Report on rail transport market operations in 2018

URZĄD TRANSPORTU KOLEJOWEGO

Warsaw 2019

Mission:

To provide safe and competitive conditions for rail transport services

Vision:

A modern and open office safeguarding high standard of services provided on the rail transport market.

Office of Rail Transport

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Ignacy Góra

President of the Office of Rail Transport

Dear Madams and Sirs, dear Readers,

in recent years rail transport has gained in significance in Poland. Modern, fast and comfortable trains, and the increasing number of revitalised train stations are a magnet for passengers. The ever-improving condition of the railway infrastructure is also of essence. Projects of an unprecedented scale are being carried out. This is a huge challenge for construction companies, infrastructure managers and railway undertakings. We look forward to see the results of remaining projects as part of the National Railway Programme.

The reports prepared by the Office of Rail Transport attest to the positive impact of the projects on the development rate of railways. A total of 310 m passengers used the services of all railway operators, which means a growth of 6.7 m people as compared to 2017. 154 m passengers passed through 10 biggest Polish railway stations. The proportion of air-conditioned or WiFi-equipped rolling stock is continuously increasing. More and more wagons are adapted for the disabled.

In 2018 the positive trend in the freight transport segment continued. 250 m tonnes of goods were transported by rail, i.e. by 10 m tonnes more than a year earlier. These mainly included the transport of building materials for the major infrastructural projects. Intermodal transport developed; in comparison to 2017, all parameters increased. 17 m tonnes of freight were transported, compared to 14.7 m tonnes in the previous year. This translates into a 15.6% increase. The share of intermodal transport in the railway freight transport market as a whole, measured with the weight of transported freight, increased by over 11% in the previous year. This allows us to expect a further growth of this most effective means of transport.

We take this opportunity to present to you the “Report on Rail Transport Market Operations in 2018”. I am confident that the data collected by the Office of Rail Transport and the analyses provided will serve as a valuable source of information on the state and condition of the rail sector in Poland.

Best regards,

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1. Abbreviations and terms

	Railway undertakings and companies		
	Alza Cargo	-	Alza Cargo sp. z o.o.
1.	Arriva RP	-	ARRIVA RP sp. z o.o.
2.	AWT	-	Advanced World Transport a.s.
3.	Barter	-	Barter S.A.
4.	Bartex	-	Bartex sp. z o.o.
5.	BCT	-	Bałtycki Terminal Kontenerowy sp. z o.o.
6.	BLS	-	BLS AG
7.	Budimex	-	Budimex S.A.
8.	Captrain Polska	-	Captrain Polska sp. z o.o.
9.	Cargo Master	-	Cargo Master sp. z o.o.
10.	Cargo Przewozy Tow.	-	Cargo Przewozy Towarowe, Transport sp. z o.o. sp.k.
11.	CARGOTOR	-	CARGOTOR sp. z o.o.
12.	Ciech Cargo	-	CIECH Cargo sp. z o.o.
13.	CD Cargo Poland	-	CD Cargo Poland sp. z o.o.
14.	CL Łososna	-	Centrum Logistyczne w Łososnej sp. z o.o.
15.	Colas Rail	-	Colas Rail Polska sp. z o.o.
16.	CTL Express	-	CTL Express sp. z o.o.
17.	CTL Logistics	-	CTL Logistics sp. z o.o.
18.	CTL Maczki – Bór	-	CTL Maczki – Bór S.A.
19.	CTL Północ	-	CTL Północ sp. z o.o.
20.	CTL Rail	-	CTL Rail sp. z o.o.
21.	CTL Train	-	CTL Train sp. z o.o.
22.	DB Cargo Polska	-	DB Cargo Polska S. A.
23.	DB Cargo Spedkol	-	DB Cargo Spedkol sp. z o.o.
24.	DB Kolchem	-	DB Schenker Rail Kolchem sp. z o.o.
25.	DCT	-	DCT Gdańsk S.A.
26.	Depol	-	Przedsiębiorstwo Obrotu Surowcami Wtórnymi “Depol” sp. z o.o.
27.	Dolkom	-	Dolnośląskie Przedsiębiorstwo Napraw Infrastruktury Komunikacyjnej DOLKOM spółka z ograniczoną odpowiedzialnością
28.	DSDiK	-	Dolnośląska Służba Dróg i Kolei we Wrocławiu (Lower Silesian Roads and Rail Service in Wrocław)
29.	Ecco Rail	-	ECCO Rail sp. z o.o.

30.	EP Cargo	-	EP Cargo A.S.
31.	Euronaft	-	Euronaft Trzebinia sp. z o.o.
32.	Euroterminal Sławków	-	“Euroterminal Sławków” sp. z o.o.
33.	Eurotrans	-	EUROTRANS sp. z o.o.
34.	F.H.U. Orion Kolej	-	F.H.U. “ORION Kolej” Krzysztof Warchoł
35.	Freightliner PL	-	Freightliner PL sp. z o .o.
36.	GCT	-	GCT. Gdynia Container Terminal S.A.
37.	Grupa Azoty „KOLTAR”	-	Grupa Azoty „KOLTAR” sp. z o.o.
38.	GTK	-	Gdański Terminal Kontenerowy SA
39.	HSL Polska	-	HSL Polska sp. z o.o.
40.	Infra SILESIA	-	Infra SILESIA S.A.
41.	Inter Cargo	-	Inter Cargo sp. z o.o.
42.	JSK	-	Jastrzębska Spółka Kolejowa sp. z o.o.
43.	JSW Logistics	-	currently JSW Logistics sp. z o.o., formerly: Zakład Przewozów i Spedycji “SPEDKOKS” sp. z o.o.
44.	Karpiel	-	„Karpiel” sp. z o.o.
45.	Kolej Bałtycka	-	„Kolej Bałtycka” S.A.
46.	Koleje Dolnośląskie	-	Koleje Dolnośląskie S.A.
47.	Koleje Małopolskie	-	“Koleje Małopolskie” sp. z o.o.
48.	Koleje Mazowieckie	-	“Koleje Mazowieckie – KM” sp. z o.o.
49.	Koleje Śląskie	-	Koleje Śląskie sp. z o.o.
50.	Koleje Wielkopolskie	-	Koleje Wielkopolskie sp. z o.o.
51.	Koleje Wschodnie	-	Koleje Wschodnie sp. z o.o.
52.	KP Kotlarnia	-	Kopalnia Piasku “Kotlarnia” S.A.
53.	KP Kotlarnia Linie Kolejowe	-	“Kopalnia Piasku Kotlarnia - Linie Kolejowe” sp. z o.o.
55.	Logistics&Transport Company	-	Logistics&Transport Company sp. z o.o.
56	Lotos Kolej	-	“Lotos Kolej” sp. z o.o.
57.	LTE Polska		LTE Polska sp. z o.o.
58.	LW Bogdanka	-	Lubelski Węgiel “Bogdanka” S.A.
59.	ŁKA or Łódzka Kolej Aglomeracyjna	-	“Łódzka Kolej Aglomeracyjna” sp. z o.o.
60.	Majkoltrans	-	“MAJKOLTRANS” sp. z o.o.
61.	Metrans Polonia	-	Metrans (Polonia) sp. z o.o.
62.	Moris	-	MORIS sp. z o.o.
63.	MOSiR Ełk	-	Municipal Center of Sport and Recreation in Ełk
64	MPK we Wrocławiu	-	Miejskie Przedsiębiorstwo Komunikacyjne we Wrocławiu
65.	NKN Usługi Kolejowe	-	NKN Usługi Kolejowe sp. z o.o.

66.	Olavion	-	Olavion sp. z o.o.
67.	Omniloko	-	OMNILOKO sp. z o.o.
68.	Orion Rail Logistics	-	Orion Rail Logistics sp. z o.o. spółka komandytowa
69.	Orlen Koltrans	-	ORLEN KolTrans sp. z o.o.
70.	OT Rail	-	OT RAIL sp. z o.o.
71.	PCC Intermodal	-	PCC Intermodal S.A.
72.	PKM	-	Pomorska Kolej Metropolitalna S.A.
73.	PKP Cargo	-	PKP CARGO S.A.
74.	PKP Cargo Service	-	PKP CARGO SERVICE sp. z o.o.
75.	PKP Energetyka	-	PKP Energetyka S.A.
76.	PKP Intercity or PKP IC	-	"PKP INTERCITY" S.A.
77.	PKP LHS	-	PKP Linia Hutnicza Szerokotorowa sp. z o.o.
78.	PKP PLK	-	PKP Polskie Linie Kolejowe S.A.
79.	PKP S.A.	-	Polskie Koleje Państwowe S.A.
80.	PKP SKM or SKM in Tricity	-	PKP Szybka Kolej Miejska w Trójmieście sp. z o.o.
81.	PMT Linie Kolejowe	-	"PMT Linie Kolejowe" sp. z o.o.
82.	PNI Warszawa	-	Przedsiębiorstwo Napraw Infrastruktury sp. z o.o. w likwidacji
83.	Pol-Miedź Trans	-	Pol–Miedź Trans sp. z o.o.
84.	Polzug	-	Polzug Intermodal Polska sp. z o.o.
85.	POZ BRUK	-	POZ BRUK sp. z o.o. sp.j.
86.	PPMT	-	Pomorskie Przedsiębiorstwo Mechaniczno – Torowe sp. z o.o.
87.	Przewozy Regionalne or POLREGIO	-	"Przewozy Regionalne" sp. z o.o.
88.	PUK Kolprem	-	Przedsiębiorstwo Usług Kolejowych KOLPREM sp. z o.o.
89.	Rail Polonia	-	Railpolonia sp. z o.o.
90.	Rail Polska	-	Rail Polska sp. z o.o.
91.	Rail Services Europe	-	Rail Services Europe sp. z o.o.
92.	SKM Warszawa or SKM in Warsaw	-	Szybka Kolej Miejska sp. z o.o.
93.	SKPL Cargo	-	SKPL Cargo sp. z o.o.
94.	STK	-	STK S.A.
95.	Swietelsky Rail Polska	-	Swietelsky Rail Polska sp. z o.o.
96.	Torpol	-	Torpol S.A.
97.	Track Tec Logistics	-	TRACK TEC Logistics sp. z o.o.
98.	Track Tec Rail	-	Track Tec Rail sp. z o.o.
99.	Trakcja PRKiI	-	Trakcja PRKiI S.A.
100.	Transchem	-	Transchem sp. z o.o.

101.	UBB	-	Usedomer Bäderbahn GmbH
102.	UBB Polska	-	UBB Polska sp. z o.o.
103.	WAM	-	WAM sp. z o.o.
104.	Wiskol	-	Wiskol sp. z o.o. sp. k.
105.	WKD	-	Warszawska Kolej Dojazdowa sp. z o.o.
106.	ZIK Sandomierz	-	Zakład Inżynierii Kolejowej sp. z o.o.
107.	ZPiS „SPEDKOKS”	-	formerly: Zakład Przewozów i Spedycji „SPEDKOKS” sp. z o.o., currently JSW Logistics sp. z o.o.
108.	ZPNTMiU “TABOR”	-	Zakłady Produkcyjno-Naprawcze Taboru Maszyn i Urządzeń “TABOR” M. Dybowski s.j.
109.	ZUE	-	ZUE S.A.
110.	Grupa CTL	-	Companies CTL Logistics sp. z o.o., CTL Północ sp. z o.o. and CTL Train sp. z o.o.
111.	DB Group	-	Companies DB Cargo Polska S.A. and DB Cargo Spedkol sp. z o.o.
112.	Grupa PKP	-	Companies PKP Cargo S.A., PKP Cargo Service sp. z o.o., PKP Linia Hutnicza Szerokotorowa sp. z o.o.
113.	DB	-	Deutsche Bahn
	Institutions and organisations		
1.	CUPT	-	Centre for EU Transport Projects
2.	EUAR	-	European Union Agency for Railways
3.	Eurostat	-	Statistical Office of the European Communities
4.	GUS	-	Statistics Poland
5.	IRG-Rail	-	Independent Regulators’ Group – Rail
6.	MI	-	Ministry of Infrastructure
7.	MIR	-	Ministry of Investment and Development
8.	UIC	-	Union Internationale des Chemins de Fer (the International Union of Railways)
9.	UTK	-	Office of Rail Transport
10.	President of UTK	-	President of the Office of Rail Transport
	Legal regulations		
1.	Directive 2012/34/EU	-	Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area
2.	Directive 2016/797/EU	-	Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union
3.	NST 2007 classification	-	Commission Regulation (EC) No 1304/2007 of 7 November 2007 amending Council Directive 95/64/EC, Council Regulation (EC) No 1172/98, Regulations (EC) No

			91/2003 and (EC) No 1365/2006 of the European Parliament and of the Council with respect to the establishment of NST 2007 as the unique classification for transported goods in certain transport modes
4.	Regulation 2015/1100	-	Commission Implementing Regulation (EU) 2015/1100 of 7 July 2015 on the reporting obligations of the Member States in the framework of rail market monitoring
5.	Regulation 2015/909		Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 on the modalities for the calculation of the cost that is directly incurred as a result of operating the train service
6.	TSI	-	Technical Specification for Interoperability
7.	TSI Noise	-	TSI NOI 2011 – Commission Decision of 4 April 2011 concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – noise' of the trans-European conventional rail system (OJ L 99 of 13 April 2011, p. 1); TSI NOI 2014 – Commission Regulation (EU) No 1304/2014 of 26 November 2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' amending Decision 2008/232/EC and repealing Decision 2011/229/EU (OJ L 356 of 12 December 2014, p. 421).
8.	TSI Control-Command and Signalling	-	TSI CCS 2006 - Commission Decision of 7 November 2006 concerning a technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European high speed rail system and modifying Annex A to Decision 2006/679/EC of 28 March 2006 concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European conventional rail system (OJ L 342, 7.12. 2006, as amended) TSI CCS 2012 - Commission Decision of 25 January 2012 on the technical specification for interoperability relating to the control-command and signalling subsystems of the trans-European rail system (OJ L 51 of 23 February 2012, as amended); TSI CCS 2016 - Commission Regulation of 27 May 2016 on the technical specification for interoperability relating to the 'control-command and signalling' subsystems of the rail system in the European Union (OJ L 158 of 15 June 2016)
9.	TSI Freight wagon	-	TSI WAG 2006 – Commission Decision of 28 July 2006 concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – freight wagons' of the trans-European conventional rail system (OJ L 344 of 8 December 2006)

			TSI WAG 2013 - Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union and repealing Decision 2006/861/EC (OJ L 104, 12.04.2013)
10.	TSI Loc&Pass of 2011 or TSI Locomotives and passenger rolling stock	-	Commission Decision 2011/291/EU of 26 April 2011 concerning a technical specification for interoperability relating to the rolling stock subsystem — 'Locomotives and passenger rolling stock' of the trans-European conventional rail system (OJ L 139, 26.5.2011, p. 1, as amended)
11.	TSI PRM 2014	-	Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility (L 356, 12.12.2014)
12.	Public Transport Act	-	the Act of 16 December 2010 on public collective transport (Journal of Laws of 2017, item 2136, as amended).
13.	Rail Transport Act	-	The Rail Transport Act of 28 March 2003 (Journal of Laws of 2017, item 2117, as amended).
14.	Regulation on providing access to railway infrastructure	-	Regulation of the Minister of Infrastructure and Construction of 7 April 2017 on providing access to railway infrastructure (Journal of Laws of 2017, item 755)
Train paths in accordance with the Network Statement of the infrastructure manager PKP PLK			
1.	L (M, W, P, T, Z, S)	-	light engines
2.	T (A, B, C, G, R, B, D, P, N, M, L, K, T, S, H)	-	freight trains
3.	TC, TD	-	intermodal trains (international TC, domestic TD)
4.	TM	-	for bulk transport in full or empty wagons in block trains, in domestic transport
	Other terms		
1.	CEF	-	Connecting Europe Facility
2.	ECM	-	entities in charge of maintenance
3.	ERTMS	-	European Rail Traffic Management System
4.	e-SEPE	-	Electronic System for Recording Operational Performance
5.	ETCS	-	European Train Control System
6.	Eurobalise	-	an element of the ERTMS/ETCS track-side equipment
7.	EMU	-	electrical multiple unit
8.	GSM-R	-	GSM for Railways
9.	NRP	-	National Rail Programme

10.	Licence	-	an entity's authorisation to perform the function of a railway undertaking in the Republic of Poland and other EU Member States or member states of the European Free Trade Association (EFTA) - parties to the agreement on the European Economic Area
11.	coal main line	-	railway lines No. 131 and 201
12.	NVR	-	National Vehicle Register
13.	“Nadodrzanka”	-	railway line No. 273
14.	pass-km	-	passenger-kilometre
15.	train-km	-	train-kilometre
16.	IEOP	-	Infrastructure and Environment Operational Programme
17.	RID	-	Regulations concerning the International Carriage of Dangerous Goods by Rail
19.	SBB	-	Schweizerische Bundesbahnen
20.	SMGS	-	Agreement on International Goods Transport by Rail
21.	DMU	-	diesel multiple unit
22.	TEU	-	an equivalent of a 20-foot unit; 1 TEU means 1 container with a length of 20 feet
23.	tonne-km	-	tonne-kilometre
24.	Three Seas Initiative	-	international economic and political initiative joining 12 EU countries located around the Baltic, Black and Adriatic Sea. The group consists of Austria, Bulgaria, Croatia, the Czech Republic, Estonia, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia and Hungary

2. Passenger transport

2.1. Operation of the passenger transport market in Poland

Passenger transport in Poland is operated by licensed railway undertakings. It can be provided as:

- public services;
- commercial transport;
- occasional transport.

Passenger rail transport services are currently provided for 18 organisers which conclude public service contracts: the minister in charge of transport, province marshals and the Mayor of Warsaw. The scope and period of contracts is individually determined by the respective organisers. For example, the Mazowieckie Province has concluded one multi-year contract with the operator Koleje Mazowieckie and with WKD. Both contracts will be binding until 2024. The Łódzkie Province entered into an agreement with Łódzka Kolej Aglomeracyjna, binding until 2028. Another example is the Małopolskie Province, which had annual contracts concluded with three operators: Przewozy Regionalne, Koleje Małopolskie and Koleje Śląskie. Overall, in 2018 operators received PLN 581 m of co-financing from the state budget (PLN 15 m more than in 2017) and PLN 1649 m (PLN 113 m more as compared to 2017) of local government co-financing for public services.

Tab. 1. List of organisers and operators with concluded contracts

organiser	operator
Ministry of Infrastructure	PKP Intercity
Marshal's Office of the Dolnośląskie Province	Koleje Dolnośląskie Przewozy Regionalne
Marshal's Office of the Kujawsko-Pomorskie Province in Toruń	Arriva RP Przewozy Regionalne
Marshal's Office of the Lubelskie Province	Przewozy Regionalne
Marshal's Office of the Lubuskie Province	Przewozy Regionalne
Marshal's Office of the Łódzkie Province	Przewozy Regionalne Łódzka Kolej Aglomeracyjna
Marshal's Office of the Małopolskie Province	Przewozy Regionalne Koleje Małopolskie Koleje Śląskie
Marshal's Office of the Mazowieckie Province	Koleje Mazowieckie WKD
Marshal's Office of the Opolskie Province	Przewozy Regionalne
Marshal's Office of the Podkarpackie Province	Przewozy Regionalne
Marshal's Office of the Podlaskie Province	Przewozy Regionalne
Marshal's Office of the Pomorskie Province	Przewozy Regionalne PKP SKM in Tricity
Marshal's Office of the Śląskie Province	Przewozy Regionalne Koleje Śląskie
Marshal's Office of the Świętokrzyskie Province	Przewozy Regionalne
Marshal's Office of the Warmińsko-Mazurskie Province in Olsztyn	Przewozy Regionalne
Marshal's Office of the Wielkopolskie Province	Przewozy Regionalne Koleje Wielkopolskie
Marshal's Office of the Zachodniopomorskie Province	Przewozy Regionalne
The City of Warsaw	SKM in Warsaw

In addition to public service transport, operators may provide commercial transport services as part of the open access policy. This involves connections which are not co-financed if the receipts from tickets are insufficient. The provision of commercial transport services on domestic and international paths requires the President of UTK's decision on granting open access. The railway undertaking receiving such a decision may apply for access to railway infrastructure to the infrastructure manager of the indicated path. These regulations do not apply to connections for which a contract has been signed with the organiser of public collective transport.

For applications for granting open access submitted in 2018, the President of UTK investigated whether a new commercial transport service would not impact the economic balance of the connections already operating on the basis of public service contracts. The analysis covered the potential benefits for passengers arising from the growth of competition, including an increase in the number of available connections, the attractiveness of the services for people who had not previously used rail transport, providing connections to popular tourist destinations or areas with previously insufficient transport options. The needs of passengers using the already available trains and the traffic rate on the railway line were also taken into account.

For all the received applications the analysis carried out by the President of UTK demonstrated that the new passenger services would complement public service transport and bring benefits to the development of the passenger rail transport market. Taking the above criteria into consideration, in 2018 all claims regarding decisions granting open access were accepted.

Decisions granting open access in 2018 were issued to the following railway undertakings:

- PKP Intercity – 15 decisions;
- Arriva RP – 1 decision;
- Koleje Dolnośląskie – 1 decision;
- Przewozy Regionalne – 5 decisions.

In 2018 the President of UTK received 12 applications for open access from Przewozy Regionalne and 1 from Leo Express Global. Some of the applications were considered in 2019.

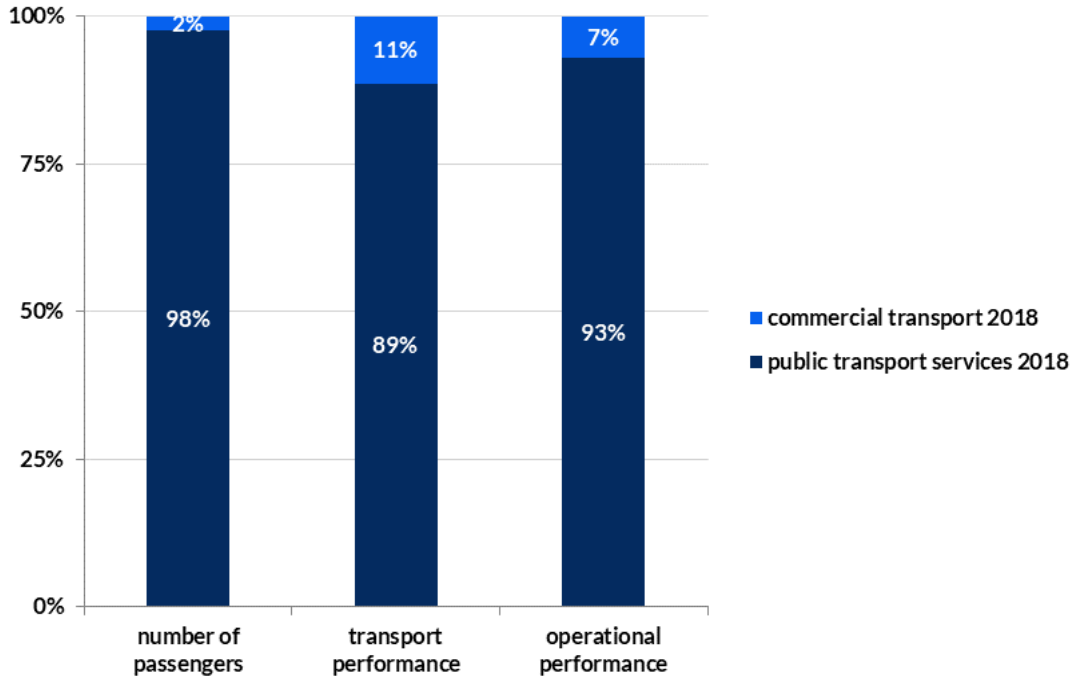
Due to the entry into force of the new Commission Implementing Regulation (EU) 2018/1795 of 20 November 2018 laying down procedure and criteria for the application of the economic equilibrium test pursuant to Article 11 of Directive 2012/34/EU of the European Parliament and of the Council, new rules of granting open access were introduced in 2018. In particular, new forms were developed for the application for granting open access and for request for an economic equilibrium test[1]. At the same time, authorised entities were informed of the entry into force of the new implementing regulation and on the related changes.

