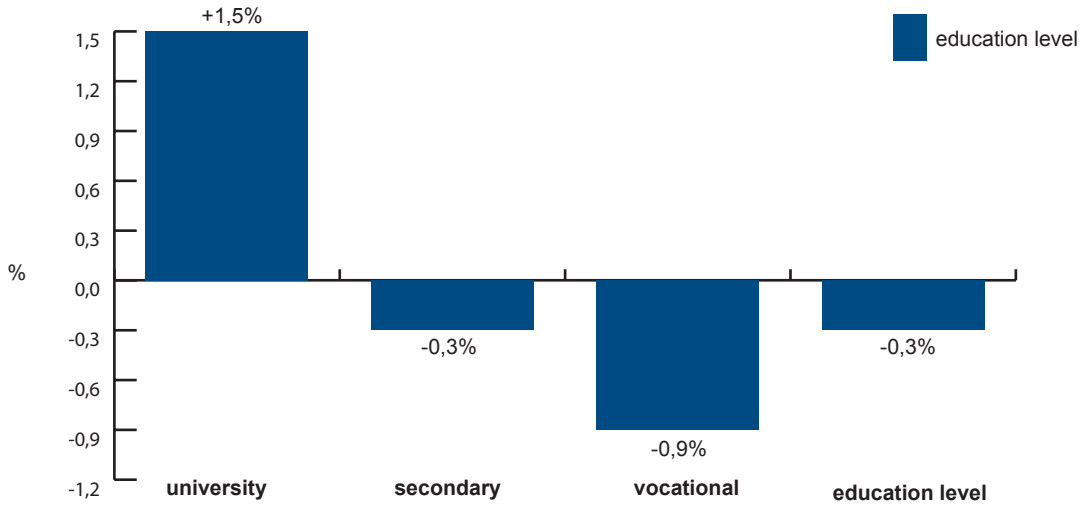
Employees with up to 10 years of seniority comprised 27.09% of the staff (10,613 persons) – this group recorded an increase by 877 employees, i.e. by 2.44% (compared to 31 December 2016). Employees with 11 to 20 years of seniority comprised 5.03% of the entire staff (1,969 persons), which means a decrease by 204 employees, i.e. by 0.47% (compared to 31 December 2016). The most numerous group at the Company were employees with more than 21 years of seniority, who comprised 67.88% of the total number of employees (26,592 persons). In comparison to 31 December 2015, this group recorded a decrease by 1,002 employees, i.e. by 1.97%.

Employment structure broken down by seniority as at 31 December 2017 – in persons



The employment structure at PKP Polskie Linie Kolejowe S.A. is systematically improving due to education.
In 2017, the share of employees with higher education increased by 1.5% in relation to 2016, 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 2017



Staff development

PKP Polskie Linie Kolejowe S.A. invests in developing the competencies and qualifications of its employees, and acquiring new rights necessary to perform work. The most frequent forms of acquiring new skills implemented by the Company are: specialist training, participation in industry conferences and seminars, raising the level of foreign language skills, raising the level of education at higher and post-graduate studies, as well as undergoing legal counsel traineeships. In addition, the Company conducts many internal trainings, using a large group of high-class specialists and experts in the railway industry, who, sharing their knowledge and experience, help the company to build a specialist staff. The Company is constantly increasing its expenditure on activities related to employee development. In 2017, a total of 103,000 participants (one employee may participate in several training courses) raised their qualifications. More than PLN 10 mln has been allocated to these activities.

In 2017, 743 employees took advantage of the opportunity to improve their professional qualifications at the university, post-graduate studies and language courses. Subsequent editions of post-graduate studies were continued in cooperation with the Union of Railway Employers (ZPK), conducted by the Gdańsk Foundation for Management Development (GFKM). The Company also establishes cooperation with higher education institutions in the area of launching faculties with a railway profile.

An extremely important group of employees, to whom specially prepared training cycles are directed, are employees of teams implementing investments and departments preparing and supporting these activities.
In 2017, these employees benefited from 13 training cycles. A total of 844 employees of investment teams were trained.
Courses referred to above covered the following issues:

1. planning and financial settlement of projects under the perspective 2014-2020, i.e. budgeting, financial arrangements, material and financial schedule of projects;
2. awarding public procurements for linear construction works (with indication of railway investments) after the amendment of the Public Procurement Law;
3. carrying out investments based on the FIDIC (International Federation of Consulting Engineers) procedures in the Design and Build system;
4. carrying out investments based on the FIDIC procedures in the Build system;
5. the rules for dealing with claims and disputes under the FIDIC contractual terms and conditions;
6. proper project settlement and preparation for inspection (project audit);
7. changes in the construction law;
8. project management methodology: PRINCE2 Foundation and PRINCE2 Practitioner;
9. the M_o_R Foundation risk management methodology.