Railway undertakings also provide occasional transport services, i.e. one-off passenger transport services provided beyond the scope of binding agreements on the provision of public service contracts or connections offered on the basis of the decision granting open access. Such transport services should be provided when people need to be transported to an event, such as a festival, match, concert, convention or other mass event. They may also arise from the performance of a transport agreement associated with a business trip, corporate team-building trip, summer camp, etc. Occasional transport differs from regular passenger transport services because it has a specific, clearly defined one-time objective. Occasional transport services may involve, e.g. the transport of supporters to a match, but not laying on additional train services in the summer season.

The “one-time” nature of occasional passenger transport services should not be understood only as involving a one-time return ride. The nature of an event might require the transport of many people using a larger number of trains, also from locations in various areas of the country, along various paths. In such a situation we can still refer to the services as occasional transport, as it is associated with a single event. In 2018 passengers transported within occasional transport services accounted for only around 0.03% of the total number of passengers.

[1]The forms were published in 2019 on the website of the Office https://www.utk.gov.pl/pl/dokumenty-i-formularze/wnioski-o-dostep/.

Fig. 1. The share of public and commercial transport services in the number of passengers transported, transport performance and operational performance in 2018.



Having a decision granting open access or a signed public service contract, a licensed railway undertaking or an applicant submits a request for a train path (infrastructure capacity) within the period specified in the network statement. Then the railway infrastructure manager grants capacities on the basis of the priority determinations according to appropriate rules defined by the Regulation on the conditions of access to and use of railway infrastructure.

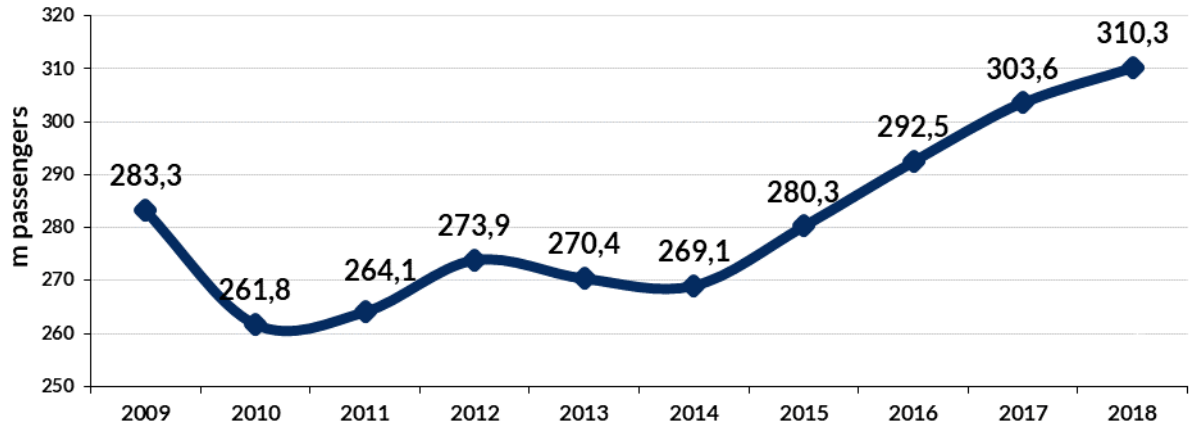
In addition to the above rules applicable to the annual timetable, railway undertakings could apply for the infrastructure capacity within the update of the timetable from 10 June 2018 or within an individual timetable in the case of a spare capacity.

PKP PLK, which manages the railway infrastructure, introduced five Substitute Timetables within a year, valid for the following periods: 10 December 2017 – 10 March 2018, 11 March 2018 – 9 June 2018, 10 June 2018 – 1 September 2018, 2 September 2018 – 20 October 2018 and 21 October 2018 – 8 December 2018. Their validity dates arise from Appendix No. 5.2 to the 2017/2018 network statement. The 2018/2019 timetable became valid on 9 December 2018, and the validity of the first Substitute Timetable began on 9 March 2019. The described arrangement of railway transport results from the repair, upgrade and maintenance works financed from both EU and national funds.

2.2. The basic parameters of the passenger transport market

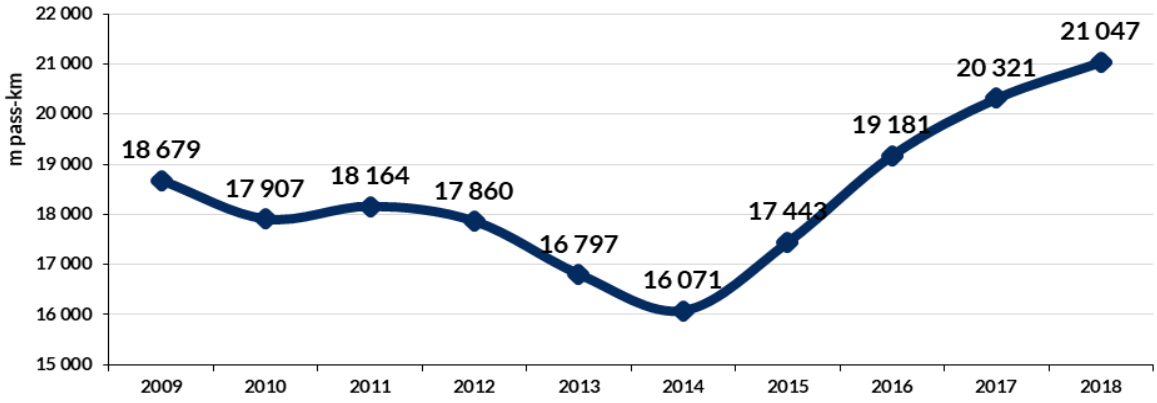
In 2018 a rise was recorded in passenger transport both in terms of the number of passengers and transport performance. In 2018 nearly 310.3 m passengers used railway services, i.e. 2.2% more than in the previous year. In the last 4 years the number of passengers increased by more than 15%. As compared to 2014, their number grew by 41 m passengers.

Fig. 2. The number of railway passengers in Poland in the years 2009-2018 (standard-gauge transport)



Transport performance amounted to over 21 bn pass-km and was 0.7 bn pass-km higher than in 2017, which is an almost 3.6% increase.

Fig. 3. Transport performance in passenger rail transport in the years 2009-2018 (standard-gauge transport)



Operational performance in 2018 reached 165.5 m train-km. It was 2% higher than a year before, which means that trains covered a distance larger than 3.2 m km.

Fig. 4. Operational performance in passenger rail transport in the years 2009-2018 (standard-gauge transport)

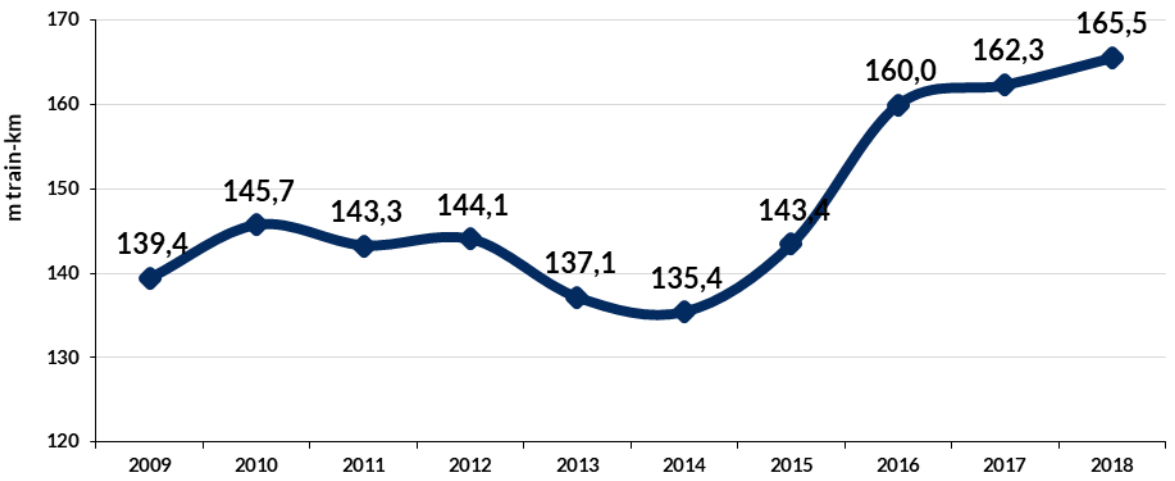
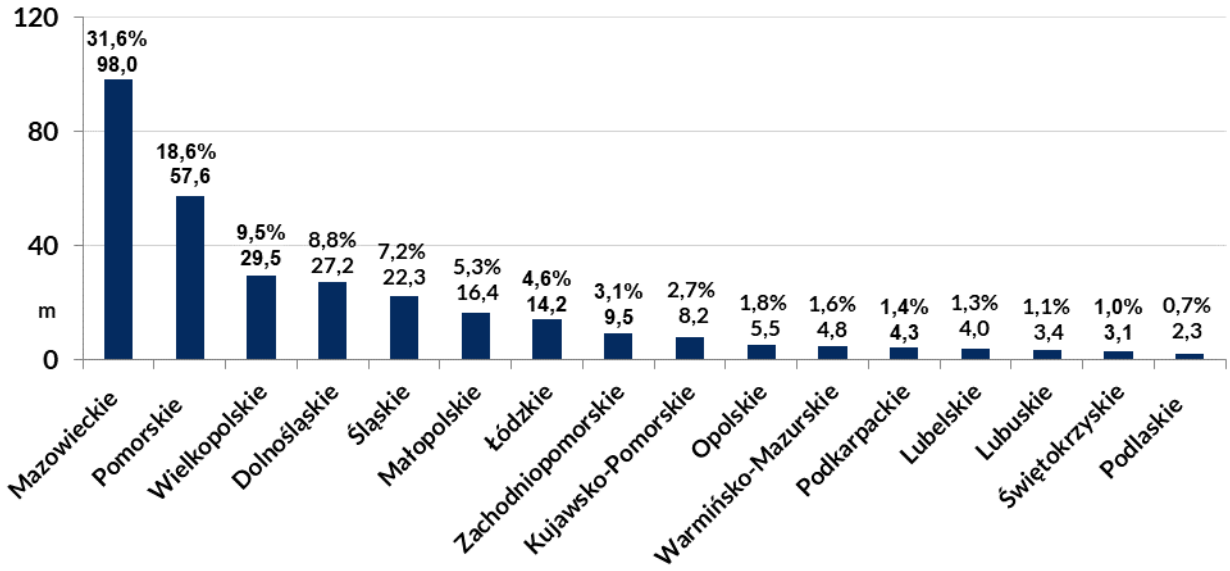


Fig. 5. The number (in m) and share (in%) of checked-in passengers in respective provinces in 2018

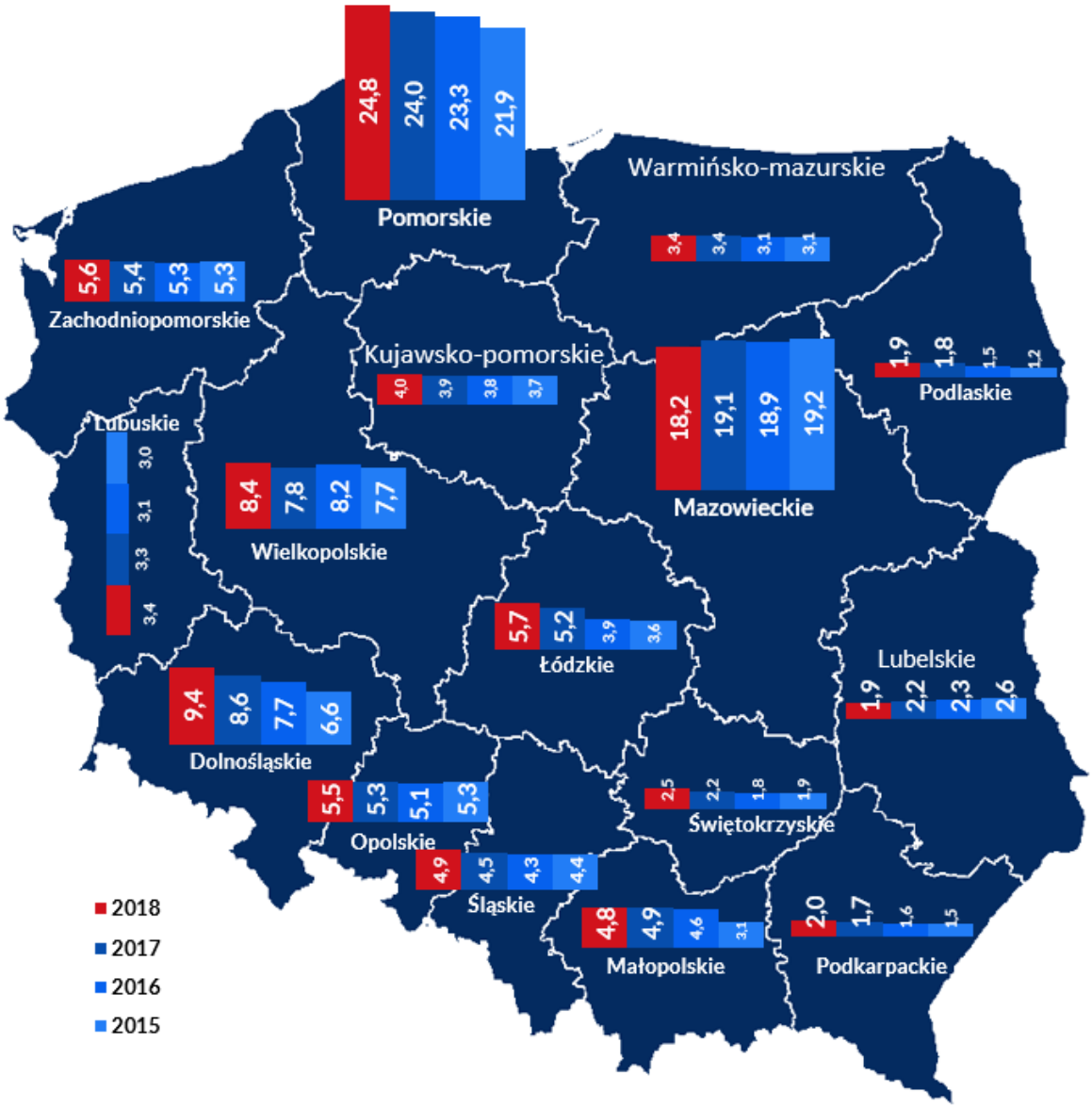


The data on passenger transport in the respective provinces in 2018 leads to the following conclusions:

- more than 3/4 of passengers checked in in five provinces: Dolnośląskie, Mazowieckie, Śląskie, Pomorskie and Wielkopolskie;
- despite numerous limitations in train transport in the Mazowieckie Province, the total number of passengers amounted to nearly 98 m. In comparison to 2017, the number of passengers dropped by 4.3 m, which translated into a lower proportion of this Province in passenger traffic by 2.1 percentage points – from 33.7% to 31.6%;
- in the Pomorskie Province, the second in terms of the number of checked-in passengers, their number was 57.6 m and was 2.1 m (3.8%) higher compared to 2017;

- in comparison to the previous year, slight changes were recorded in the shares of the respective provinces in passenger transport; this was also true for the number of passengers transported. The provinces where the number of checked-in passengers increased the most were Wielkopolskie (a 2.4 m increase) and Dolnośląskie (a 2.3 m growth).

Fig. 6. The average number of trips per 1 resident of a given province in 2015-2018



One of the measures of the popularity of rail transport in the regions is the rail usage rate, i.e. the number of trips (checked-in passengers) per 1 province resident. For the purposes of calculating the indicator, GUS data were used on the number of residents of provinces in the respective years. The rail usage rate in 2018 for Poland as a whole was 8.1 trips. This means an increase of 0.2 in comparison to 2017.

A frequency of railway trips higher than the national average was recorded only in 4 out of 16 provinces: Pomorskie, Mazowieckie, Dolnośląskie and Wielkopolskie. The highest rail usage rate was observed in the Pomorskie Province – 24.8 (a rise of 0.8). Other regions with a high rail usage rate were the Mazowieckie Province – 18.2 (a drop of 0.9), Dolnośląskie – 9.4 (a growth of 0.8) and Wielkopolskie – 8.4 (a 0.6 rise).

In four regions the rail usage rate decreased in comparison to 2017: in the Lubelskie, Małopolskie, Mazowieckie and Warmińsko-Mazurskie provinces; in all of these except the Mazowieckie Province the decreases did not exceed 0.4 trip.

One of the key factors with an impact on the number of railway passengers is cooperation with bus undertakings and municipal transport in selected cities. An important role was also played by the practice of accepting municipal transport tickets, increasingly frequent among local government undertakings. The tendency is also noticeable in the services offered by long-distance operators, which provide an option of using municipal transport for a specified time within a single ticket. This is the case, for instance, for PKP Intercity and ŁKA. It is also worth mentioning the integrated ticket initiative, i.e. a ticket enabling the use of services of several selected railway undertakings. The service was launched on 9 December 2018 with the new 2018/2019 timetable.

The data clearly point to a change in the ticket distribution channels and an increased popularity of electronic outlets. Despite the shortcomings in the operation of electronic sales channels, the availability of tickets is increasing, also through mobile apps. For more information on this, see Chapter 2.9 Ticket sales and distribution.

2.3. The role of railway stations in the passenger traffic in Poland

The quality of railway station infrastructure and the number of stations in cities are among the factors impacting rail usage in a given region. Provincial capital cities are of primary importance for both long-distance and agglomeration-based passenger traffic. Passenger stations located in these cities generate nearly 47% of the whole passenger traffic in Poland.

In 2018 the station which provided services for the highest number of passengers was Wrocław Główny, and the city which generated the highest passenger traffic was Warsaw and the stations located in the city (19.7% of all passenger traffic). The creation of Wrocławska Kolej Aglomeracyjna contributed to a 67% rise in the number of passengers in the Wrocław agglomeration in comparison to 2014. In 5 years the highest increase in the number, and growth rate, of checked-in passengers was observed in Kraków, which is primarily due to the higher number of passengers of the Kraków Główny station. A sharp growth in the number of passengers was also recorded at the Kraków Balice station, and the opening of new stations, such as Kraków Podgórze, contributed to a generally higher availability of railway services in Kraków.

Difficulties related to the limited operation of railway lines used by agglomeration-based and regional undertakings had a direct impact on passenger traffic in several provincial cities in 2018. Such difficulties occurred, i.a., in Warsaw, Kraków and Poznań.

A considerable proportion of heavy-traffic stations is not fully adjusted to the needs of people with limited mobility. For instance, the number of passengers of the Warszawa Wschodnia station increased in the recent years, which was associated with the function of combining long-distance and regional traffic.

However, infrastructural deficiencies are among the barriers to the proper coordination of these connection for people with limited mobility.

Tab. 2. Data on the passenger trafficat stations located within provincial capital cities

city	province	passengertraffic		evolution %		share of the total passenger traffic in 2018
		2018	2017	2018/2017	2018/2014	
Wrocław	Dolnośląskie	26.2	23.6	11%	67%	4.2%
Bydgoszcz	Kujawsko-Pomorskie	5.2	5.0	5%	17%	0.8%
Toruń	Kujawsko-Pomorskie	3.6	3.4	6%	21%	0.6%
Lublin	Lubelskie	2.0	2.4	-17%	-15%	0.3%
Gorzów Wielkopolski	Lubuskie	0.98	1.02	-4%	-4%	0.2%
Zielona Góra	Lubuskie	1.6	1.5	9%	42%	0.3%
Łódź	Łódzkie	10.3	8.5	21%	120%	1.7%
Kraków	Małopolskie	18.5	21.4	-14%	143%	3.0%
Warszawa	Mazowieckie	122.1	128.1	-5%	12%	19.7%
Opole	Opolskie	4.4	4.2	5%	12%	0.7%
Rzeszów	Podkarpackie	2.8	2.5	13%	40%	0.4%
Białystok	Podlaskie	2.5	2.4	6%	52%	0.4%
Gdańsk	Pomorskie	38.3	36.1	6%	31%	6.2%
Katowice	Śląskie	14.7	12.9	13%	29%	2.4%
Kielce	Świętokrzyskie	2.1	1.9	11%	28%	0.3%
Olsztyn	Warmińsko-Mazurskie	3.27	3.30	-1%	9%	0.5%
Poznań	Wielkopolskie	23.9	23.2	3%	20%	3.9%
Szczecin	Zachodniopomorskie	6.5	6.1	7%	6%	1.1%

Stations in the largest agglomerations generate a high proportion of passenger traffic, with the significance of the main city differing significantly between provinces. In the Dolnośląskie, Małopolskie, Mazowieckie and Podlaskie Provinces there is a strong domination of passenger traffic around the region's capital. Passenger traffic in the mentioned provinces exceeds 50%. The role of the respective stations in their cities is also of importance. This can be observed on the example of Warsaw and Kraków, where the network of stations is relatively dense, with 51 stations in Warsaw and 22 in Kraków. The opening of a new station leads to a rapid increase in the number of passengers. In the Podlaskie Province more than a half of all railway passengers check in at the Białystok station. The station provides services to a similar number of passengers to that in Tarnów, which accounts for 7% of passenger traffic in the Małopolskie Province.

Fig. 7. Cities with the highest passenger traffic in the respective provinces, the share of the given city in the Province's passenger traffic and the passenger traffic in the given city (in m)

Dolnośląskie		
Wrocław	52%	26.2
Legnica	4%	2.1
Wałbrzych	2%	1.1
Oborniki Śląskie	2%	1.0
Jelenia Góra	2%	0.9

Kujawsko-Pomorskie		
Bydgoszcz	30%	5.2
Toruń	20%	3.6
Włocławek	6%	1.0
Inowrocław	5%	0.8
Grudziądz	4%	0.6

Lubelskie		
Lublin	24%	2.0
Łuków	15%	1.2
Dęblin	10%	0.8
Chełm	7%	0.6
Biała Podlaska	7%	0.5

Lubuskie		
Zielona Góra	22%	1.6
Gorzów Wlkp.	14%	1.0
Kostrzyn	10%	0.7
Zbąszynek	10%	0.7
Nowa Sól	5%	0.3

Łódzkie		
Łódź	42%	10.3
Skierniewice	16%	3.9
Łowicz	5%	1.2
Kutno	4%	1.0
Koluszki	4%	1.0

Małopolskie		
Kraków	57%	18.5
Tarnów	7%	2.2
Wieliczka	6%	1.8
Bochnia	3%	1.1
Miechów	3%	0.8

Mazowieckie		
Warszawa	61%	122.1
Grodzisk	3%	5.9
Pruszków	2%	4.4
Siedlce	2%	4.1
Żyrardów	2%	3.3

Opolskie		
Opole	37%	4.4
Brzeg	12%	1.4
Kędzierzyn-Koźle	9%	1.1
Kluczbork	4%	0.5
Lewin Brzeski	4%	0.5

Podkarpackie		
Rzeszów	31%	2.8
Przemyśl	22%	1.9
Jarosław	8%	0.7
Dębica	7%	0.6
Przeworsk	5%	0.4

Podlaskie		
Białystok	53%	2.5
Łapy	13%	0.6
Szepietowo	5%	0.2
Suwałki	4%	0.2
Kuźnica	3%	0.2

Pomorskie		
Gdańsk	33%	38.3
Gdynia	23%	26.5
Sopot	9%	10.1
Wejherowo	6%	7.5
Rumia	4%	4.6

Śląskie		
Katowice	33%	14.7
Częstochowa	10%	4.3
Gliwice	9%	4.0
Bielsko-Biała	4%	1.9
Tychy	4%	1.7

Świętokrzyskie		
Kielce	33%	2.1
Skarżysko-Kamienna	15%	0.9
Sędziszów	9%	0.6
Klimontów	8%	0.5
Starachowice	6%	0.4

Warmińsko-Mazurskie		
Olsztyn	32%	3.3
Iława	13%	1.4
Elbląg	11%	1.1
Działdowo	6%	0.6
Ostróda	5%	0.5

Wielkopolskie		
Poznań	42%	23.9
Gniezno	4%	2.2
Leszno	3%	1.7
Ostrów Wlkp.	2%	1.4
Piła	2%	1.2

Zachodniopomorskie		
Szczecin	33.1%	6.5
Stargard	9.7%	1.9
Świnoujście	6.7%	1.3
Koszalin	6.3%	1.2
Kołobrzeg	5.6%	1.1

2.4. Licensing passenger railway transport

In line with the Rail Transport Act, a railway undertaking is:

- an entrepreneur licensed to provide rail transport services or traction services or
- an entity providing transport services on narrow-gauge rail infrastructure.