As part of the activities supporting the training of employees in positions related to railway traffic management and safety, PKP Polskie Linie Kolejowe S.A. conducted the process of professional preparation on its own. The training and vocational courses allow for a shorter period of time to retrain employees employed in other positions with the required length of service to a given railway position. During training and qualification courses completed in 2017, 1,696 employees were granted the right to perform activities on railway stations (related to railway traffic operation and safety).
Lectures at qualification courses are conducted by the Company's employees who have appropriate qualifications and professional experience, including about 100 employees employed as instructors. This is particularly important in view of the need to properly prepare future employees who, in their daily work, will carry out duties directly related to the operation and safety of railway traffic.

Additionally, as part of professional development, the Company conducts training for traffic dispatcher and candidates for traffic dispatchers on a railway traffic control and communication simulator. In 2017, more than 1,400 traffic dispatchers at traffic stations equipped with computer devices took part in practical classes at the simulator.
Bearing in mind the changes in regulations concerning employees driving railway vehicles, i.e. the need for them to obtain a licence and engine driver's certificate, the Company has taken steps to adapt its internal guidelines to the requirements of EU regulations and Polish law. The "Procedure for issuing, updating, suspending and revoking the engine driver's certificate in PKP Polskie Linie Kolejowe S.A." was developed and approved. In 2017, due to the need for employees to maintain their driving licences, the process of exchanging driving rights for an engine driver's licence was completed. This process involved nearly one thousand employees of the Company. Moreover, in order to supplement the current staff authorised to drive vehicles, PKP Polskie Linie Kolejowe S.A. organises trainings for newly hired employees according to new regulations, i.e. in order to obtain a licence and engine driver's certificate. By the end of 2017, 97 employees of the Company had participated in this type of training.
Another type of activities undertaken by the Company, which allow for the development of staff and ensuring the continuity of employment of employees on the positions of the core business, include:

1. preparation of promotion paths and internal redeployment, especially for those positions where a certain length of service at railway stations is required. The advantage of such action is, among others: shorter time of professional preparation and adaptation for a given position, lower costs and shortening of the recruitment process, increased motivation of employees and improvement of railway traffic safety;
2. recruitment of staff to the railway traffic operation area;
3. establishing and developing cooperation with upper secondary schools and universities.

PKP Polskie Linie Kolejowe S.A. conducts a full range of trainings in occupational health and safety. Particular emphasis in this respect is placed on the training of staff working in positions related to railway traffic management and safety, as in the case of these positions, the acquisition of safe work skills concerns not only the employee, but also co-workers and customers. The proper handling of emergency situations or the ability to provide first aid are also issues to which the Company pays special attention. In total, in 2017, over 21,000 employees of the Company were trained in OHS.

Counteracting the effects of the generation gap and cooperation with upper secondary schools

In order to limit and counteract the effects of the generation gap, PKP Polskie Linie Kolejowe S.A. conducts an in-depth and detailed analysis of employment needs and implements a number of measures aimed at smooth completion of employment. Considering the above, the cooperation with Labour Offices, upper secondary schools and universities is constantly expanded, thanks to which the Company can quickly and efficiently attract qualified staff. In 2017, PKP Polskie Linie Kolejowe S.A. reached for a new tool to attract employees and took part in Career Days during the 12th TRAKO International Railway Fair (26-29 September 2017, Gdańsk).
PKP Polskie Linie Kolejowe S.A. also actively cooperates with upper secondary schools located all over the country, which offer education on railway faculties, i.e:

1. railway transport technician;
2. rail road and engineered facility technician;
3. automatic control and signalling technician;
4. rail transport power engineering technician.

This cooperation and the scholarship programme offered to the best students is becoming more and more popular with both the authorities managing and supervising educational institutions, as well as students and their parents. The number of schools with which the Company starts and continues its cooperation has been growing year by year, and the number of scholarship holders has also increased. The year 2017 was closed with the number of nearly 40 schools cooperating with PKP Polskie Linie Kolejowe S.A. and nearly 400 scholarship holders regularly receiving financial support. In total, there are currently several dozen classes in all of the above-mentioned institutions, including:

- 73 classes majoring in railway transport technician;
- 12 classes majoring in rail road and engineered facility technician;
- 13 classes majoring in automatic control and signalling technician;
- 13 classes majoring in rail transport power engineering technician.

As part of the cooperation, PKP Polskie Linie Kolejowe S.A. enables students studying railway faculties to participate in apprenticeships and internships at the side of qualified employees on the premises of their organisational units. Thanks to this, students have an opportunity to get to know the working environment (including the profession they will pursue in the future) and the values that guide the Company.
As far as possible, school didactic laboratories were also equipped, which made it easier for students to acquire and consolidate their skills (e.g. centralised mechanical devices were handed over: track circuit, dependency box, lever bench, switch levers, E-type relay devices – cubic signal box control panels).