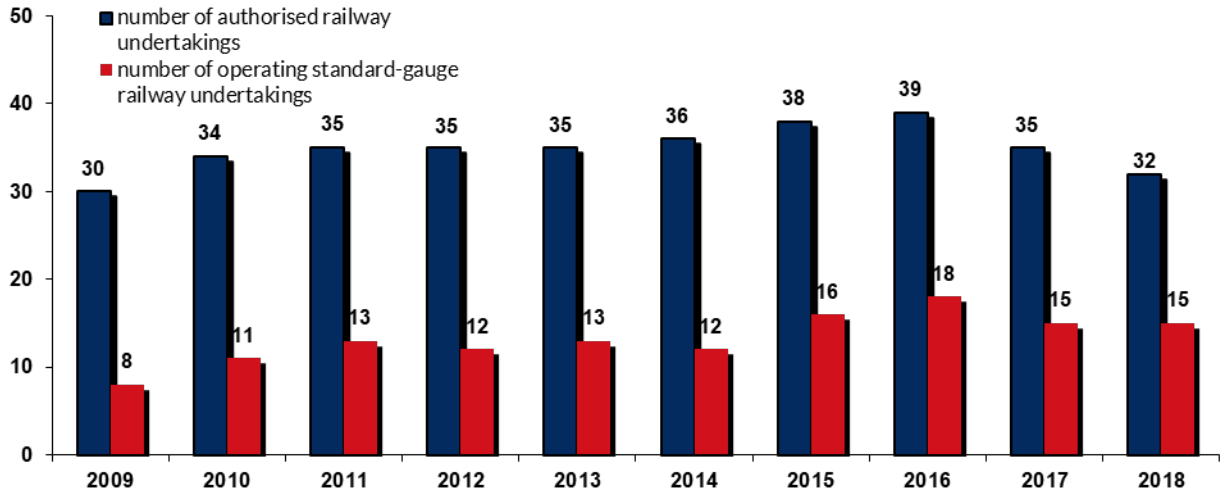
A railway undertaking providing transport services on narrow-gauge lines does not require a railway undertaking licence. The amendment of the Rail Transport Act, which entered in to force on 30 December 2016, authorised entrepreneurs operating narrow-gauge infrastructure and holding a railway undertaking licence issued on the basis of the previous regulations to apply to the President of UTK with an application to cancel their licence. The President of UTK in 2018 issued 3 decisions to cancel such licences for: the Warsaw Railway Museum, the Municipal Centre of Sport and Recreation in Ełk and the Bieszczady Forest Railway Foundation.

In 2018 the President of UTK issued the following decisions concerning the licensing of railway passenger transport:

- did not issue any railway undertaking licence to provide passenger rail transport;
- one railway undertaking (MPK in Wrocław) had its licence to provide passenger rail transport suspended;
- one railway undertaking (Koleje Wschodnie) had its licence for freight transport and traction services revoked;
- one railway undertaking (Rail Services Europe) had its licence for freight transport and traction services revoked.

At the end of 2018, 32 railway undertakings had active licences for the provision of passenger rail transport (except for suspended ones), 16 of which reported regular passenger transport services on standard-gauge infrastructure.

Fig. 8. The number of licensed passenger railway undertakings authorised to provide transport services and actually operating on the railway market in the years 2009-2018



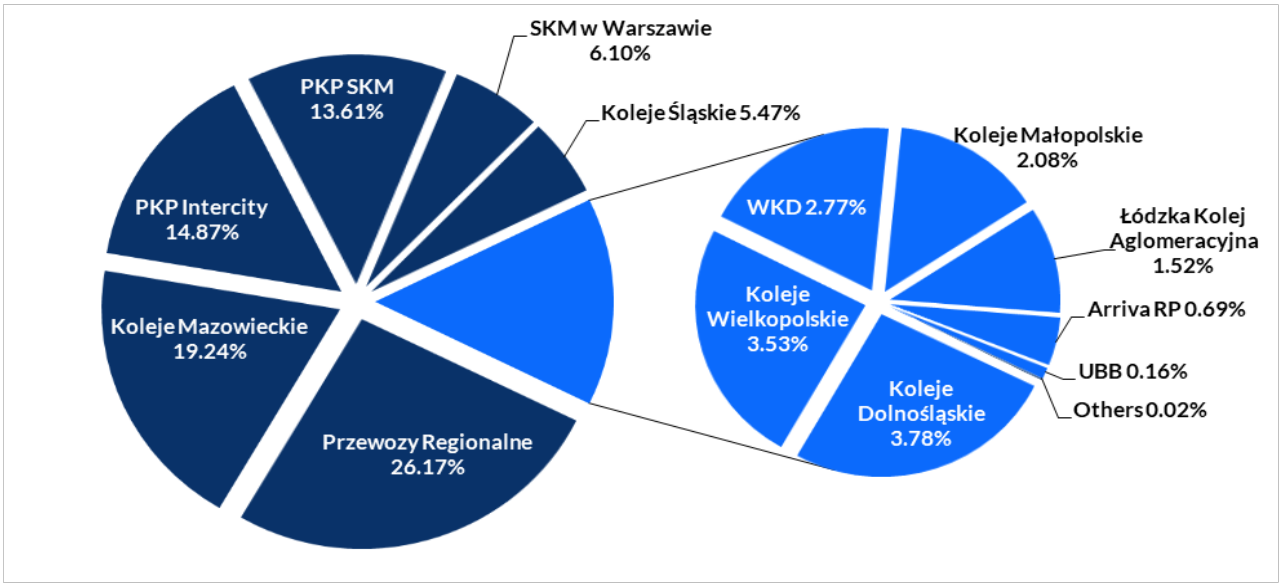
Due to the entry into force, on 30 May 2017, of an amendment to the Rail Transport Act covering, i.a. railway transport licensing, until 30 December 2017 railway undertakings were obligated to adjust to the requirements of the amended Act. A new element for railway undertakings was the provision of more detailed requirements applicable to the insurance cover for civil liability. Existing regulations provide for the minimum guaranteed amount of the civil liability insurance for most railway undertakings at EUR 2.5 m. The analysis of the level of insurance for passenger railway undertakings carried out in 2018 by UTK demonstrated that undertakings adjusted the guaranteed amount of the civil liability insurance to the amounts specified in the regulations. Some passenger railway undertakings are insured for an amount exceeding PLN 50 m; these undertakings account for more than 70% of transport performance.

2.5. The passenger railway undertaking market

In 2018 the number of passengers increased for long-distance, regional and agglomeration-based railway undertakings. The highest number of passengers used the services of Przewozy Regionalne, Koleje Mazowieckie, PKP Intercity and PKP SKM in Tricity (73.9% in total).

The largest market share in terms of the number of passengers transported was recorded by the company Przewozy Regionalne operating under the consumer brand POLREGIO. The services of the operator were used by 81.2 m passengers (1.3 m passengers more than in 2017), while its market share in terms of the number of passengers transported decreased by 0.14 percentage point and amounted to 26.17%. The undertaking plays a crucial role especially in the case of regional services covering smaller locations. It is also the main railway operator in provinces in which individual local government companies have not been formed.

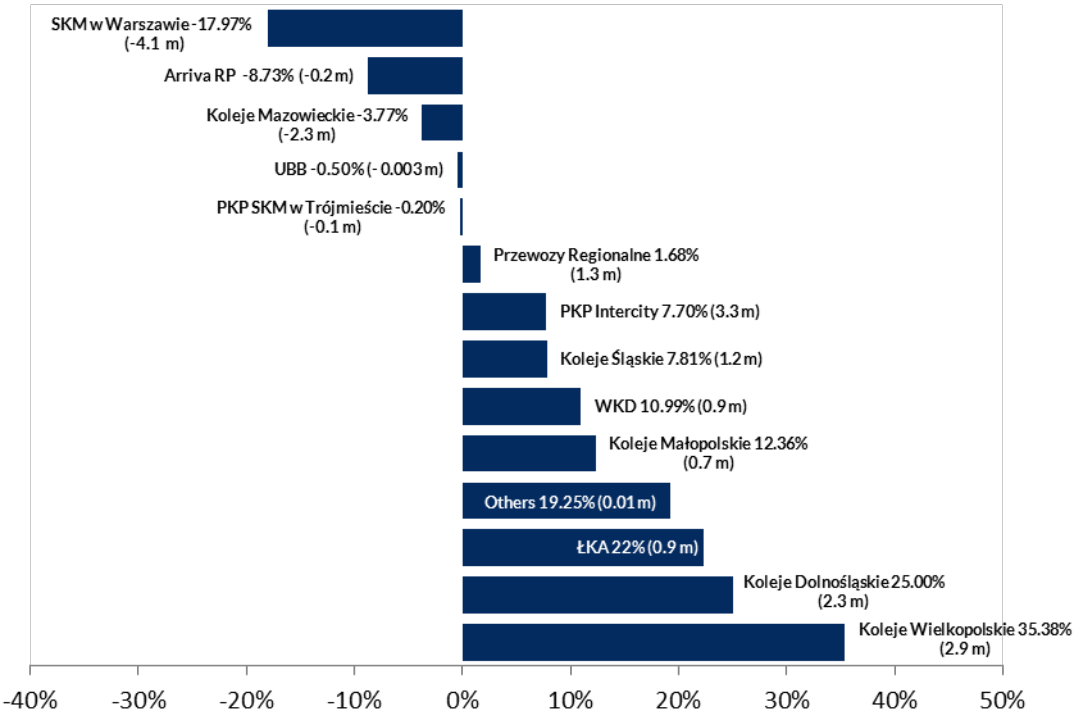
Fig. 9. The market share of passenger transport undertakings in terms of the number of passengers in 2018



The highest increase in the number of passengers was observed for PKP Intercity, which transported almost 3.3 m passengers more in comparison to the previous year. Koleje Wielkopolskie transported almost 2.9 m passengers more, and Koleje Dolnośląskie – 2.3 m passengers more. PKP Intercity recorded the highest increases in the number of passengers in the second half of the year. In the case of Koleje Wielkopolskie, the increase was associated, i.a., with a greater use of the Poznań Rail Node. The market shares in terms of number of passengers increased for each one out of three railway undertakings, exceeding 0.5 percentage point in comparison with the previous year. These included Koleje Wielkopolskie (0.87 percentage point), PKP Intercity (0.76 percentage point) and Koleje Dolnośląskie (0.69 percentage point).

The highest decrease in market shares and absolute numbers of passengers was observed for two major regional and agglomeration-based railway undertakings in the Mazowieckie Province, i.e. SKM in Warsaw and Koleje Mazowieckie. The total number of transported passengers was lower by nearly 6.5 m passengers than a year before. Numerous track closures, such as the closure of line 20 (Warszawa Główna Towarowa – Warszawa Gdańska – Warszawa Praga) and 447 (Warszawa Zachodnia – Grodzisk Mazowiecki) and limitations on major sections contributed to a considerable decrease in passenger flows.

Fig. 10. The evolution of number of passengers (in m passengers and percentage change) by railway undertaking 2018/2017



Tab. 3. Number of passengers by railway undertaking in 2014-2018 in m passengers

railway undertaking	year				
	2014	2015	2016	2017	2018
in total	**269.1**	**280.3**	**292.5**	**303.6**	**310.3**
Przewozy Regionalne	79.3	76.8	79.5	79.9	81.2
Koleje Mazowieckie	62.6	63.2	60.9	62.0	59.7
PKP Intercity	25.5	31.2	38.5	42.8	46.1
PKP SKM in Tricity	35.7	39.3	41.9	42.3	42.2
SKM Warszawa	25.6	25.3	23.8	23.1	18.9
Koleje Śląskie	16.0	15.9	15.3	15.7	17.0
Koleje Dolnośląskie	3.6	5.2	7.3	9.4	11.7
Koleje Wielkopolskie	7.2	7.4	8.3	8.1	11.0
WKD	7.9	7.7	6.9	7.7	8.6
Koleje Małopolskie	0.0	1.8	4.8	5.7	6.4
Łódzka Kolej Aglomeracyjna	0.3	1.6	2.5	3.9	4.7
Arriva RP	4.6	4.3	2.3	2.3	2.1
UBB	0.5	0.5	0.5	0.5	0.5
other	0.0	0.0	0.1	0.05	0.01

Fig. 11. The share of railway undertakings in the passenger transport market in 2014-2018 by the number of passengers

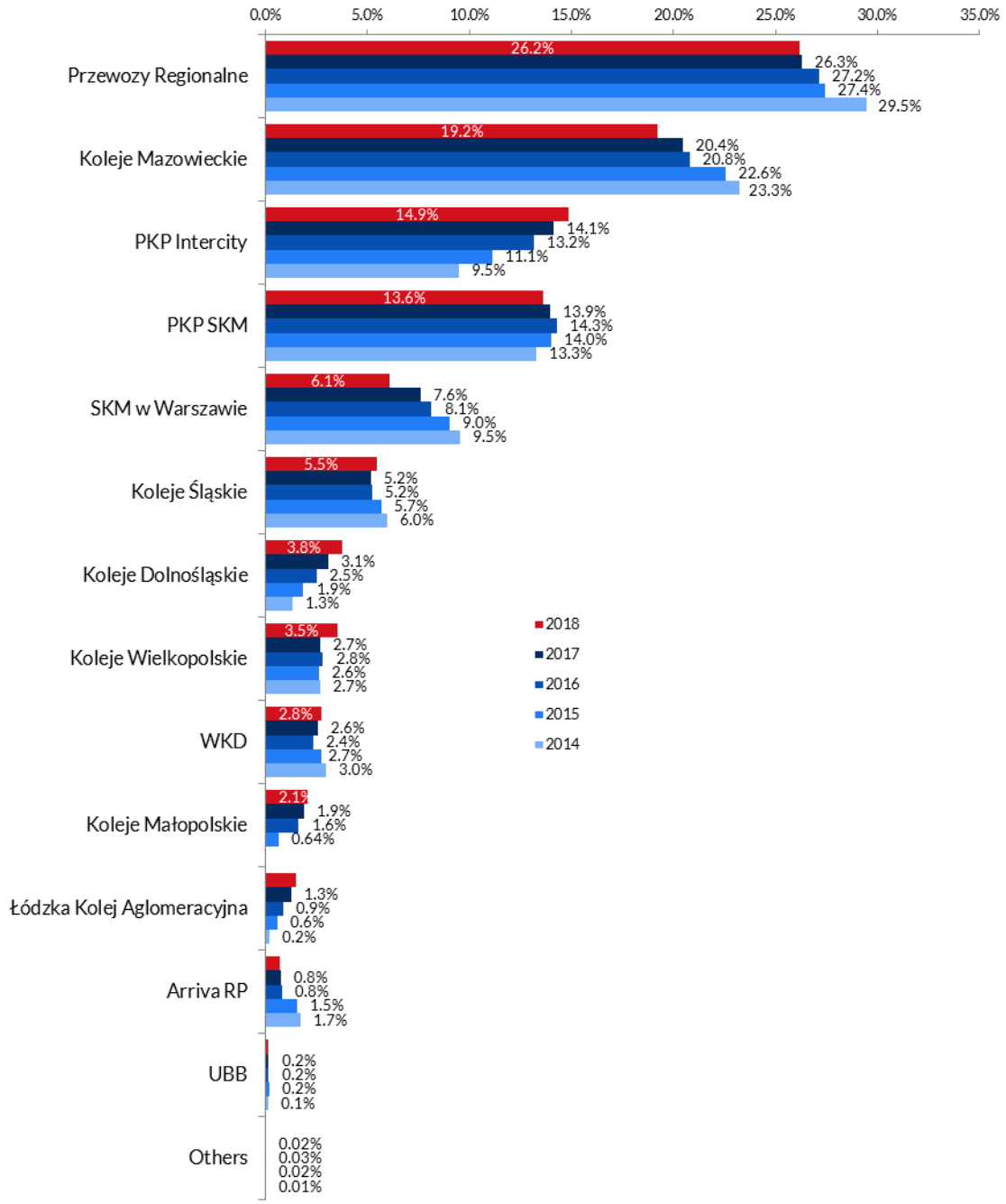
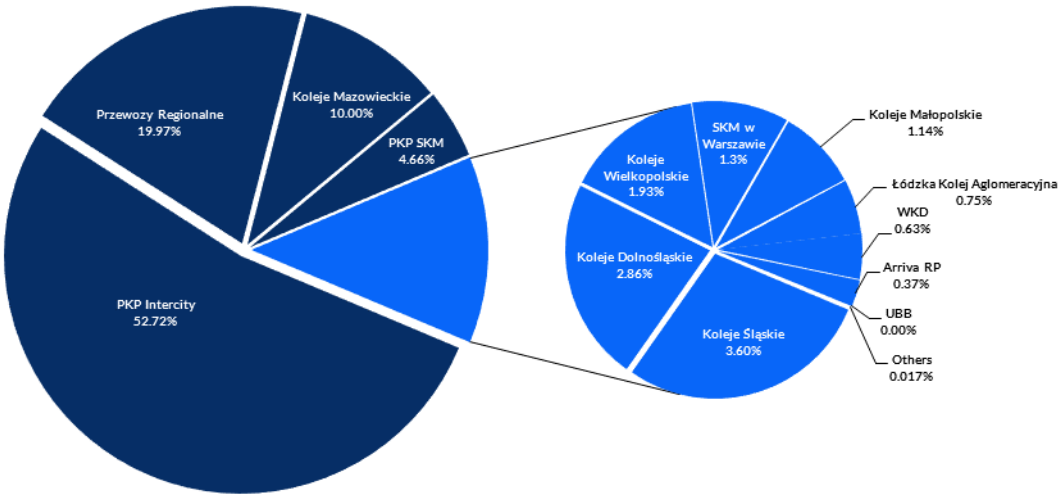
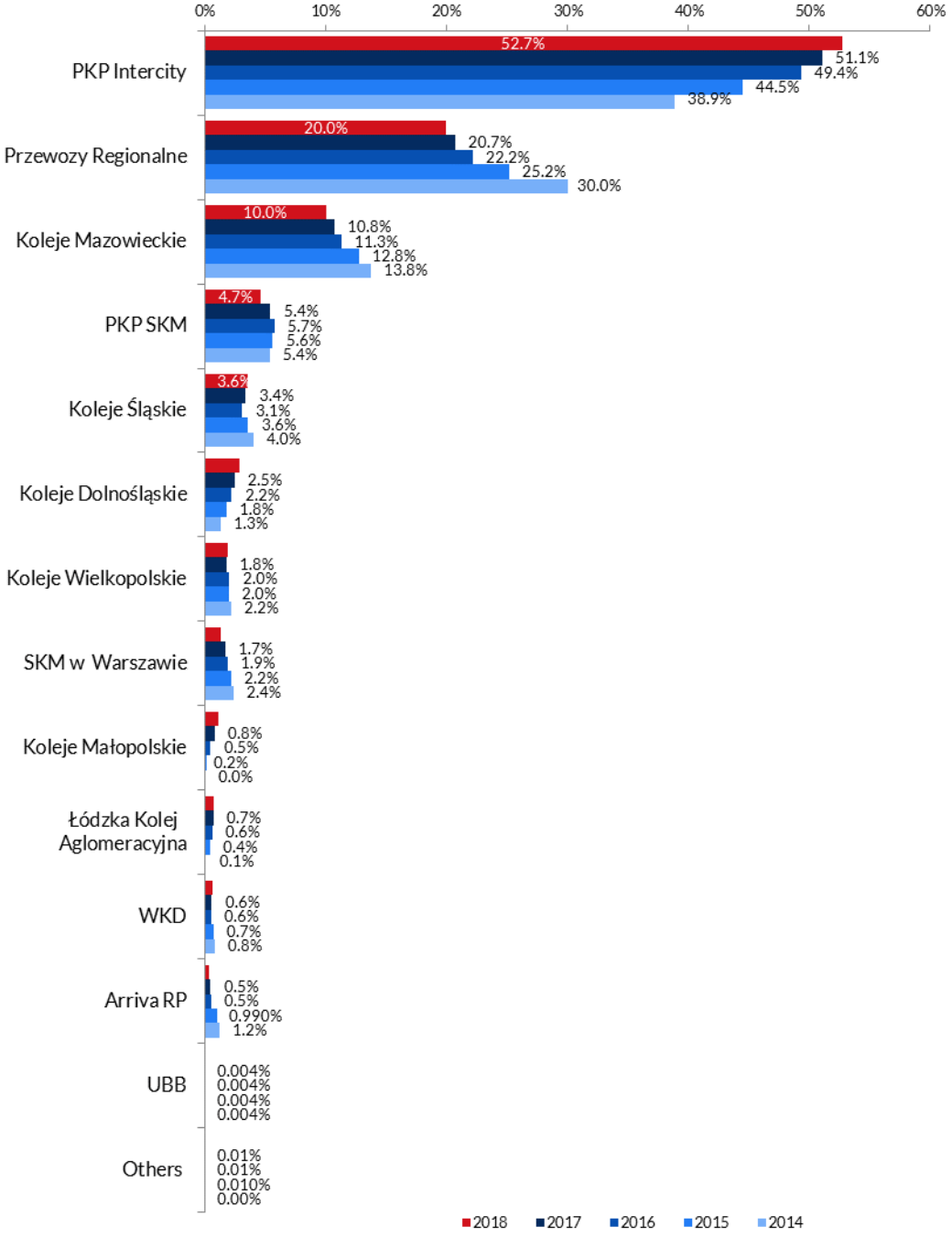


Fig. 12. The share of railway undertakings in the passenger transport market by transport performance in 2018



The share of PKP Intercity, the largest railway undertaking by transport performance, increased to 52.7% from 51.1% in 2017. Second in the ranking, Przewozy Regionalne saw its market share decrease by nearly 0.8 percentage point to around 20%. The share of three major railway undertakings: PKP Intercity, Przewozy Regionalne and Koleje Mazowieckie accounted for nearly 83% of the whole market in terms of transport performance. The average travel distance of one passenger for all railway undertakings in 2018 was approx. 68 km. For PKP Intercity the average travel distance amounted to 240.5 km (a decrease of almost 2 km) and for Przewozy Regionalne – 51.8 km (a drop of 1 km).

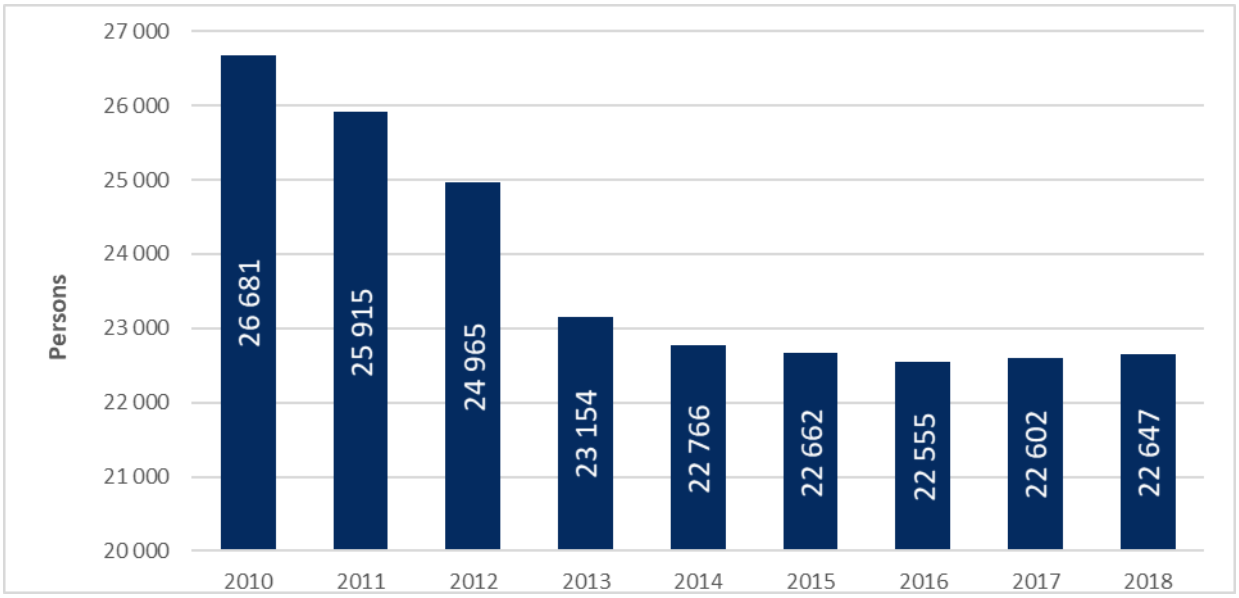
Fig. 13. The passenger transport market structure by transport performance in Poland in 2014-2018



2.6. Employment at passenger railway undertakings

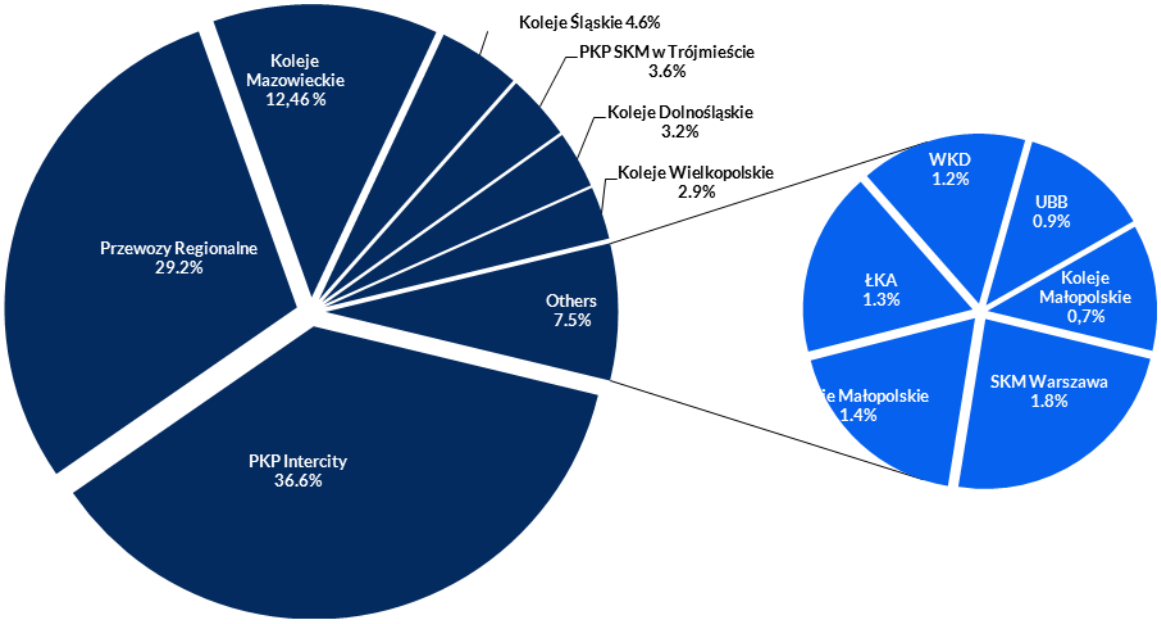
In 2018 (as at 31 December 2018) 22,647 people were employed in the passenger transport sector. The analysis of data since 2014 reveals a constant employment rate, with only a slight rise of 0.2% in 2018.

Fig. 14. Employment in the passenger transport sector in the years 2010-2018



The highest rise in employment in another year in a row was recorded by Koleje Małopolskie, where employment grew by 9% (26 people). Łódzka Kolej Aglomeracyjna hired 25 new employees (a 9.1% increase). In 2018 only three companies reduced their employment: Przewozy Regionalne decreased their workforce by 442 people (6%), Koleje Mazowieckie by 13 people (0.5%), and SKM in Tricity by 2 people (0.2%).

Fig. 15. Employment structure at passenger railway undertakings in 2018



Among companies providing regular (timetable) passenger transport, the major employers in 2018 were: PKP Intercity (36.6%), Przewozy Regionalne (29.2%) and Koleje Mazowieckie (12.5%). The three companies employed in total more than 78% of all employees of passenger railway undertakings.

The key employees of railway undertakings are individuals dealing directly with train traffic who must have the required predispositions and authorisations to perform duties in a given job position. These employees are subject to the legislation on regulated professions.

Tab. 4. Employment structure with regard to regulated professions at passenger railway undertakings in 2018

regulated professions	number of employees
total	**10,380**
train driver	5,025
train manager	3,942
rolling stock inspector	852
adjuster	282
shunter	130
traffic controller	52
signaller	46
railway vehicle driver	34
track supervisor	15
control engineer	1

Employees licensed to practise professions directly associated with train traffic accounted for 46% of all individuals employed with passenger railway undertakings.

Tab. 5. Age structure of all employees hired by passenger railway undertakings in 2018[2]

age	< 30 years	30-50 years	> 50 years
employees	3,183	9,777	9,223
%	14%	44%	42%

[2]Age structure calculated on the basis of FTEs for railway operations from 1 January to 31 December 2018. FTE should be interpreted as the total number of hours (including overtime) worked in a given job position divided by the number of hours worked annually in a full-time position.

Tab. 6. Age structure of train drivers hired by passenger railway undertakings in 2018[3]

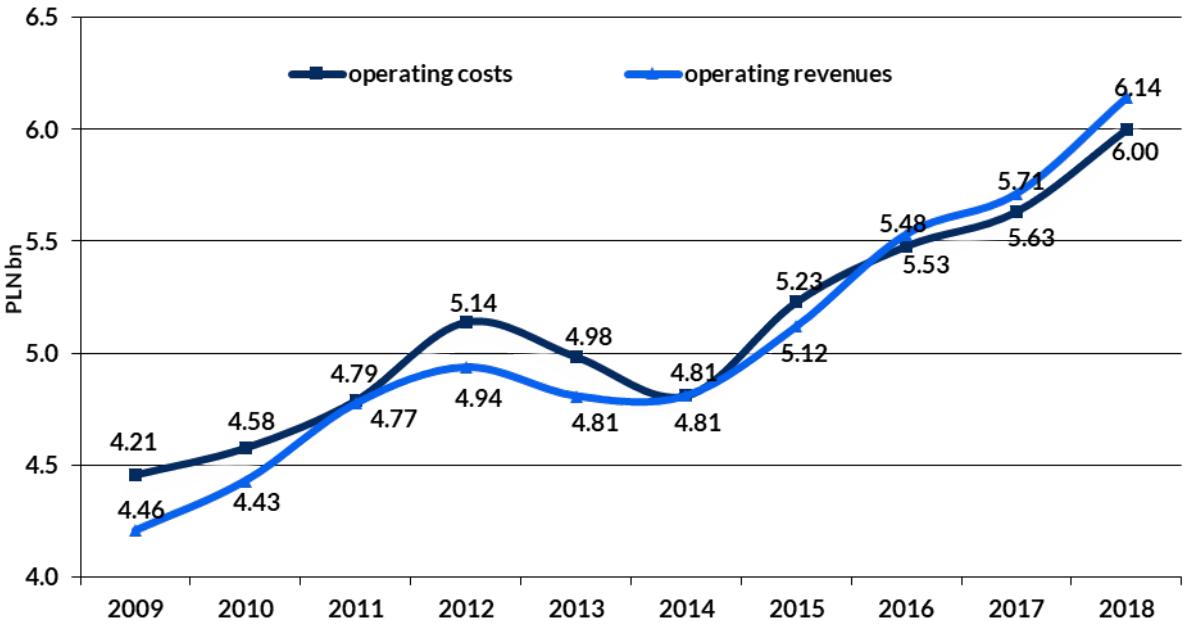
age	< 30 years	30-50 years	> 50 years
employees	1,013	2,237	1,943
%	20%	43%	37%

The presented employment age structure for railway undertakings points to a high proportion of people aged above 50 years. Taking into consideration the possibility of early retirement of people working in positions directly connected with traffic, such a high proportion of this age group may lead to a generation gap faced by railway undertakings, which will have a negative impact on their operations.

It is also worth pointing out that the efforts by railway undertakings within the last few years to prevent the generation gap among train drivers have led to an improvement of the age structure of this professional group as compared to other employees. A higher proportion of employees aged below 30 years and a lower percentage of staff aged above 50 years were recorded.

2.7. Financial performance of passenger railway undertakings

Fig. 16. The business performance of passenger railway undertakings (in PLN bn) in the years 2009-2018



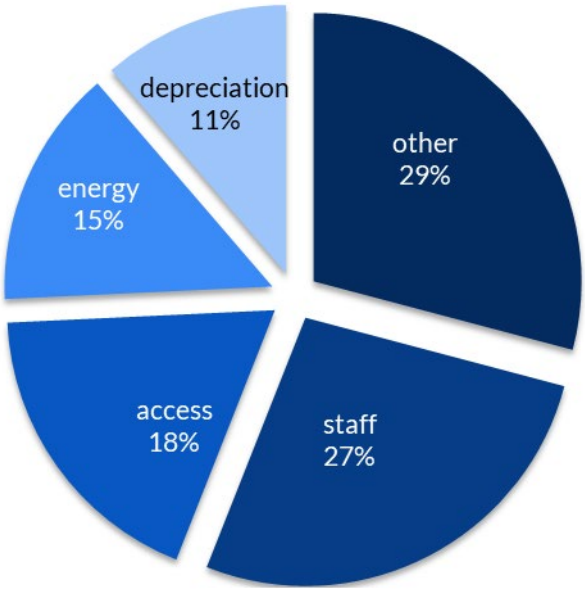
2018 was another year which saw a growth in revenue of passenger railway undertakings. A cost increase was also observed. Passenger operators closed the year 2018 with revenue at PLN 6.14 bn. In this period costs amounted to PLN 6 bn, which means that companies achieved an operating profit of approx. PLN 140 m.

[3]Age structure calculated on the basis of FTEs for railway operations from 1 January to 31 December 2018. FTE should be interpreted as the total number of hours (including overtime) worked in a given job position divided by the number of hours worked annually in a full-time position.

As in the previous years, ticket sales were the major source of revenue. The revenues also included government and local-government subsidies, for the provision of public services and covering the deficit related to statutory reliefs.

An important component of costs incurred by railway undertakings is the cost of access to railway infrastructure (including the fee for minimum access to the infrastructure), along with expenditures on electricity and fuel. In 2018 the average fee for minimum access to infrastructure per 1 train-km was PLN 6.47, which is almost identical to 2017 (an increase of PLN 0.03). In addition, railway undertakings paid over PLN 21.78 m of other charges for railway infrastructure managers. The costs of access to infrastructure were PLN 1.1 bn in total, accounting for 18% of all operating costs of passenger railway undertakings.

Fig. 17. Cost structure at passenger railway undertakings in 2018



Passenger transport is the basic service provided by passenger undertakings. In order to compare the price of the service, the cost of train-km was taken as a measure, i.e. operational performance of the respective railway undertakings taking into account costs of its realisation.

Tab. 7. Comparison of the cost of one train-km by passenger railway undertakings (PLN/train-km)

cost	PLN/train-km
minimum	25.43
maximum	52.02
median	32.28
average	36.49

Considerable differences were found among passenger railway undertakings as regards the costs of one train-km. The highest financial expenditures in this respect were incurred by railway undertakings also operating as infrastructure managers (such as, e.g., PKP SKM in Tricity or WKD) as well as those providing long-distance transport.

2.8. The range of commercial services provided by railway undertakings

In 2018 another substantial increase was recorded in the number of passengers in province, inter-province and international connections. As far as province connections are concerned, more than 261.8 m passengers used railway transport (3.3 m more than in 2017). Inter-province trains (stopping, fast and express trains) transported more than 44 m passengers (a rise of 2.4 m), while 4 m people used international and cross-border trains (an over 1 m increase). However, the number of passengers in occasional trains decreased from 143,000 in 2017 to 106,000 in 2018.

Tab. 8. The number of passengers (in thous.) in particular categories of services in the years 2015-2018

connections	year				2018/2017
	2015	2016	2017	2018	
in total	**280,309**	**292,549**	**303,555**	**310,284**	**2.22%**
province	244,336	251,611	258,453	261,761	1.28%
inter-province	33,367	38,099	41,962	44,410	5.83%
international (including cross-border)	2,455	2,724	2,997	4,007	33.70%
occasional	151	114	143	106	-25.87%

In the category of **province transport,** five railway undertakings: Przewozy Regionalne, Koleje Mazowieckie, PKP Szybka Kolej Miejska in Tricity, SKM in Warsaw and Koleje Śląskie in 2018 transported a total of over 218 m passengers, which accounts for more than 83% of all passengers using these connections. The highest increase in the number of passengers was recorded in Koleje Wielkopolskie – from 8 m in 2017 to almost 11 m in 2018. Also, in 2018 Koleje Dolnośląskie for the first time exceeded the number of 10 m transported passengers.

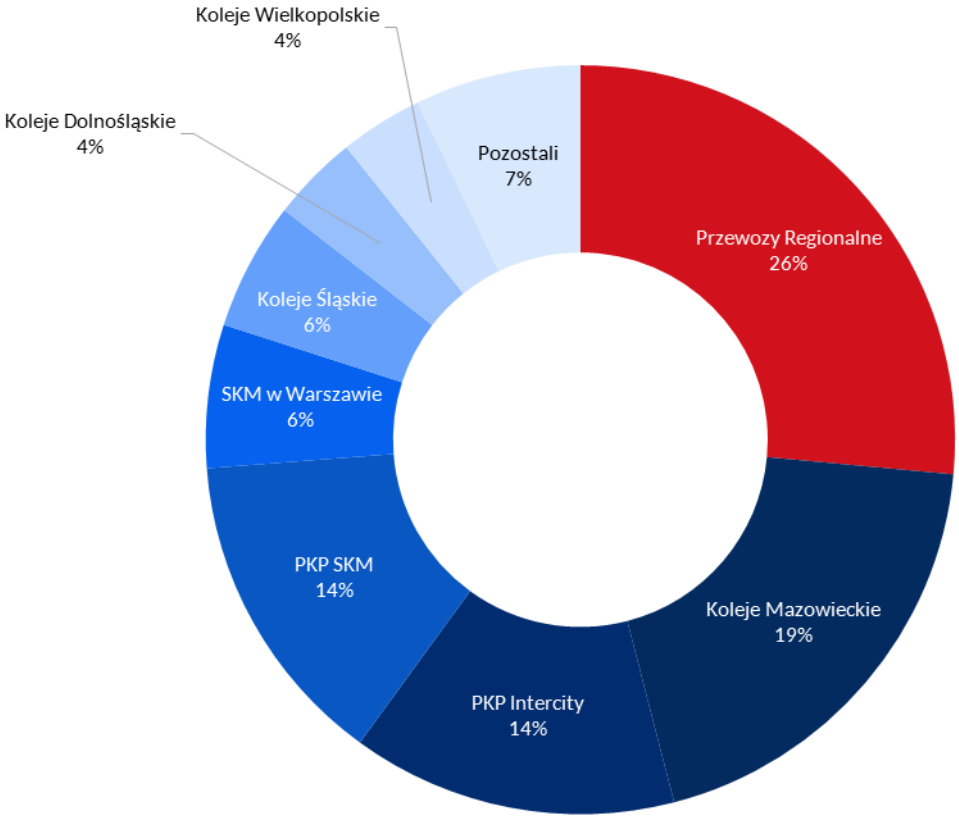
In 2018 several railway undertakings recorded a decrease in the number of passengers. In the case of Koleje Mazowieckie and SKM in Warsaw, a lower number of passengers was due to the upgrade works on railway line No. 447 Warszawa Zachodnia – Grodzisk Mazowiecki. Fewer passengers used the services of PKP SKM in Tricity and Arriva RP.

In the category of **inter-province transport**, PKP Intercity was an unquestionable market leader. In 2018 almost 43 m people used national connections offered by this railway undertaking. Łódzka Kolej Aglomeracyjna also increased its presence in this category, in 2018 transporting more than 427,000 passengers with inter-province trains (almost 115,000 more than in 2017). The group of undertakings which recorded a rising number of passengers also included Arriva RP, which in 2018 transported almost 67,000 passengers (an increase of over 15,000 in comparison to 2017) and Koleje Dolnośląskie, which in 2018 carried 188,000 passengers (a growth of approx. 3,000 in comparison to 2017). Less passengers used the services of Przewozy Regionalne, which in 2018 carried 615,000 passengers as part of inter-province connections (a decrease of nearly 16,000 as compared to 2017). More than 122,000 people travelled with Koleje Mazowieckie along inter-province routes (a decrease of over 20,000 as compared to 2017).

The development of broadly defined international integration and Poland's opening to neighbouring countries in the recent years has contributed to the continuous growth of the number of **international and cross-border** connections. In 2018, as compared to 2017, PKP Intercity recorded a considerable increase in the number of international train passengers – from 2,185,000 to 3,144,000. This was related to the opening of new international connections in the 2017-2018 timetable and changing the category of

selected trains within international connections from the EIC to the IC category, which had a substantial impact on the decrease in ticket prices. A rise was also observed in the number of passengers in international and cross-border trains operated by Koleje Dolnośląskie, Przewozy Regionalne and Koleje Śląskie. Furthermore, in 2018 international connections became available to the residents of Skawina, Oświęcim and Mysłowice, where Leo Express, the Czech private railway undertaking, launched its seasonal connections. Usedomer Bäderbahn, another foreign railway undertaking providing international transport in Poland, was the only undertaking which in 2018 lost passengers as compared to the previous year.

Fig. 18. The share of railway undertakings in the number of passengers in national connections (province and inter-province) in 2018



Tab. 9. The range of services provided by railway undertakings as part of national passenger connections in 2018

connections	railway undertaking					
	PKP Intercity	Przewozy Regionalne	Łódzka Kolej Aglomeracyjna	Koleje Mazowieckie	Koleje Dolnośląskie, Koleje Śląskie, Koleje Wielkopolskie, Koleje Małopolskie, Arriva RP	PKP SKM in Tricity SKM in Warsaw WKD
province						
stopping		REGIO	stopping	stopping	stopping	stopping
inter-province						
stopping		REGIO		stopping Słoneczny	stopping	
fast	TLK, IC	interREGIO musicREGIO	ŁKAsprinter			
express	EIC, EIP					

Within national connections **PKP Intercity** provided inter-province fast transport (in most cases operating as part of public service transport) and inter-province express trains (operating on a commercial basis). The company's network of connections covered all provinces and was operated by four commercial categories of trains:

- Express InterCity Premium (EIP), with electric multiple units Alstom Pendolino EMU250PKP (series ED250);
- Express InterCity (EIC), with standard wagon sets;
- InterCity (IC), with electric multiple units Pesa Bydgostia (series ED74), Stadler FLIRT (series ED160) and Pesa Dart (series ED161) and standard wagon sets;
- Twoje Linie Kolejowe (TLK), with standard wagon sets.

As part of its national connections **Przewozy Regionalne** provided province stopping, inter-province stopping and inter-province fast connections (including interREGIO trains running on weekdays along the section between Łódź and Warsaw and musicREGIO trains). The company's network of connections covered all provinces. The services were provided within three commercial brands:

- REGIO, with electric railcars and multiple units, diesel railcars and multiple units, and standard wagon sets;
- interREGIO with electric multiple units;
- musicREGIO with electric multiple units.

As part of national connections **Koleje Mazowieckie** provided province stopping and inter-province stopping connections. The company's connections network covered the Mazowieckie, Łódzkie, Lubelskie, Podlaskie, Warmińsko-Mazurskie, Świętokrzyskie and Pomorskie Provinces. The service range of Koleje Mazowieckie was limited to stopping trains and the "Słoneczny" connection available in the summer along the path between Warszawa Zachodnia, Gdynia Główna and Ustka. The company provided its transport services with electric multiple units, diesel railcars, diesel multiple units and double-deck coach sets with electric locomotives.

PKP SKM in Tricity operated services for local connections as part of public collective transport. The railway undertaking provided local connections in the Tricity agglomeration and as part of Pomorska Kolej Metropolitalna with the use of electric multiple units and diesel multiple units.

SKM in Warsaw operated services for local connections as part of public collective transport. The railway undertaking operated local connections in the Warsaw agglomeration (including connections to/from the Warsaw Chopin Airport) with the use of electric multiple units.

Within national connections **Koleje Śląskie** provided province stopping and inter-province stopping connections. The company's connections network covered the Śląskie and Małopolskie Provinces. The railway undertaking continued the "Giewont" weekend connections along the Katowice – Żywiec – Zakopane path and launched a new Gliwice – Rybnik – Wisła Głębce connection. The company's range of services included stopping trains with electric multiple units.

As part of national connections **Koleje Dolnośląskie** provided province stopping and inter-province stopping connections. The company's connections network covered the Dolnośląskie, Opolskie, Wielkopolskie and Lubuskie Provinces. The undertaking's service range was limited to stopping trains with electric multiple units, diesel railcars and diesel multiple units.

Within national connections **Koleje Wielkopolskie** provided province stopping and inter-province stopping connections. The company's connections network covered the Wielkopolskie, Lubuskie, Łódzkie and Kujawsko-Pomorskie Provinces. In 2018 the railway undertaking started a service, as part of Poznańska Kolej Metropolitalna, from Poznań to Nowy Tomyśl, Grodzisk Wielkopolski, Jarocin, Wągrowiec, Swarzędz and Zbąszynek. Also, train services along the Gniezno – Września – Jarocin path were reopened. Furthermore, the company launched special trains for the "Beer with Culture" 8th Szreniawa Beer Festival. The company's service range was limited to stopping trains with electric multiple units, diesel multiple units and regular passenger transport with steam multiple units along the Wolsztyn – Poznań, Wolsztyn – Leszno path.

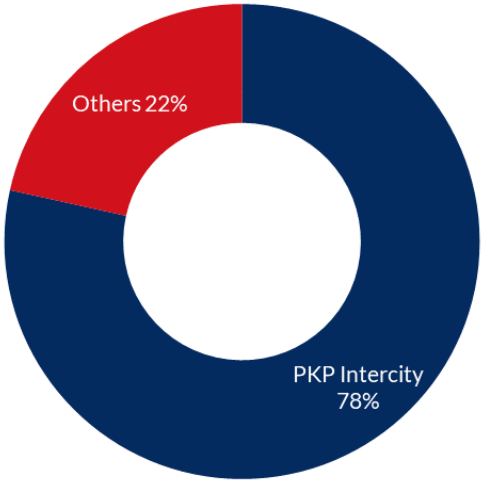
Warszawska Kolej Dojazdowa operated services for connections in the Mazowieckie Province along the Warszawa Śródmieście WKD – Grodzisk Mazowiecki Radońska path with a turnoff to the Milanówek Grudów stop. The railway undertaking used electric multiple units for the connections.

As part of national connections **Koleje Małopolskie** provided province stopping and inter-province stopping connections. The company's connections network covered the Małopolskie, Świętokrzyskie and Podkarpackie Provinces. The undertaking's range of services included stopping trains with electric multiple units.

As part of national connections **Łódzka Kolej Aglomeracyjna** provided province stopping transport and inter-province fast transport services (launched for weekends and holidays along the Łódź – Warsaw path under the ŁKAsprinter commercial brand). The company's connections network covered the Łódzkie and Mazowieckie Provinces. The railway undertaking's service range was limited to two types of trains – stopping and ŁKAsprinter trains, with Stadler FLIRT and Newag Impuls electric multiple units.