In addition, students of railway faculties have the opportunity to learn on a modern simulator of railway traffic control and communication equipment, which was opened by the Company in 2015. A dozen or so monitors of the simulator reproduce real situations that may occur in railway traffic, as well as the operation of railway traffic control equipment. The main aim of such classes is to provide practical knowledge and awareness of the scope of responsibility of the work of the traffic dispatcher. In many institutions, railway classes are conducted by qualified employees of the Company, who share their professional experience and provide students with the necessary knowledge.

External communication

Opening of the Kraków link

The Kraków Zabłocie - Kraków Podgórze link is the largest new railway facility in Poland, commissioned in 2017. It is more than 1,100 m long. The link opens up opportunities for fast travel in the city, agglomeration and region and shortens the travel time of long-distance trains. Thanks to three flyovers and two viaducts, which are part of the link, it is possible to travel "over Kraków" faster.

PKP Polskie Linie Kolejowe S.A. signed the agreement for the construction of the facility on 16 September 2015 with a consortium of Budimex SA (leader) and Ferrovial Agroman SA (partner). The total value of the project amounted to over PLN 352 mln and the EU co-funding – PLN 192 mln. The opening ceremony of the link took place on 20 October 2017.

Research and Development in Railway Infrastructure

The BRIK project is a programme supporting scientific research and development works in the area of railway infrastructure, implemented jointly by the National Research and Development Centre (NRDC) – executive agency of the Ministry competent for higher education and PKP Polskie Linie Kolejowe S.A. The contribution to the programme budget on the part of NRDC and PLK amounts to PLN 25 mln each (the total budget of the BRIK programme is PLN 50 mln). The project will last until the end of 2023 and is dedicated to research units, universities and companies from the railway industry. The main objective of the BRIK programme is to increase innovation and competitiveness of rail transport by 2026. The effect of the project will be the creation of modern IT systems improving safety, development of solutions limiting the impact of railways on the environment, more efficient maintenance and modernisation of infrastructure and increasing the comfort of travellers.

The programme identifies five thematic areas on which activities will focus:

1. digitisation and processing of railway traffic parameters;
2. reducing negative impact of railway transport on the environment;
3. increasing the accessibility and durability of passenger service facilities;
4. increasing the resilience of railway infrastructure to climatic factors and interference by third parties;
5. improving the process of maintaining and modernising railway infrastructure.

Within these five areas, 24 R&D projects are planned to be implemented. The call for applications lasted from 30 October to 29 December 2017.

TRAKO International Railway Fair

On 25-29 September 2017, the representatives of PKP Polskie Linie Kolejowe S.A. took part in the 12th edition of the TRAKO International Railway Fair. The TRAKO Fair is the most prestigious meeting place for the representatives of rail transport industry in Poland, which is an excellent opportunity to promote rail transport, freight forwarding and rail logistics and to present the latest technologies.

PKP Polskie Linie Kolejowe S.A. was present at the TRAKO fair as part of the PKP Group stand. The Company presented information, first of all, about planned and implemented modernisation work on particular railway lines, about the latest technical solutions being deployed in ongoing projects. The Company's stand attracted many visitors of this important industry expo.

In addition, representatives of the Company participated in the following discussion panels:

- *"Infrastructure Manager – Contractor and Manufacturer – Notified Body. How relations between these entities influence the pace and costs of implementation, efficiency and quality as well as innovation of investments. What have we achieved? What is ahead of us?*

- *"Turn for finances, or how to balance the public mission and business";*
- *"Railway safety status".*

It is also worth to note that for the first time during the fair a Career Day was organised, during which PKP Group companies presented their job, internship and apprenticeship offers. In addition, during the Career Day the HR experts from PKP Polskie Linie Kolejowe S.A. conducted the workshops entitled *"Qualifications and competences that will help you find a job in PKP Polskie Linie Kolejowe S.A."*

Prestigious award in the IT industry

On 25 May 2017, during the SAP FORUM PKP industry conference, PKP Polskie Linie Kolejowe S.A. received the "Innovation 2017: SAP Innovation Award" for the project "Implementation of the SAP HCM system". It is an award for a rapid – conducted during the year, Stage I of the SAP HCM system implementation project – modules: organisational structure management, human resources management, payroll, working time, training, social fund operation, travel benefits, reporting and statistics. In Stage II of the project, the Company planned to implement a delegation management module.

As a result of the operation, the Company has a tool that allows for multiple shortening and simplification of human resources administration by unifying human resources processes within the company. Moreover, the effect of this implementation is full automation of the process of planning and recording of working time, settlement of salaries and other employee benefits. The system also allows employees to control their own database, which translates into more effective team management and transparency of the Company. Currently, the system supports about 40,000 employees of the Company and several thousand pensioners.

As part of the project, an employee portal was also made available for self-management and employee self-service processes, which streamlined administrative personnel activities and reduced the document flow in the company. The HR portal gives more than 10,000 employees access to important information, such as wage components, holidays and overtime.

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Map of railway lines