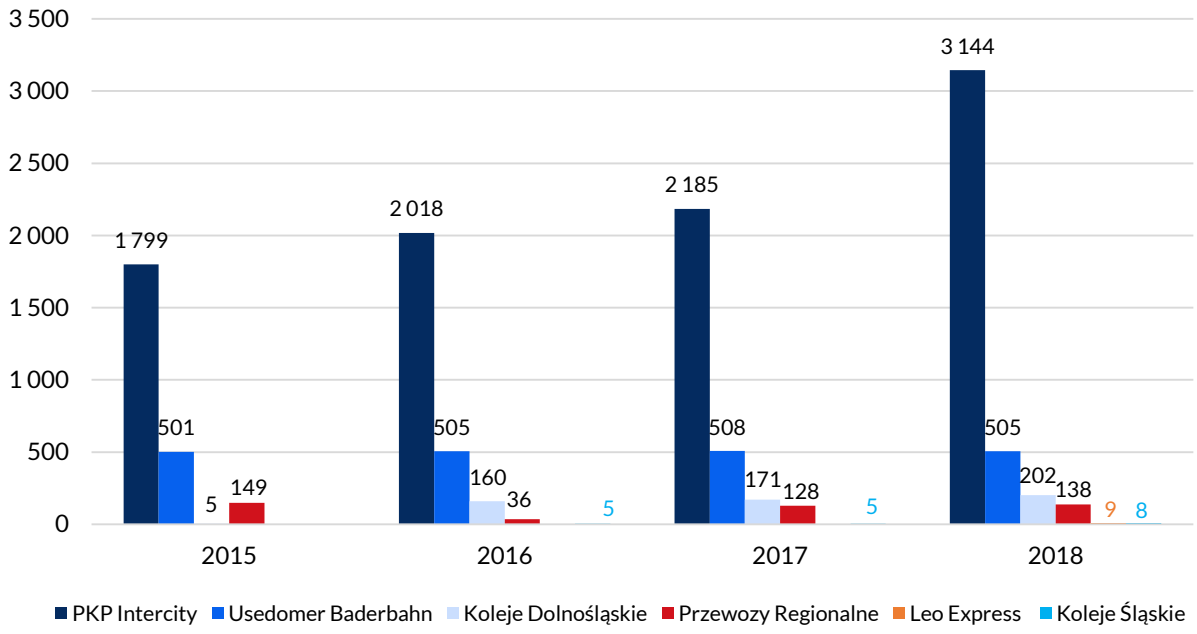
Within national connections **Arriva RP** provided province stopping and inter-province stopping connections. The company's connections network covered the Kujawsko-Pomorskie and Pomorskie Provinces. For the summer the railway undertaking launched a special connection along the Bydgoszcz – Władysławowo – Hel path. The undertaking's service range covered stopping trains with diesel railcars and diesel multiple units.

Fig. 19. The share of railway undertakings in the number of passengers in international connections in 2018



In addition to PKP Intercity, international transport was provided by other railway undertakings: UBB (13%), Koleje Dolnośląskie (5%), Przewozy Regionalne (3%), Leo Express (0.22%) and Koleje Śląskie (0.2%). International transport involves cross-border traffic as defined in the Act on public collective transport. This is a zone including at least one commune, district or province where a public collective transport operator provides its services. The area is located in the direct vicinity of the state border of the Republic of Poland, and the area of the respective administration unit located on the territory of a neighbouring state.

Fig. 20. The number of passengers transported in international trains, including cross-border trains in 2015-2018 (in thous. passengers)



Tab. 10. The range of services provided by railway undertakings as part of international passenger connections in 2018

connections	railway undertaking					
	PKP IC	Przewozy Regionalne	Koleje Dolnośląskie	Koleje Śląskie	UBB	Leo Express
international						
stopping (cross-border)		REGIO	stopping	stopping	stopping	
fast	TLK, IC		fast			Leo Express
express	EIC, EN					

Within international connections **PKP Intercity** provided international fast transport services (in most cases operating as part of public service transport) and international express train services (operating on a commercial basis). International connections launched by the railway undertaking provided access to: Vienna (Austria), Grodno and Minsk (Belarus), Ostrava and Prague (the Czech Republic), Paris and Nice (France), Berlin (Germany), Moscow (Russia), Bratislava (Slovakia), Lviv and Kiev (Ukraine) and Budapest (Hungary). A new connection in the company's range introduced in 2018 was the summer TLK "Wydmy" train running along the Bohumín (the Czech Republic) – Łeba/Hel path and the IC "Nightjet" train running along the Berlin – Vienna/Budapest path. The company's international service range included four commercial brands with standard wagon sets:

- **Express InterCity** (EIC);
- **EuroNight** (EN);
- **InterCity** (IC);
- **Twoje Linie Kolejowe** (TLK).

Within international connections **Przewozy Regionalne** provided cross-border transport to Belarus (Terespol – Brest path), to Lithuania (Białystok – Suwałki – Kaunas path), to Germany (Gorzów Wielkopolski – Berlin, Szczecin – Berlin, Kostrzyn – Berlin, Szczecin – Lübeck, Szczecin – Angermunde, Zielona Góra – Frankfurt (Oder), Żagań – Forst and Zielona Góra – Görlitz paths) and to Slovakia (Rzeszów – Medzilaborce and Sanok – Medzilaborce path). The railway undertaking offered these connections under the REGIO commercial brand.

As part of international connections Koleje Śląskie provided cross-border transport services only to the Czech Republic (Katowice – Rybnik – Bohumin path). The company's international range includes only stopping trains.

Within international connections **Koleje Dolnośląskie** provided cross-border international transport to the Czech Republic (Wrocław Główny – Lichkov, Szklarska Poręba Górna – Liberec, Sędzisław – Trutnov, Wrocław – Meziměstí – Adršpach paths) and to Germany (Jelenia Góra – Görlitz, Wrocław – Forst (Lausitz) and international fast transport to Germany (along the Wrocław – Dresden and Wrocław – Berlin Lichtenberg paths).

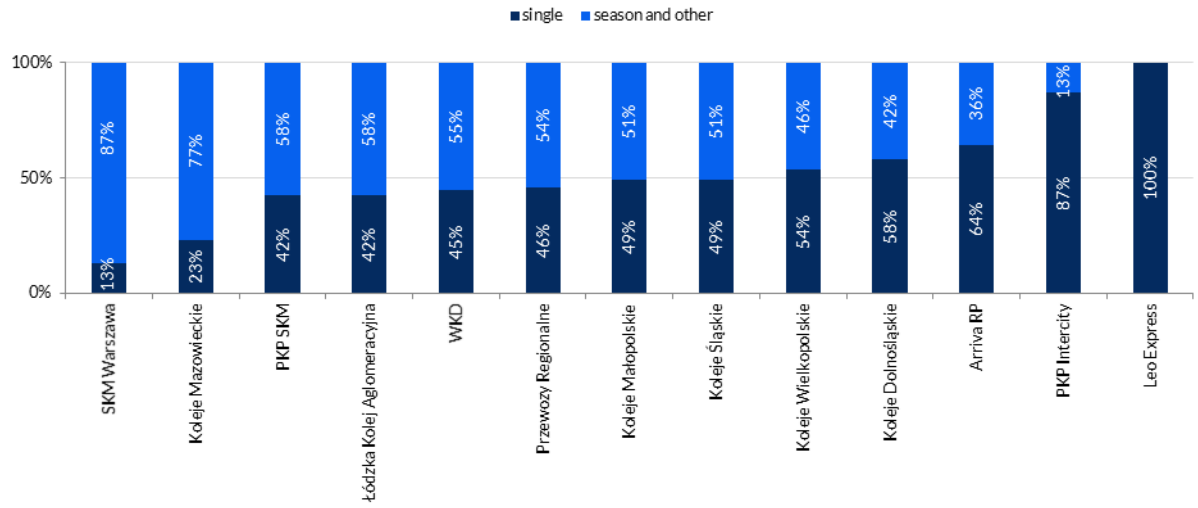
As part of international connections **UBB** provided international stopping transport between Poland and Germany along the Świnoujście Centrum – Stralsund path. The section between Świnoujście Centrum and Ahlbeck Grenze with a length of 1.4 km is managed by UBB Polska, a railway infrastructure manager, owned by the German UBB company, part of the Deutsche Bahn corporation. The railway undertaking is not a public collective transport operator, so passenger transport provided by it is not included under cross-border transport.

As part of international connections **Leo Express** operated seasonal international fast transport services (launched on the basis of open access granted to the railway undertaking for passenger railway transport along an international path) from Prague to Kraków. The railway undertaking's service range on the international path was limited to the Leo Express commercial brand.

2.9. Railway ticket sales and distribution

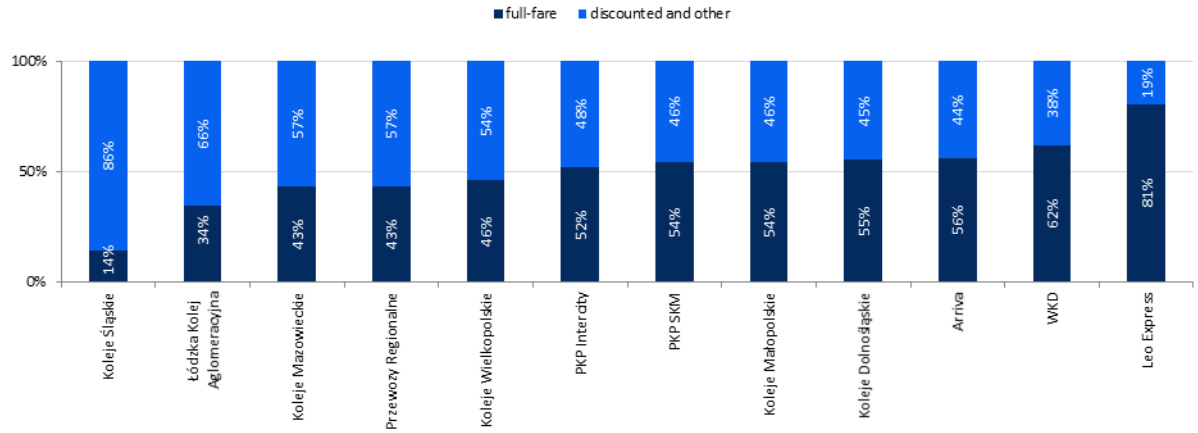
Season tickets were the most popular among railway passengers – in 2018 54% of railway trips were with these tickets. The category also includes special offers, such as city cards entitling passengers to use train services. 46% passengers travelled with single tickets. The structure of ticket types varies by railway undertaking. The highest percentage of passengers choosing season and other tickets was recorded in SKM Warszawa (87%, a decrease of 4 percentage points) and Koleje Mazowieckie (77%, a drop of 1 percentage point). The only railway undertaking operating in 2018 which did not report season tickets was Leo Express.

Fig. 21. The share of the number of passengers by ticket types (single, season and other) in 2018



Among railway undertakings with a rising percentage of passengers using season tickets were Koleje Małopolskie (51%), an increase of 9 percentage points) and ŁKA (56%, a rise of 7 percentage points). Other railway undertakings did not observe any major changes in their ticket structure.

Fig. 22. The share of the number of passengers by ticket types (full-fare, discounted and other) in 2018



When comparing sales data from 2017 and 2018, in the case of most railway undertakings a low rate of change was observed in the division of tickets into full-fare and discounted/other. Changes in the shares structure of particular railway undertakings were not significant, i.e. from 0.06 percentage point to 1.8 percentage points.

In the case of Koleje Wielkopolskie a rise in the share of discounted and other tickets of 4 percentage points was observed to 54%, and for Koleje Dolnośląskie the share of discounted and other tickets increased by 9 percentage points to 55%. Leo Express, a new railway undertaking which launched its operations in 2018, reported selling 81% full-fare tickets and 19% discounted tickets.

Tab. 11. The share of distribution channels in 2017-2018

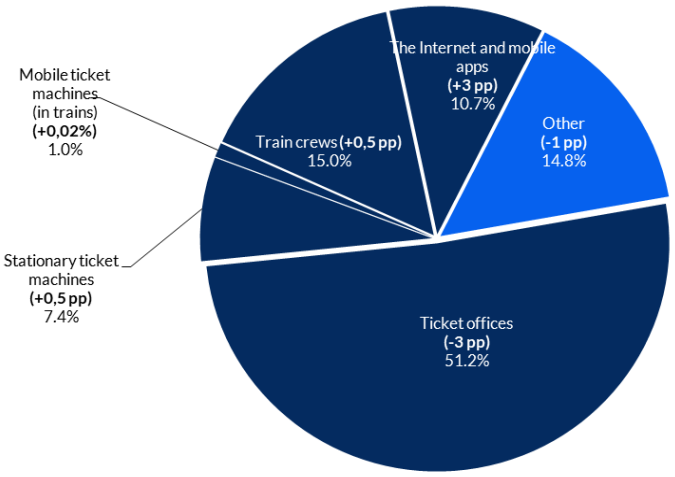
distribution channel	year		2018/2017 change
	2017	2018	
ticket offices	54.2%	51.2%	-3.0 percentage point
train crews	14.5%	15.0%	0.5 percentage point
the Internet and mobile apps	7.7%	10.7%	3.0 percentage point
stationary ticket machines	6.8%	7.4%	0.6 percentage point
mobile ticket machines (in trains)	1.0%	1.0%	0
other	15.7%	14.8%	-0.9 percentage point

The comparison of the distribution channel structure in 2018 as compared to 2017 points to a decline in the share of trips with tickets purchased in ticket offices (from 54.2% to 51.2%), with a simultaneous rise in the shares of the remaining channels (except for "other"). The calculation included the ticket offices of railway undertakings, agency ticket offices and ticket offices of other railway undertakings.

For passengers travelling on the basis of tickets sold by train crews, a growth from 14.5% to 15.0% was recorded. This could be due to a limited availability of ticket offices and the resulting necessity to purchase tickets from train crews without extra charges if the trip began on a stop/station where ticket offices are not available (this applies in particular to regional railways).

It is worth paying attention to a relatively high (from 7.7% to 10.7%) increase in the share of "The Internet and mobile apps" channel, which may be caused by its advantages such as convenient purchase and payment and general availability. The share of the "other" channel (e.g. tickets sold by WKD train drivers, distribution of traditional paper tickets of PKP SKM, the consolidated package of ZTM in Warsaw) dropped by 0.9 percentage point.

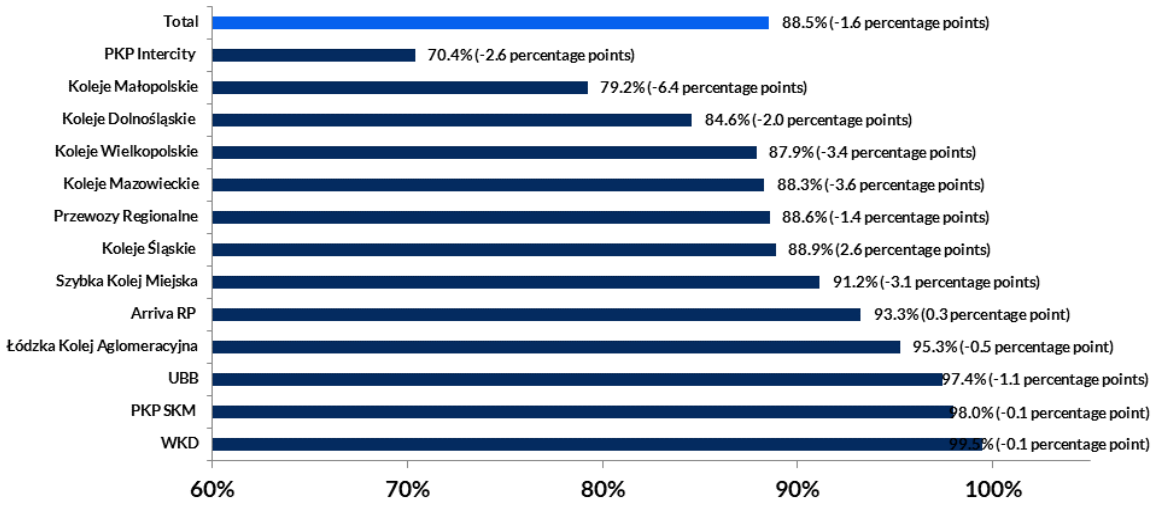
Fig. 23. The share of the respective distribution channels in the total number of tickets sold by the number of passengers in 2018 , including change in comparison to 2017 in percentage points (pp)



2.10. The evaluation of the quality of rail transport services – punctuality

One of the most important determinants of the quality of transport services is the level of punctuality. In 2018, trains that reached the final station on time or with a delay up to 5 minutes were considered punctual. In 2018 the punctuality of trains on final stations was 88.5% (in 2017 it was 90.2%). Licensed railway undertakings dispatched a total of over 1.78 m trains, approx. 3.9% more than in the previous year (a rise of 66,600). In 2018 total train delays equalled 66,069 hours (57,184 hours in 2017, i.e. the total train delays time increased by 8,885 hours in comparison to the previous year). The average train delay time, excluding delays of up to 5 minutes, decreased by 48 s and in 2018 amounted to 16 min 59 s. With the inclusion of trains delayed by up to 5 minutes, the average delay time was 9 min 28 s (by 5 seconds more than in 2017). Trains delayed up to 5 min constituted the largest share, i.e. 51.2%, although lower than in the previous year. (in 2017 – 53.1%). However, the number of trains delayed from 5 to 60 min grew, in 2018 accounting for 46.8% (44.8% in 2017). Trains delayed by 1-2 hours represented 1.5% (1.6% in 2017) and those delayed by more than 2 hours – 0.4% (0.6% in 2017).

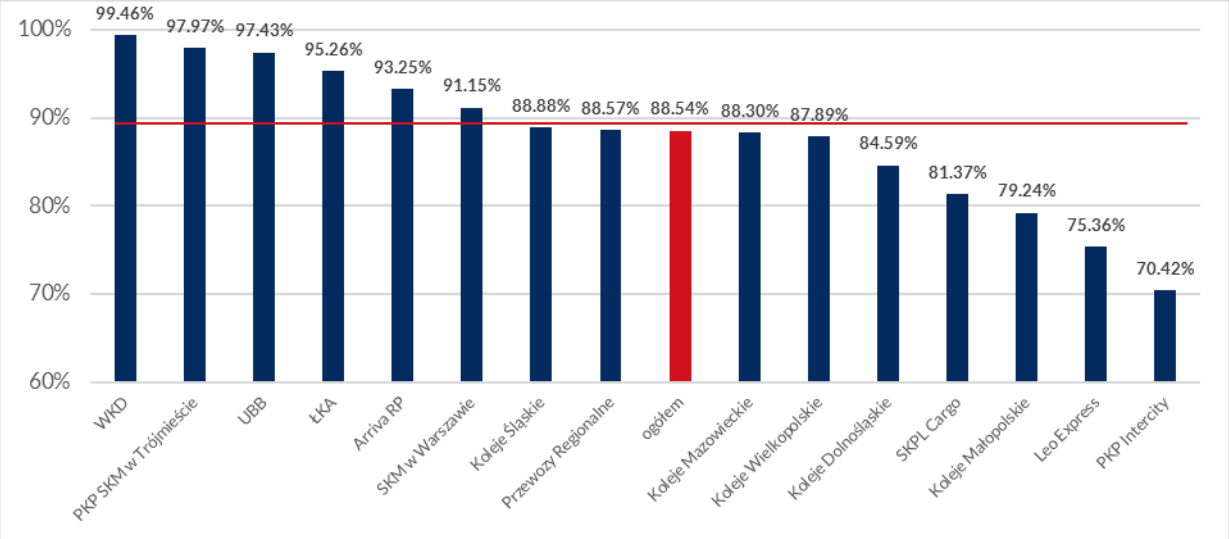
Fig. 24. The punctuality of passenger railway undertakings in 2018 (indicating the change in relation to 2017)



Tab. 12. The punctuality of passenger railway undertakings in 2017-2018 and in the respective quarters of 2018 (delays above 5 minutes)

connections	Quarter 1	Quarter 2	Quarter 3	Quarter 4	2018	2017
in total	**90.14%**	**88.21%**	**87.42%**	**88.48%**	**88.54%**	**90.17%**
Arriva RP	93.95%	93.40%	91.90%	93.82%	93.25%	92.97%
Koleje Dolnośląskie	87.77%	80.94%	85.23%	84.41%	84.59%	86.55%
Koleje Małopolskie	73.44%	84.04%	78.75%	81.28%	79.24%	85.67%
Koleje Mazowieckie	91.45%	87.69%	86.71%	87.38%	88.30%	91.85%
Koleje Śląskie	90.76%	88.27%	88.57%	88.04%	88.88%	86.28%
Koleje Wielkopolskie	89.02%	86.56%	86.75%	89.24%	87.89%	91.24%
ŁKA	96.79%	95.19%	95.19%	94.04%	95.26%	95.76%
PKP Intercity	74.52%	68.20%	66.68%	72.53%	70.42%	72.97%
PKP SKM in Tricity	98.26%	98.18%	97.98%	97.46%	97.97%	98.05%
Przewozy Regionalne	89.76%	88.75%	87.31%	88.59%	88.57%	90.01%
SKM In Warsaw	94.64%	90.80%	89.62%	89.57%	91.15%	94.21%
UBB	98.71%	97.63%	95.99%	98.01%	97.43%	98.51%
WKD	99.65%	99.41%	99.41%	99.29%	99.46%	99.58%
Leo Express	-	-	79.07%	69.23%	75.36%	-
SKPL Cargo	-	87.53%	77.07%	78.20%	81.37%	-

Fig. 25. The punctuality of railway undertakings in 2018 (delays above 5 minutes on arrival)



As in the previous year, WKD trains using their own separate infrastructure had the highest punctuality indicator. In 2018 the undertaking recorded 99.5% punctuality (99.6% in 2017).

A high punctuality indicator was also observed for PKP SKM in Tricity and UBB, amounting to 98% and 97.4%, respectively. Starting from early 2018, as compared to 2017, a decrease in punctuality could be

noticed in the respective quarters of the year for PKP Intercity. The railway undertaking provided long-distance services covering the entire country, and in the case of such connections the effects of large-scale investment works on the rail network are the most visible. At PKP Intercity punctuality dropped by nearly 2.6 percentage points in comparison to the 2017 results.

The highest decrease in punctuality in 2018 was recorded by Koleje Małopolskie – of over 6.5 percentage points (from 85.7% to 79.2%). The railway undertaking's result was influenced by modernisation works started as early as in 2017 in several points in Kraków. In 2018 modernisation works were continued and tracks were built within the agglomeration. Numerous track closures and CCS installations failures caused considerable train delays.

2.11. The evolution of passenger transport services in Poland compared to other European countries

As at the date of drawing up this report, data on passenger transport in 2018 in Europe were not available in official studies and statistics of the European Commission and Eurostat. The Office of Rail Transport collected partial data from 12 regulatory bodies affiliated in IRG-Rail as part of its cooperation with the group. The data are not official and are subject to minor adjustments.

In 2016 railway passenger transport in Europe reached 450 bn pass-km out of approx. 6 trillion pass-km of land transport in total. Railway was mainly used for domestic travel, with international transport accounting for only 6% of transport performance.

Fig. 26. Evolution of the number of passengers carried in selected European countries (2018/2017)

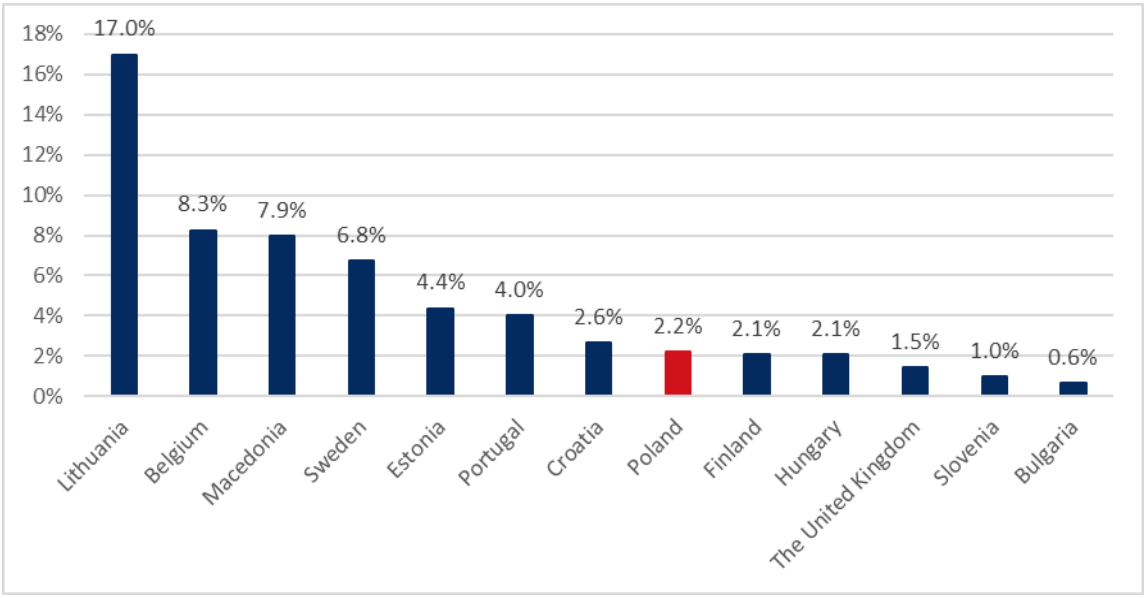


Fig. 27. Evolution of transport performance in selected European countries (2018/2017)

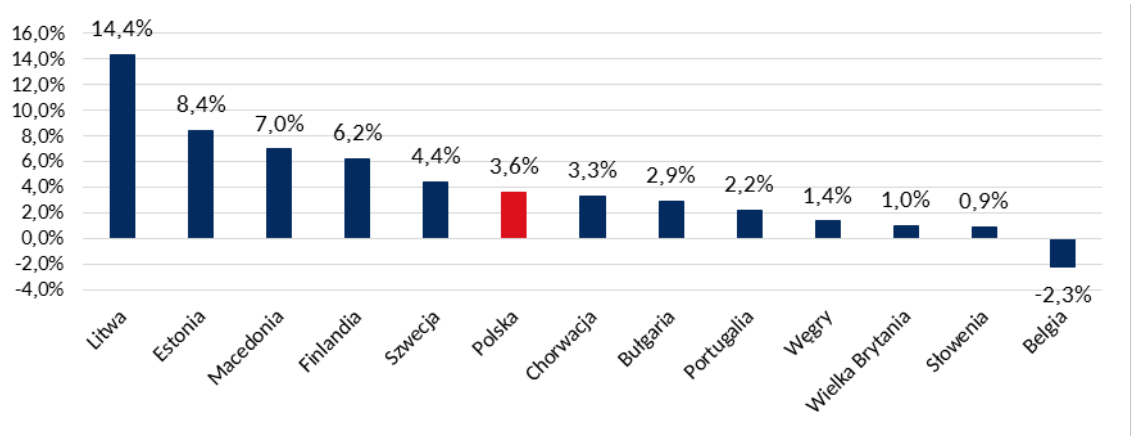
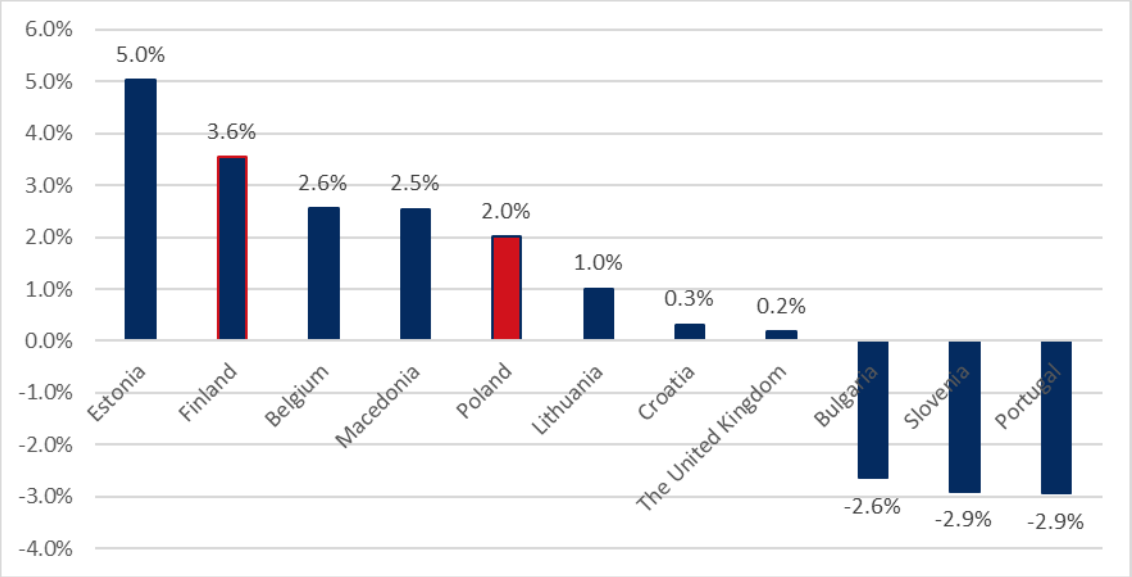


Fig. 28. Evolution of operational performance achieved in 2018 in selected European countries (2018/2017)



The highest percentage rise in terms of the number of passengers took place in Lithuania. The growth of the passenger market was caused by measures taken by AB „Lietuvos geležinkeliai", a Lithuanian national railway undertaking. The undertaking set out to improve its service range and increase the availability of railway transport. The measures included appealing marketing of services, improved timetables, the purchase of new rolling stock, opening of new paths and ensuring the multimodality of passenger transport. As a result, the number of passengers in Lithuania increased from 4.4 m to 5.2 m.

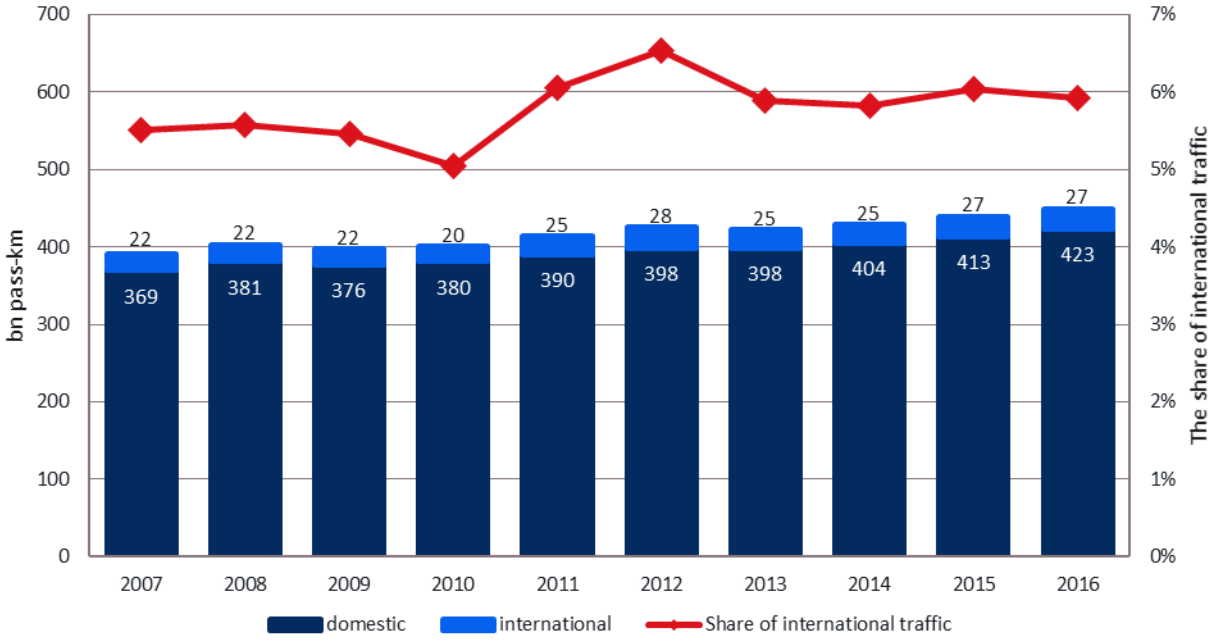
In 2018, as compared to 2017, a slight rise of 134,500 passengers was recorded on the Bulgarian market, along with an increase in transport performance of almost 42 m pass-km.

In Finland an upward trend continued in long-distance and regional traffic. The share in the railway travel market increased thanks to the lower ticket prices and reduced travel time for popular long-distance paths. As a result, the number of passenger transport services increased.

In Portugal in 2018 the number of passengers transported increased by 5.7 m (4%) year on year. At the same time, transport performance on the passenger market dropped (by -2.9%). Railway passenger transport in cities grew continuously both as a result of intensified tourist activity and improved quality of transport services.

In the United Kingdom a growth on the passenger transport market of 25 m passengers was recorded (1.5%), generated mainly around London and in the south-eastern part of the country.

Fig. 29. Change in the volume of railway passenger traffic in Europe in 2007-2016 (in bn pass-km)



Source: Sixth report on monitoring development of the rail market (RMMS) published in March 2019.

EU citizens are increasingly choosing railway services. This contributes to a higher number of pass-km per capita, which increased from 830 in 2011 to 882 in 2016 (i.e. by approx. 1.2% per year).

Fig. 30. The share of transport performance by rail, passenger cars, coaches & buses and trams & the underground in the respective European countries in 2016

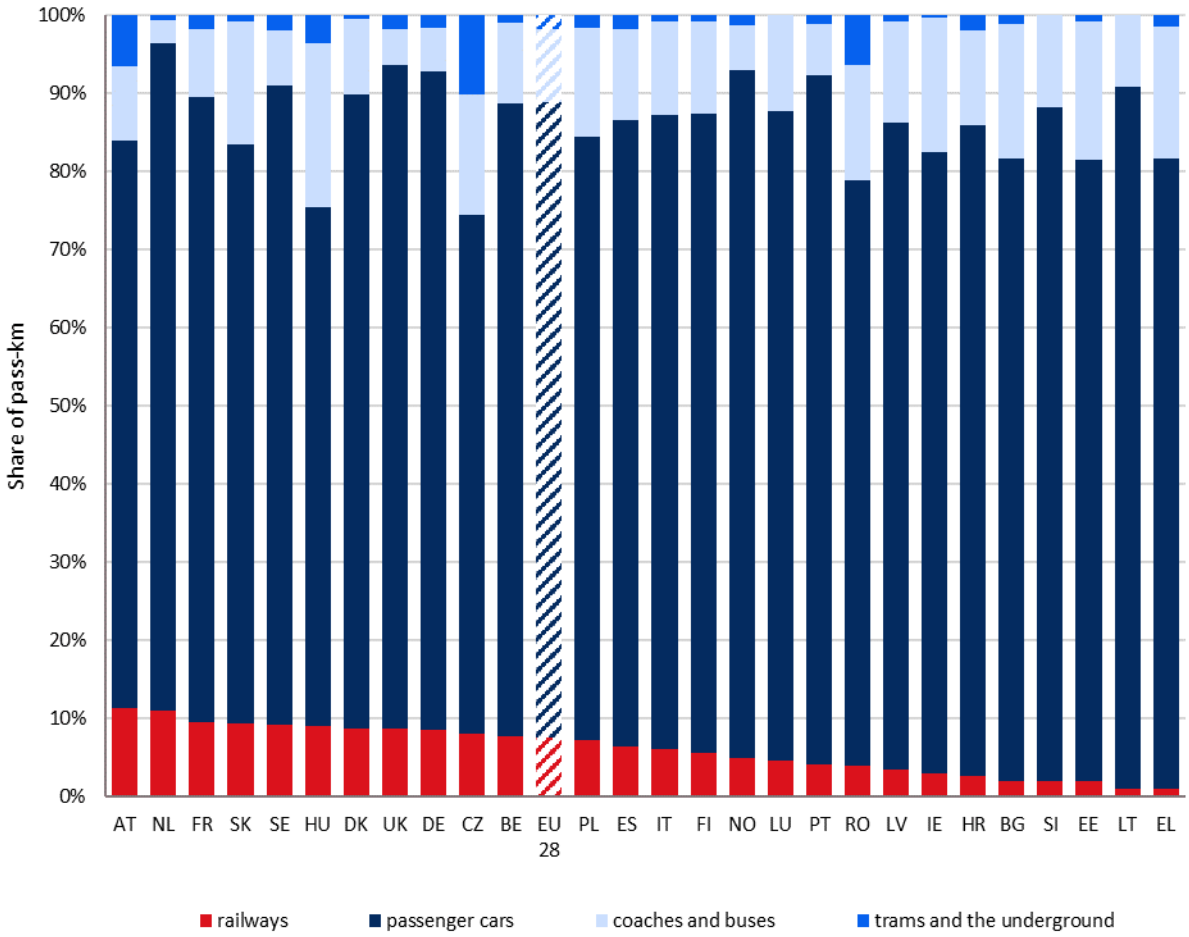
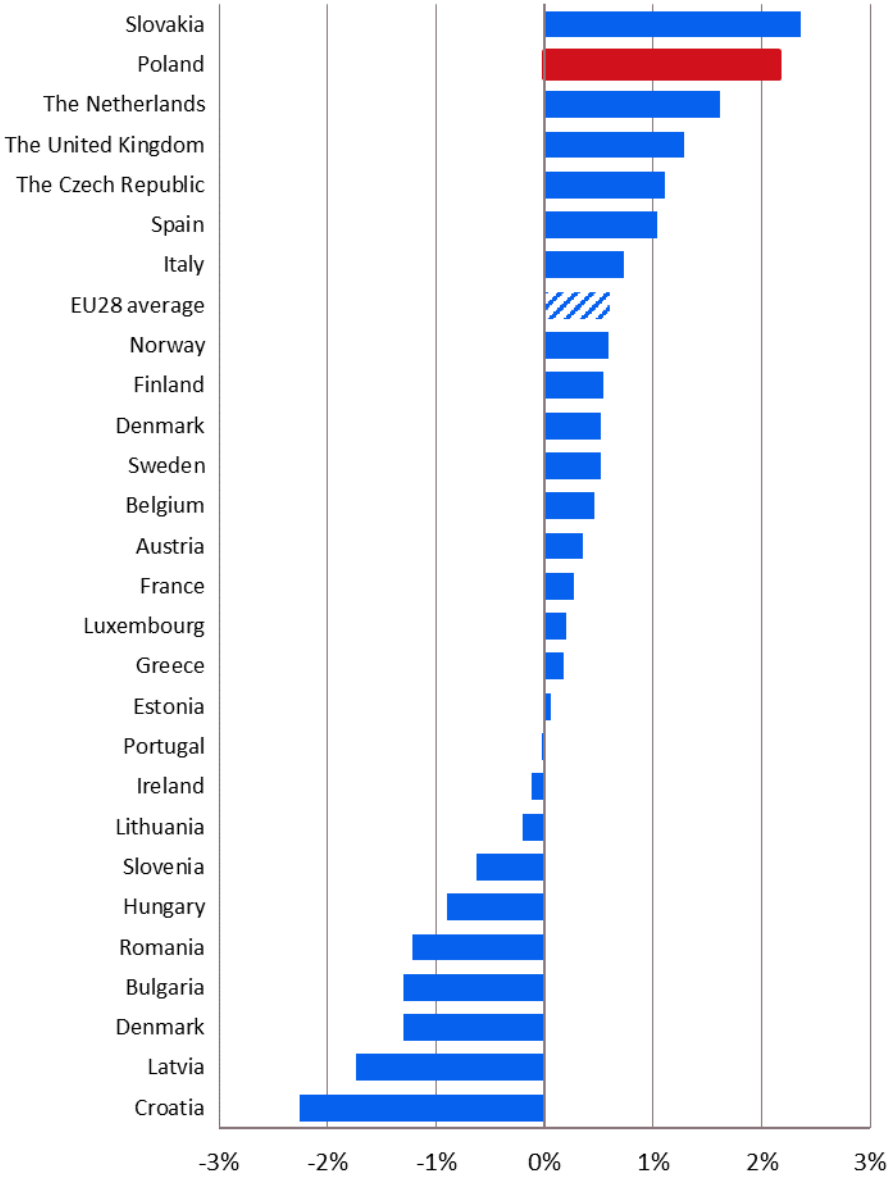
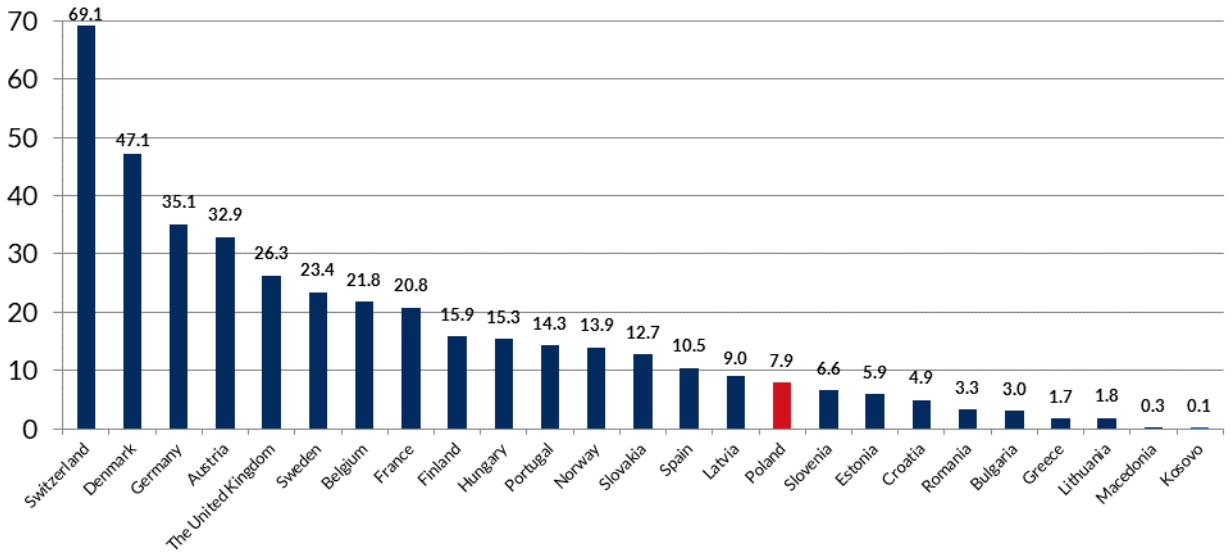


Fig. 31. Change in passenger transport operated in the respective European countries in 2011-2016



The share of passengers cars in land transport in EU countries exceeded 80%. The average share of passenger railways grew from 7.0% to 7.6% in 2007-2016.

Fig. 32. Rail usage rate in 2017 in selected European countries



In order to compare the rail usage rate in particular countries, the number of passengers obtained from regulatory bodies were divided by the number of residents of a given country as at 1 January 2018 according to Eurostat data. As at the date of drawing up this Report, not all countries had published their data on the number of passengers carried in 2018. Thus, for standardisation, the indicator for 2017 was taken into account in the comparison.

As compared to other European countries, the number of trips per capita in Poland in 2017 was 7.9 trips, but according to data for 2018 it grew to 8.1. The value is still lower than the European average, which in 2017 equalled 20.3 trips per year per average resident.

Among the countries which presented data on the number of passengers carried in 2018, and which reported an increased rail usage are the following:

- Sweden, with a rise from 22.2 in 2017 to 23.4 in 2018;
- Belgium, with an increase from 20.2 to 21.8;
- Estonia, with an increase from 5.2 to 5.9 trips per capita;
- in Portugal, with a growth in the number of passengers by nearly 14 m, a considerable rise in the average number of railway trips was observed from 12.9 to 14.3 per capita.

The lowest rail usage is observed in Balkan countries such as Kosovo and Macedonia, where railways cannot compete with road transport. Their railway usage is only slightly higher than in Greece. Railways are used to a limited extent also in Bulgaria, Croatia, Estonia, Lithuania, Romania and Slovenia.

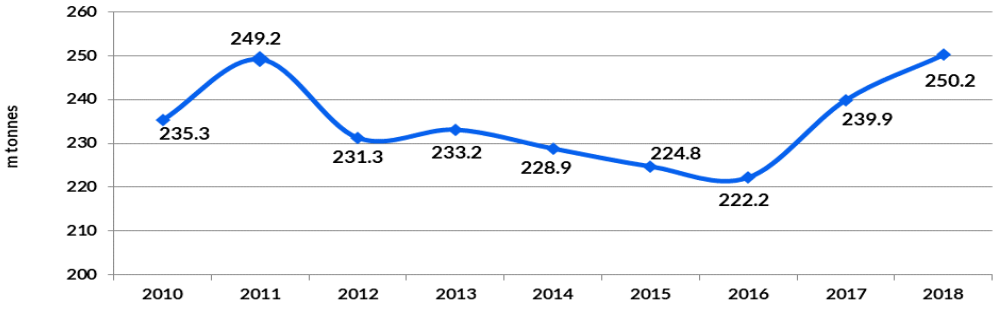
3. Freight transport

In 2018 in freight transport an increase was observed in weight, transport performance and operational performance. Numerous works carried out as part of new road and railway infrastructural projects generated increased transport volumes of aggregates and materials. Projects carried out on tracks also had a negative impact on freight transport, causing numerous bypasses for freight train sets. In 2018 a rise of the transported freight weight was observed. The result was similar to the record-breaking value for 2011 and amounted to 250.2 m tonnes. It was associated with the country's economic development, good sales results of many industrial sectors and infrastructural projects. A high growth rate was also observed in intermodal transport, where the weight of freight transported by rail increased by 15.6%, and transport performance grew by 14.8%.

3.1. The basic parameters of the freight transport market

As compared to 2017, in 2018 a rise in the transported freight weight was observed from 239.9 m tonnes to 250.2 m tonnes (a 4.3% growth). Despite the fact that the upward trend continued, it did so at a lower rate, as in 2017 the weight growth rate of transported freight in comparison to 2016 was 7.9% (3.6 percentage points higher than in 2018).

Fig. 33. Cargo weight in freight rail transport in the years 2010-2018 (standard-gauge transport)



The analysis of the data of freight transport demonstrates that transport performance also increased by 4.8 bn tonne-km (8.8%). Transport performance depends on the length of paths covered by trains. A higher increase of this parameter relative to transported freight weight was caused by numerous track closures and the necessity to transport freight along longer paths.

Fig. 34. Transport performance in freight rail transport in the years 2010-2018 (standard-gauge transport)

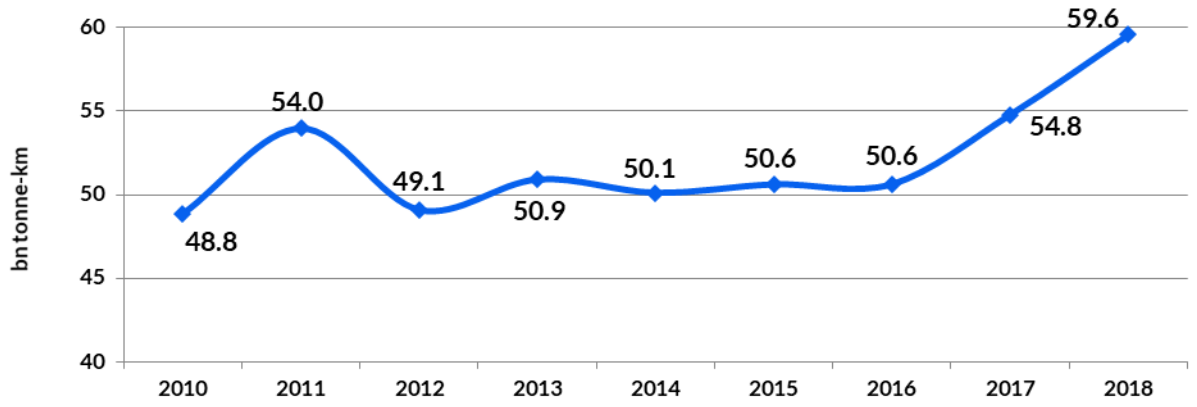
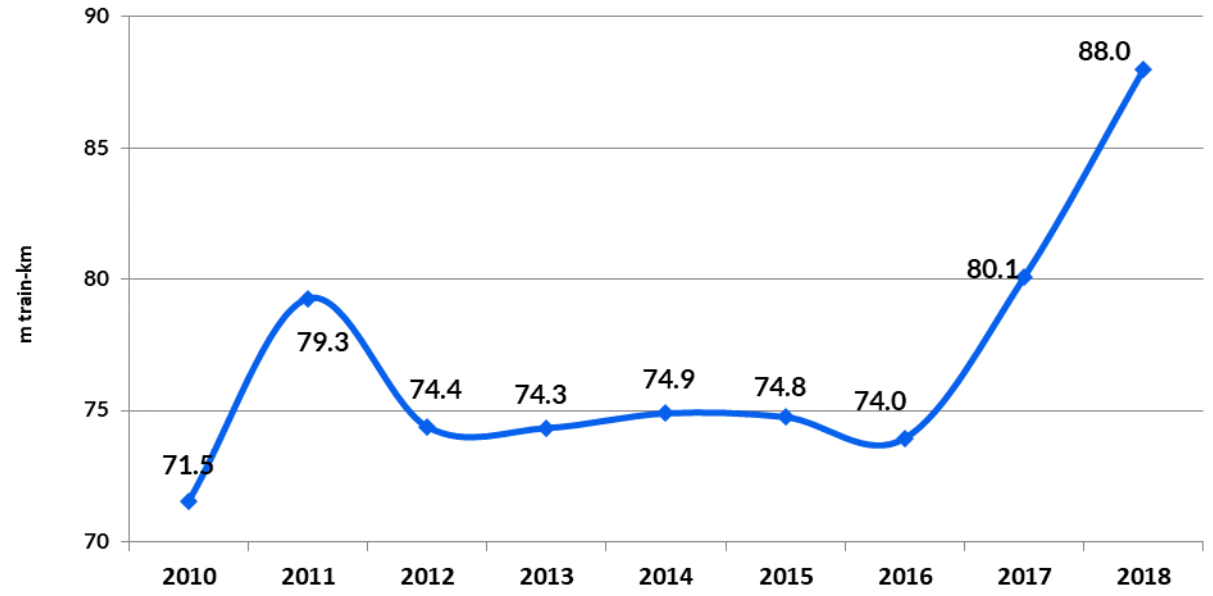


Fig. 35. Operational performance in freight rail transport in the years 2010-2018 (standard-gauge transport)



A similar trend can be observed for operational performance. The parameter increased from 80.1 m train-km in 2017 to 88 m train-km in 2018 (a rise of 9.9%). However, it should be noted that the increase in operational performance, caused by longer distances due to track closures and bypasses, had a negative impact on transport profitability. In such cases higher costs are often observed related to an increased rolling stock use, operation, and fuel and electricity use. This translates into higher transport prices

covered by the ordering party. Longer distances contribute to limited availability of rolling stock units. Railway undertakings have at their disposal less train pairs that can be launched during a day.

3.2. The main commodity groups

In 2018 the weight of transported freight increased, and the structure of the transported commodity groups changed. Intermodal transport had gained in significance, carried out by a higher number of railway undertakings, as discussed in Chapter 3.9. Some railway undertakings also provided transport services involving taking over part of the cargo from another railway operator as part of commercial relations.

In 2018 the following commodity groups had the highest share in transport with regard to the carried weight:

- coal and lignite; crude petroleum and natural gas – 39.2% (more than 98 m tonnes);
- metal ores and other mining and quarrying products (including iron ores, aggregates, sand, gravel and clay – 28.3% (70.7 m tonnes);
- coke and refined petroleum products, manufactured gas – 11.2% (28 m tonnes).

The three groups accounted for more than 78.6% of cargo transported by freight railway undertakings in Poland in 2018. As regards the weight of the transported freight, the highest increase was observed in the group of metal ores and other mining and quarrying products– of over 8.4 m tonnes, of which the aggregates subgroup saw a 9 m tonnes growth, iron ores – a nearly 0.5 m tonnes rise, while other subgroups recorded decreases.

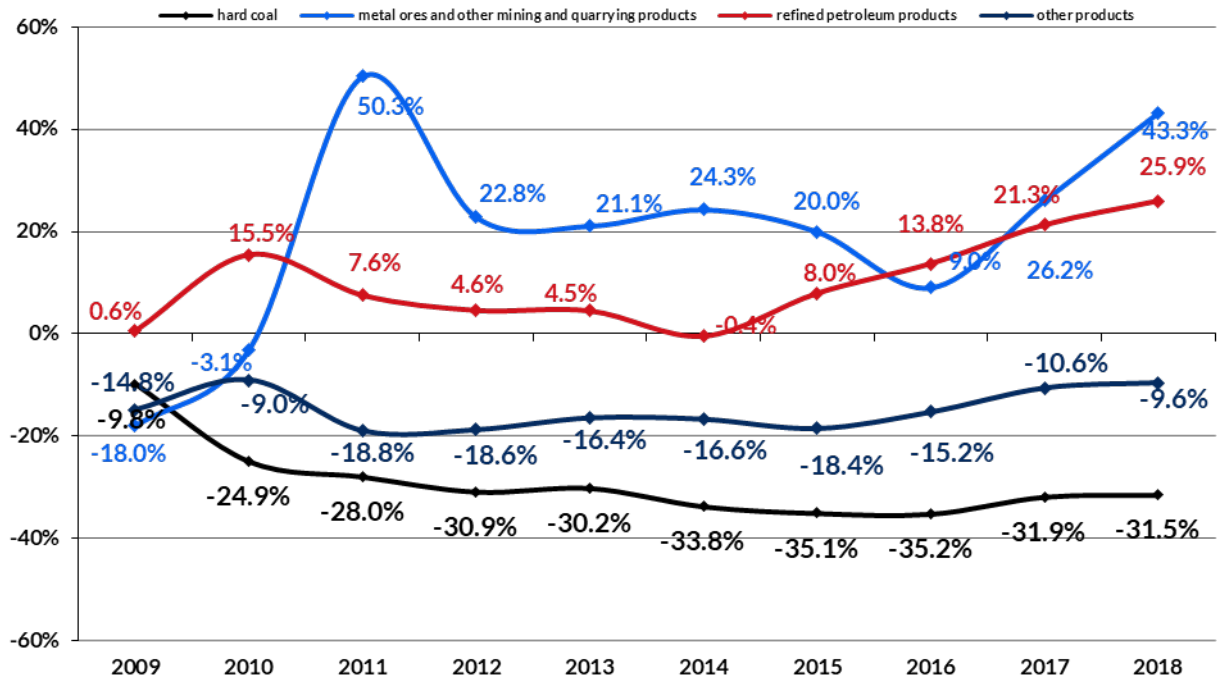
Another commodity groups in which the absolute transported weight increased in comparison to the previous year were coal and lignite; crude petroleum and natural gas – 0.9 m tonnes, and basic metals; fabricated metal products – 0.8 m tonnes. The total weight of freight transported within these groups grew by over 10 m as compared to 2017.

When analysing the data on commodity groups, an upward trend can be observed for the transport of aggregates and construction materials – from 43,667 thous. tonnes in 2017 to 52,671 thous. tonnes in 2018 (a 20.6% rise). An upward trend of the weight of transported cargo also concerned basic metals; fabricated metal products – 8.3%, other non-metallic mineral products – 2.8%, empty packages – 18.8% and unidentifiable goods – nearly 33%. In line with the Standard Goods Classification for Transport Statistics, unidentifiable goods include those which for any reason were not identified and assigned to groups according to sections 01-16 in line with the NST 2007 classification. This also refers to goods transported in containers or swap bodies which cannot be identified.

NST 2007 classification

section	description
01	Products of agriculture, hunting, and forestry; fish and other fishing products
02	Hard coal, lignite, crude oil and natural gas
03	Metal ores and other mining and quarrying products; peat; uranium and thorium
04	Food products, beverages and tobacco
05	Textiles and textile products; leather and leather products
06	Wood and products of wood and cork (except furniture); articles of straw and plaiting materials; pulp, paper and paper products; printed matter and recorded media
07	Coke and refined petroleum products
08	Chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel
09	Other non-metallic mineral products
10	Basic metals; fabricated metal products, except machinery and equipment
11	Machinery and equipment n.e.c.; office machinery and computers; electrical machinery and apparatus n.e.c.; radio, television and communication equipment and apparatus; medical, precision and optical instruments; watches and clocks
12	Transport equipment
13	Furniture; other manufactured goods n.e.c.
14	Secondary raw materials; municipal wastes and other wastes
15	Mail, parcels
16	Equipment and material utilized in the transport of goods
17	Goods moved in the course of household and office removals; baggage and articles accompanying travellers; motor vehicles being moved for repair; other non-market goods n.e.c.
18	Grouped goods: a mixture of types of goods which are transported together
19	Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16
20	Other goods n.e.c.

Fig. 36. The evolution of raw material transport by weight transported in 2009-2018 (2008=0)



The freight transport performance in 2018 amounted in total to 59.6 bn tonne-km. The commodity groups with the highest contribution to the results were metal ores and other mining and quarrying products – 17.9 bn tonne-km and coal and lignite; crude petroleum and natural gas – over 15.9 bn tonne-km.

The shares of the two above-mentioned groups accounted for 56.7% of all transported goods, of which metal ores and other mining and quarrying products constituted nearly 30% and the transport of coal and lignite; crude petroleum and natural gas – 26.7%. In the group "empty packaging and unidentifiable goods", the increase in transport performance was mainly related to transporting units within intermodal transport.

The table below includes the main groups of goods transported by rail undertakings and a detailed analysis of particular groups of goods transported by rail, by weight and transport performance, excluding narrow-gauge transport.

Tab. 13.Main groups of goods transported by freight railway undertakings in 2018

Railway undertaking	HARD COAL, LIGNITE	METAL ORES AND OTHER MINING AND QUARRYING PRODUCTS	COKE, BRIQUETTES, REFINED PETROLEUM PRODUCTS	CHEMICALS, CHEMICAL PRODUCTS	BASIC METALS, FABRICATED METAL PRODUCTS
Alza Cargo	✔		✔		
AWT	✔		✔		
Barter	✔	✔	✔	✔	✔
Bartex	✔				
Budimex		✔	✔	✔	
Captrain Polska	✔		✔		✔
CargoMaster		✔	✔	✔	

Cargo Przewozy Tow.	✔	✔	✔	✔	✔
CD Cargo Poland	✔	✔	✔	✔	✔
Ciech Cargo	✔	✔		✔	
CL Łososna	✔				
Colas Rail		✔	✔	✔	
CTL Logistics	✔	✔	✔	✔	✔
CTL Północ	✔				✔
DB Cargo Polska	✔	✔	✔		✔
DB Cargo Spedkol				✔	
Depol		✔			
Dolkom			✔	✔	
Ecco Rail	✔	✔	✔	✔	✔
EP Cargo	✔		✔	✔	
Eurotrans	✔	✔	✔	✔	✔
F.H.U Orion Kolej		✔			
Freightliner PL	✔	✔	✔	✔	✔
Grupa Azoty „KOLTAR"	✔	✔		✔	
HSL Polska	✔	✔	✔	✔	✔
Inter Cargo	✔	✔	✔	✔	✔
JSW Logistics	✔		✔		
Karpiel		✔		✔	
Kolej Bałtycka	✔	✔	✔		✔
KP Kotlarnia	✔	✔			

Railway undertaking	HARD COAL, LIGNITE	METAL ORES AND OTHER MINING AND QUARRYING PRODUCTS	COKE, BRIQUETTES, REFINED PETROLEUM PRODUCTS	CHEMICALS, CHEMICAL PRODUCTS	BASIC METALS, FABRICATED METAL PRODUCTS
Logistics&Transport Company		✔			
Lotos Kolej		✔	✔	✔	✔
LTE Polska		✔		✔	✔
LW Bogdanka	✔				
Majkoltrans		✔		✔	
Moris					✔
NKN Usługi Kolejowe		✔	✔	✔	
Olavion		✔	✔	✔	

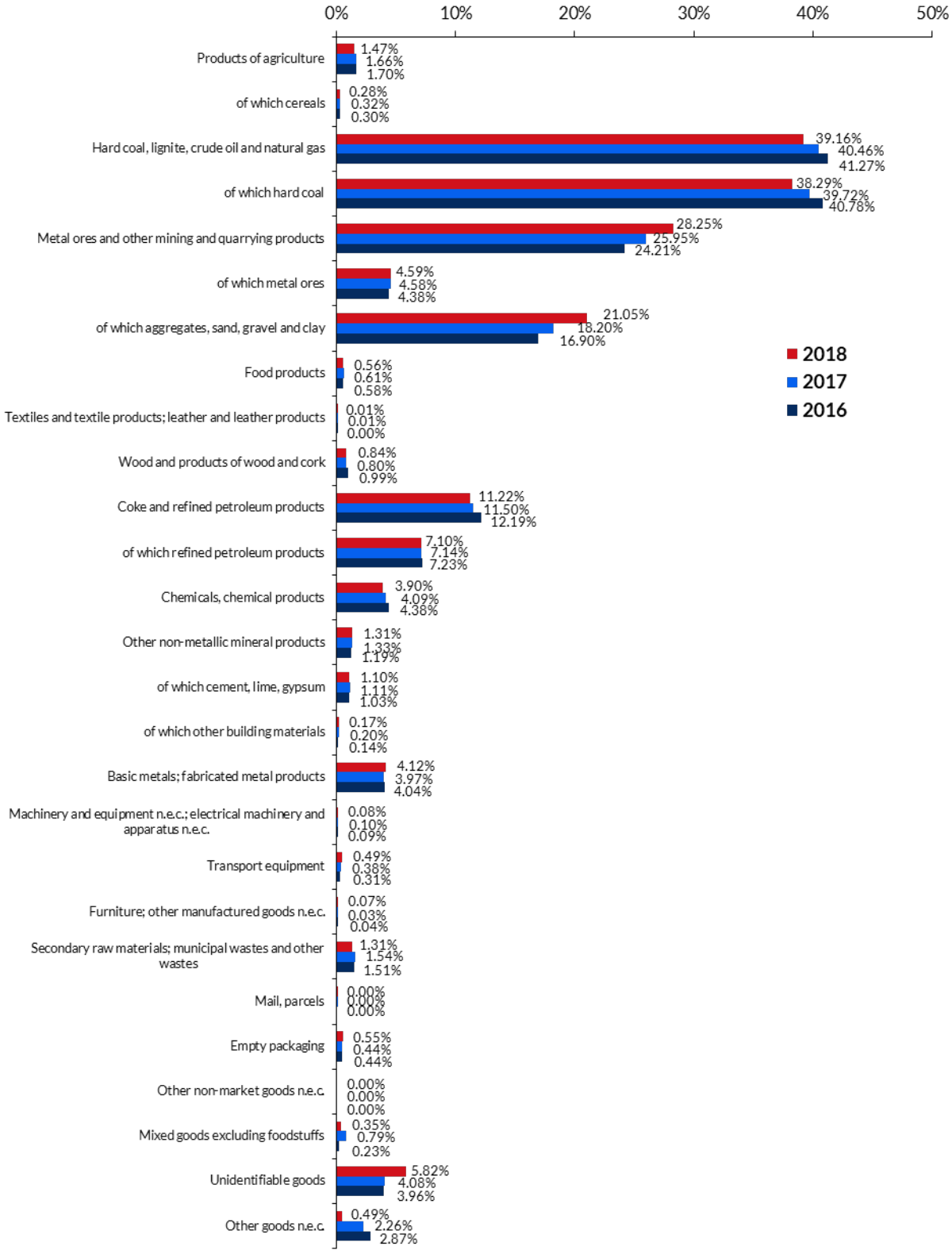
Orion Rail Logistics		✔		✔	
Orlen KolTrans	✔		✔		
Omniloko					
OT Rail					
PKP Cargo	✔	✔	✔	✔	✔
PKP Cargo Service	✔				✔
PKP LHS	✔	✔	✔	✔	
PNI Warszawa					
Pol-Miedź Trans	✔	✔	✔	✔	✔
POZ BRUK		✔			
PPMT		✔			
PUK KOLPREM	✔		✔		
Railpolonia		✔			
Rail Polska	✔	✔		✔	✔
SKPL Cargo		✔			
STK	✔	✔	✔	✔	✔
Swietelsky Rail Polska		✔	✔		✔
Torpol		✔			
Trakcja PRKiI		✔			✔
Transchem			✔	✔	
Wiskol		✔			✔
ZPNTMiU "TABOR"	✔	✔	✔	✔	
ZIK Sandomierz		✔		✔	
ZUE		✔			

Tab. 14. The volume of transported weight of goods by groups of goods (in thousand tonnes) and market shares in 2018

Weight of goods			
Groups of goods		In total (in thousand tonnes)	Market share [%]
total		**250,251.122**	**100.00%**
Products of agriculture, hunting, and forestry; fish and other fishing products		3,669.734	1.47%
of which	cereals	706.862	0.28%
Hard coal, lignite, petroleum and natural gas		98,009.358	39.16%
of which	hard coal	95,824.422	38.29%
Ores and other mining and quarrying products		70,689.766	28.25%
of which	iron ores	11,474.851	4.59%

	Aggregates, sand, gravel, clay	52,671.444	21.05%
Food products, beverages and tobacco products		1,396.081	0.56%
Textiles and textile products, leather and leather products		25.616	0.0102%
Wood and articles of wood, cork, articles of straw, paper and paper products, printed matter and recorded media		2,097.014	0.84%
coke and refined petroleum products, manufactured gas		28,084.409	11.22%
of which	refined petroleum products	17,780.041	7.10%
Chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel		9,750.874	3.90%
Other non-metallic mineral products		3,272.082	1.31%
of which	cement, lime, gypsum	2,760.095	1.10%
	other building materials	422.255	0.17%
Basic metals, fabricated metal products, except machinery and equipment		10,311.448	4.12%
Machines, appliances, electrical and electronic equipment		205.819	0.08%
Transport equipment		1,226.042	0.49%
Furniture, other manufactured goods n.e.c.		184.664	0.07%
Secondary raw materials, municipal wastes		3,287.137	1.31%
Letters, packages and courier's parcels and shipments		0.164	0.000%
Empty packaging		1,371.251	0.55%
Goods moved in the course of household and office removals, other non-market goods n.e.c.		0.000	0.00%
mixed goods excluding foodstuffs		872.715	0.35%
Unidentifiable goods		14,570.824	5.82%
Other goods n.e.c.		1,226.123	0.49%

Fig. 37. The share of transported groups of goods by weight in 2016-2018



Tab. 15.Transport performance by groups of goods (in thousand tonnes) and market shares in 2018

Transport performance			
Groups of goods		total (in thousand tonne-km)	Market share [%]
total		**59,642,032**	**100.00%**
Products of agriculture, hunting, and forestry; fish and other fishing products		1,170,460	1.96%
of which	cereals	233,732	0.39%
Hard coal, lignite, petroleum and natural gas		15,934,715	26.72%
of which	hard coal	15,244,339	25.56%
Ores and other mining and quarrying products		17,873,221	29.97%
of which	iron ores	4,384,683	7.35%
	Aggregates, sand, gravel, clay	11,713,598	19.64%
Food products, beverages and tobacco products		308,770	0.52%
Textiles and textile products, leather and leather products		2,119	0.0036%
Wood and articles of wood, cork, articles of straw, paper and paper products, printed matter and recorded media		564,004	0.95%
coke and refined petroleum products, manufactured gas		9,477,037	15.89%
of which	refined petroleum products	6,387,800	10.71%
Chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel		3,177,481	5.33%
Other non-metallic mineral products		921,907	1.55%
of which	cement, lime, gypsum	804,848	1.35%
	other building materials	91,700	0.15%
Basic metals, fabricated metal products, except machinery and equipment		2,652,247	4.45%
Machines, appliances, electrical and electronic equipment		50,677	0.08%
Transport equipment		385,621	0.65%
Furniture, other manufactured goods n.e.c.		83,997	0.14%
Secondary raw materials, municipal wastes		870,404	1.46%
Letters, packages and courier's parcels and shipments		2.62	0.0000044%
Empty packaging		478,085	0.80%
Goods moved in the course of household and office removals, other non-market goods n.e.c.		0	0.00%
mixed goods excluding foodstuffs		125,106	0.21%
Unidentifiable goods		5,342,801	8.96%
Other goods n.e.c.		223,379	0.37%

Fig. 38. The share of transported freight groups by transport performance in the years 2016-2018

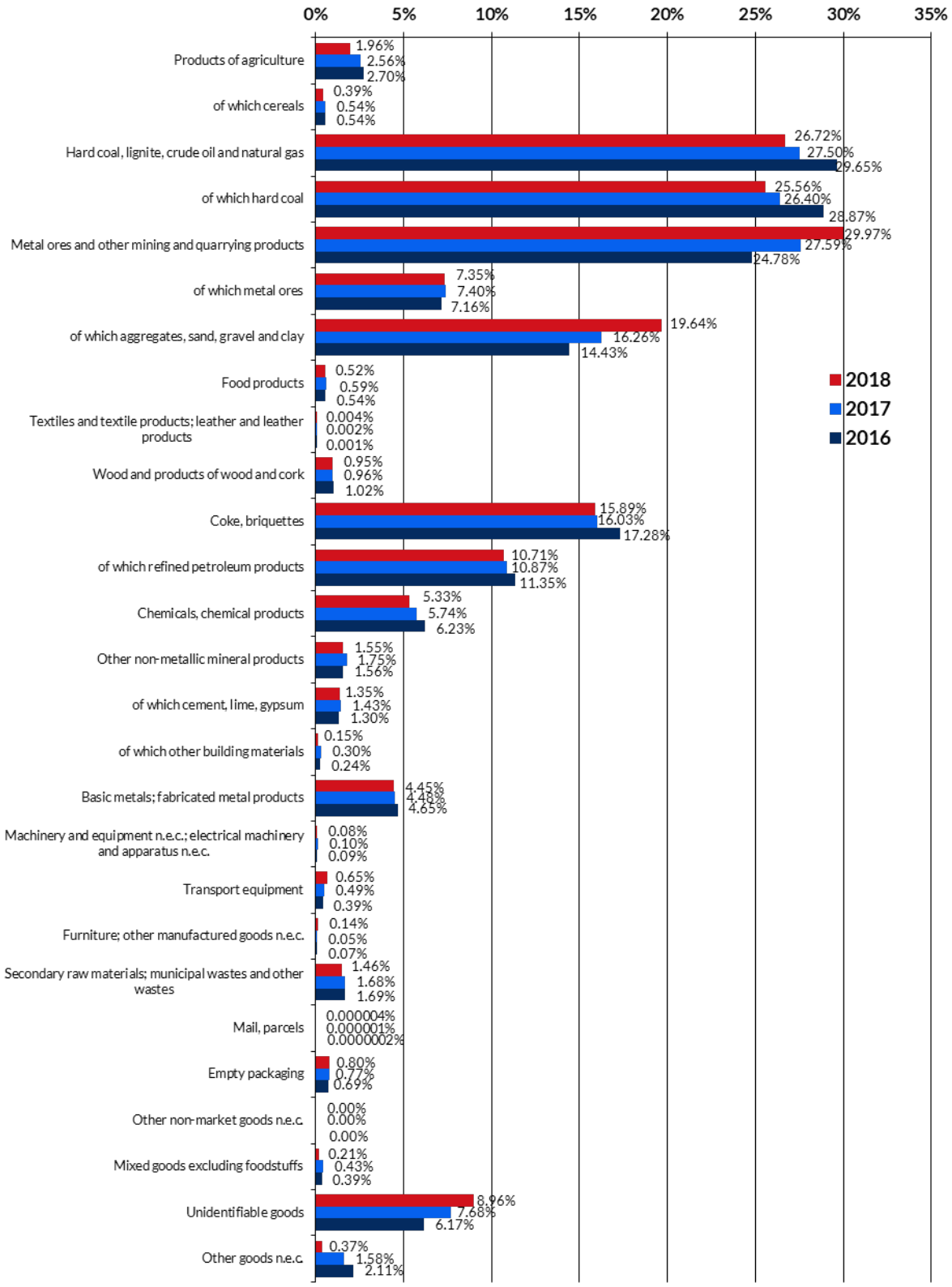
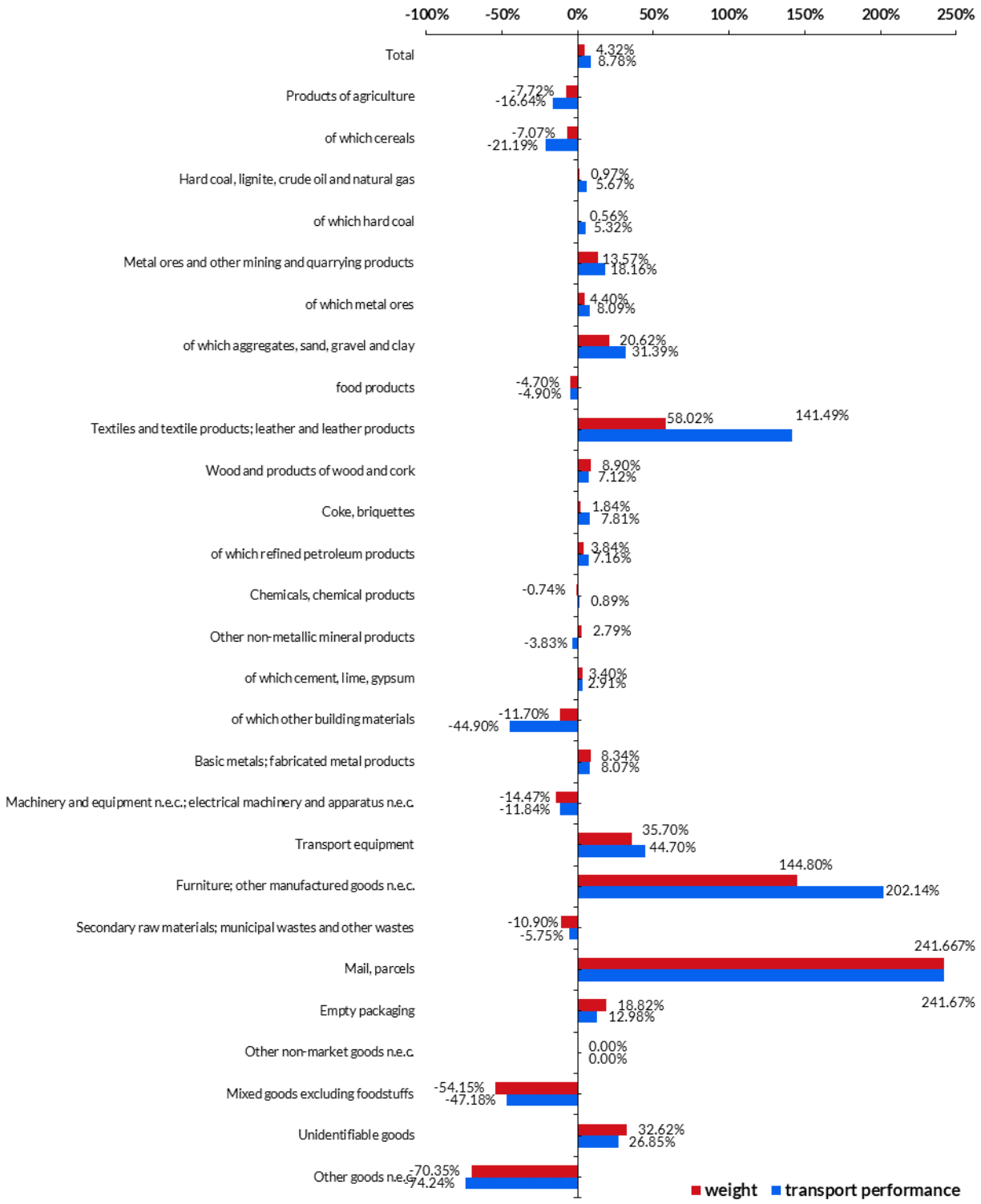


Fig. 39. Transport volume changes for particular groups of goods in 2018

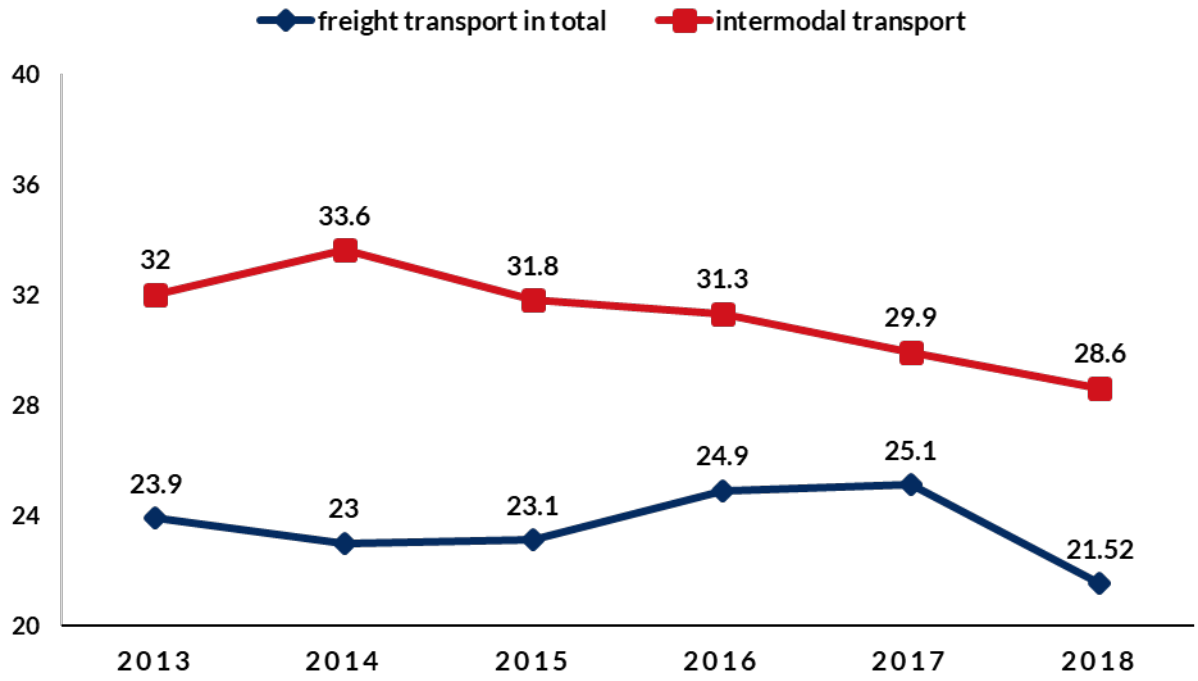


3.3. Average speed of freight trains

In order to calculate the average commercial speed of freight trains a method was used according to which commercial speed is a quotient of the path length (in km) and time spent on covering this distance (in hours). The average annual commercial speed in freight transport indicated by individual railway

undertakings was adjusted to their market share measured with their operational performance. Commercial speed in intermodal transport was adjusted to the number of trains.

Fig. 40. The average commercial speed of all freight trains and of intermodal trains in Poland in km/h in the years 2013-2018

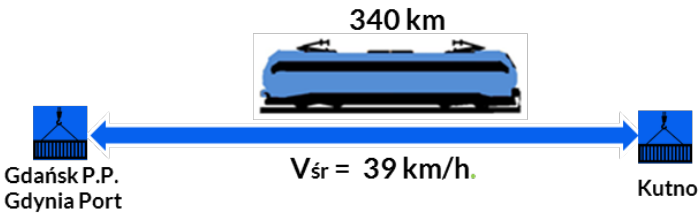


The average commercial speed of freight trains in Poland is low and has a negative impact on the competitiveness of rail transport. Freight transport speed in 2018 decreased by over 3 km/h in comparison to 2017. A lower drop was recorded in intermodal transport – of slightly above 1 km/h. The speed of freight trains in Poland decreased due to two key factors, i.e. modernisation of railway lines and higher volume of transport.

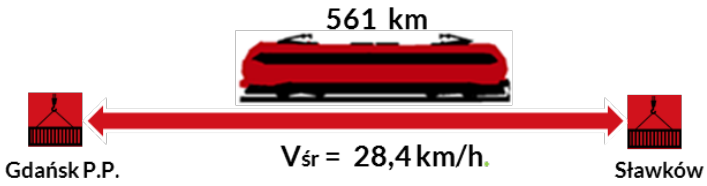
2018 saw another increase in intermodal transport, whose speed also increased. The analysis of data on intermodal transport shows a drop in average speed in 2015-2018. This may be primarily due to the fact that the scale of intermodal transport was growing gradually, the number of railway undertakings and paths was increasing, so disruptions and delays on the network were observed in intermodal transport to a greater extent. The average speed of 28.6 km/h is one of the factors making it difficult for railways to compete with road transport.

According to European Commission's data the average timetable speed in 9 out of 12 Three Seas Initiative countries in 2017 was from 24.2 km/h in Bulgaria to 60 km/h in the Czech Republic. In Poland the timetable speed was only 31.2 km/h. The "Strategy for Responsible Development (SRD) by 2020 (with a perspective to 2030)" (p. 311) includes an objective to reach the average speed of freight trains in the PKP PLK network of 40 km/h by 2020.

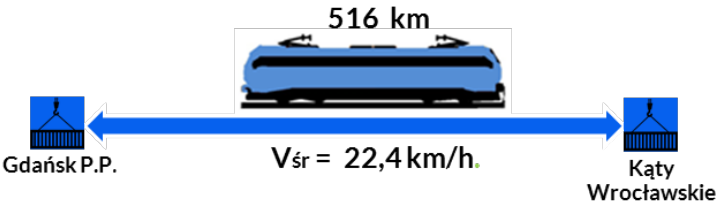
Fig. 41. Timetable speed in selected Three Seas Initiative countries in international connections in 2017


340 km
Gdańsk P.P.
Gdynia Port
Vśr = 39 km/h.
Kutno


Gdynia Port
Gdańsk Port Północny
Kutno


561 km
Gdańsk P.P.
Vśr = 28,4 km/h.
Sławków


Gdańsk Port Północny
Sławków


516 km
Gdańsk P.P.
Vśr = 22,4 km/h.
Kąty Wrocławskie


Gdańsk Port Północny
Kąty Wrocławskie

Fig. 43. Average transit speed for selected domestic intermodal connections

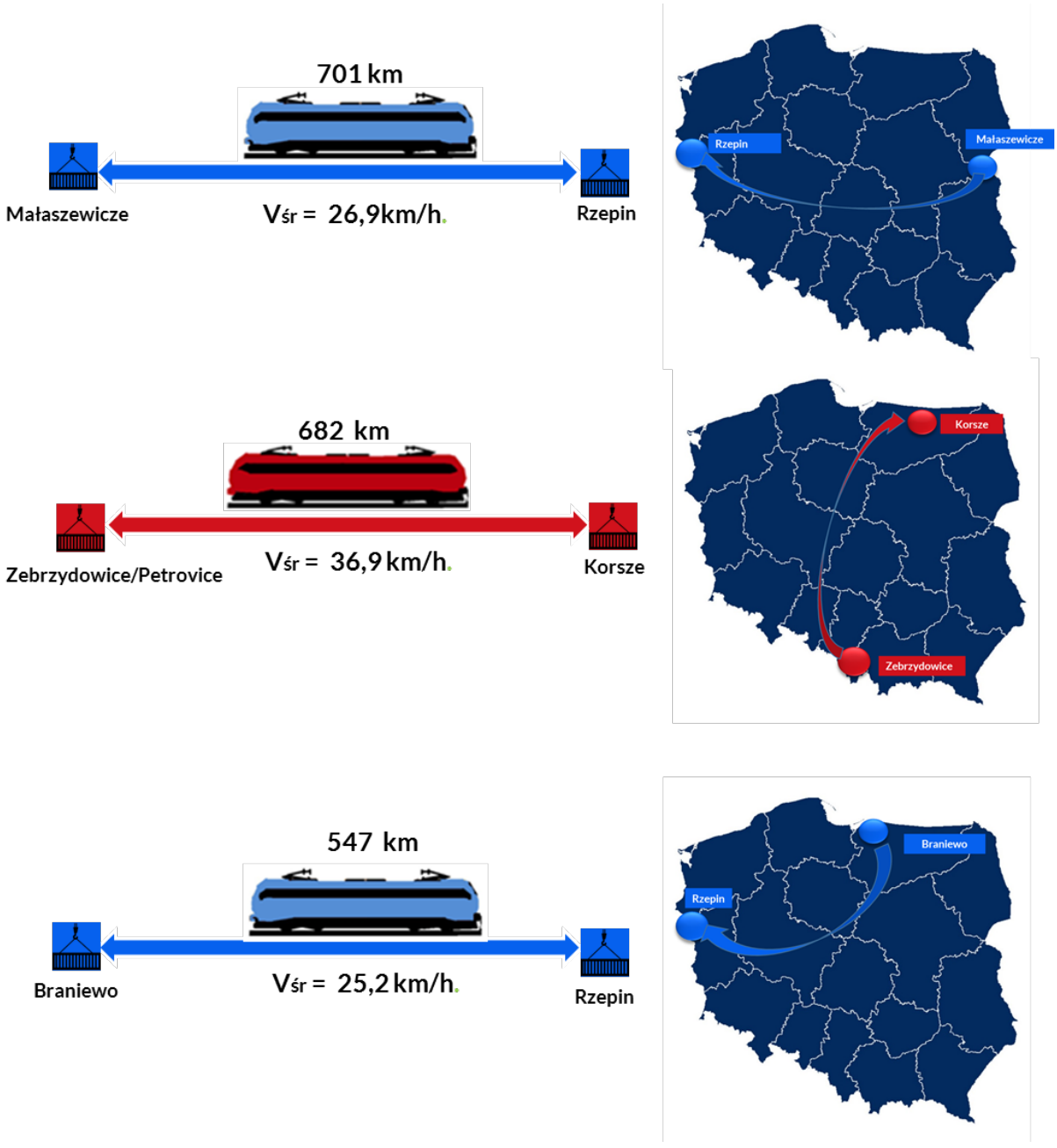
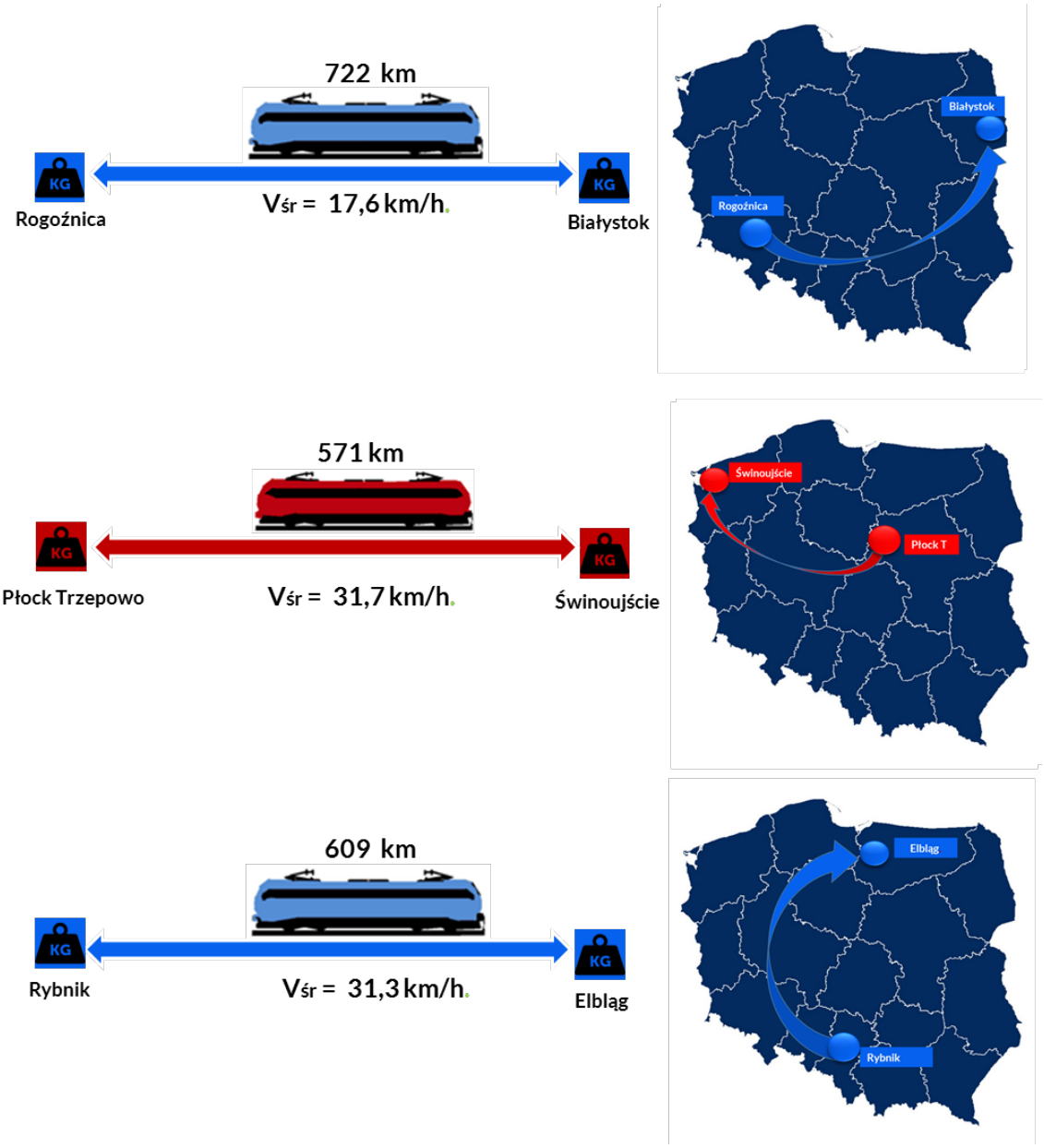
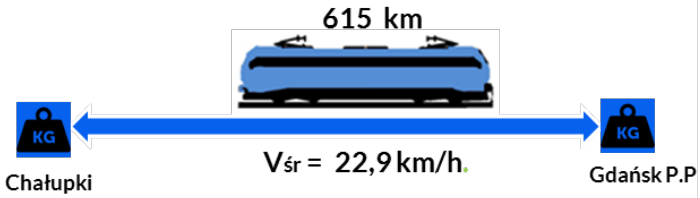
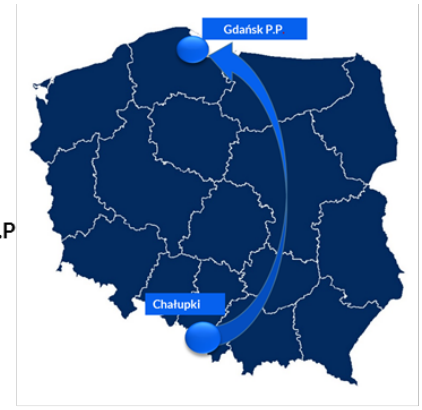
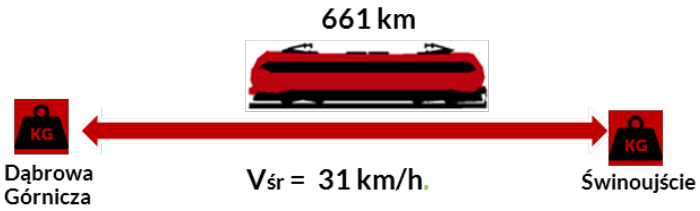


Fig. 44. Average speed for selected bulk transport connections

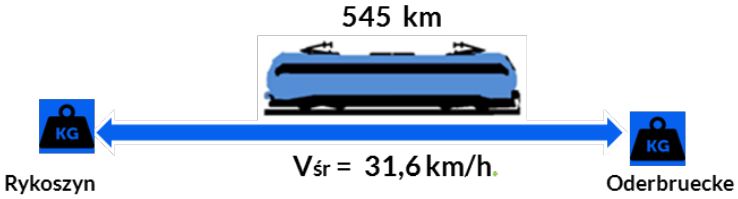


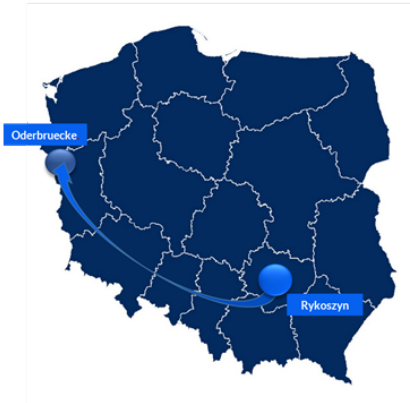

615 km
KG
KG
Chałupki
Vśr = 22,9 km/h.
Gdańsk P.P


Gdańsk P.P
Chałupki


661 km
KG
KG
Dąbrowa Górnicza
Vśr = 31 km/h.
Świnoujście


Świnoujście
Dąbrowa Górnicza


545 km
KG
KG
Rykoszyn
Vśr = 31,6 km/h.
Oderbruecke


Oderbruecke
Rykoszyn

3.4. Freight transport licensing

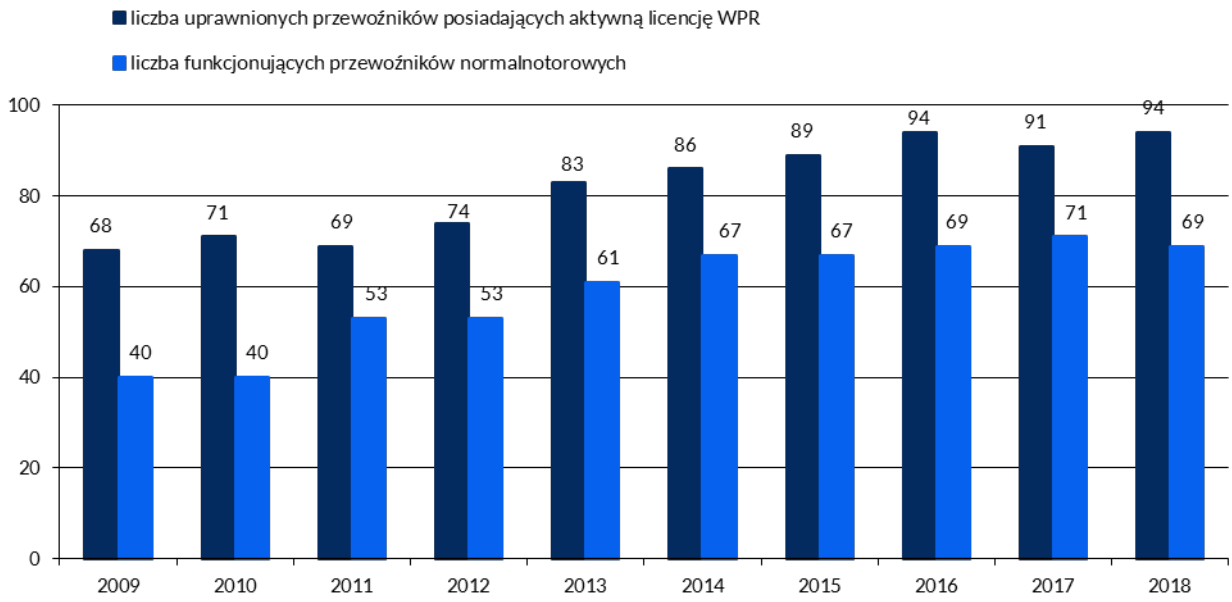
At the end of 2018, valid licences (suspended licenses excluded) were held by 94 railway undertakings, including 1 temporary licence. Throughout 2018, out of 94 railway undertakings holding licences, 69 undertakings engaged in the transport business.

In 2018, 9 undertakings applied for a railway undertaking licence for the provision of freight rail transport or a railway undertaking licence for the provision of freight rail transport and traction services. The President of UTK granted the licence to 3 entrepreneurs: 2 licences referred to activities involving freight transport and traction services (for OCTOPUS Rail sp. z o.o. and TKOL sp. z o.o.) and 1 licence related to freight transport (for the company "Żwirownia Dolata" "Beton Dolata" Agnieszka Dolata). The remaining 6 undertakings received their licenses in 2019.

One railway undertaking (JSW Logistics sp. z o.o., formerly ZPiPS "Spedkoks") with a licence for freight transport extended its licences activities to include traction services. The President of UTK revoked the licences of 2 railway undertakings: Koleje Wschodnie for freight transport and traction services and Rail Services Europe Sp. z o.o. for passenger rail transport, freight rail transport and traction services.

The licence for freight transport services of MOSiR Ełk was cancelled.

Fig. 45. The number of licensed railway undertakings authorised to provide transport services and operating on the rail market in the years 2009-2018



Due to the entry into force on 30 May 2017 of an amendment to the Rail Transport Act covering, i.a. railway transport licensing, until 30 December 2017 railway undertakings were obligated to adjust to the requirements of the amended Act. A new element for railway undertakings was the provision of more detailed requirements related to the insurance cover for civil liability. Existing regulations provide for the minimum guaranteed amount of the civil liability insurance for most railway undertakings at EUR 2.5 m.

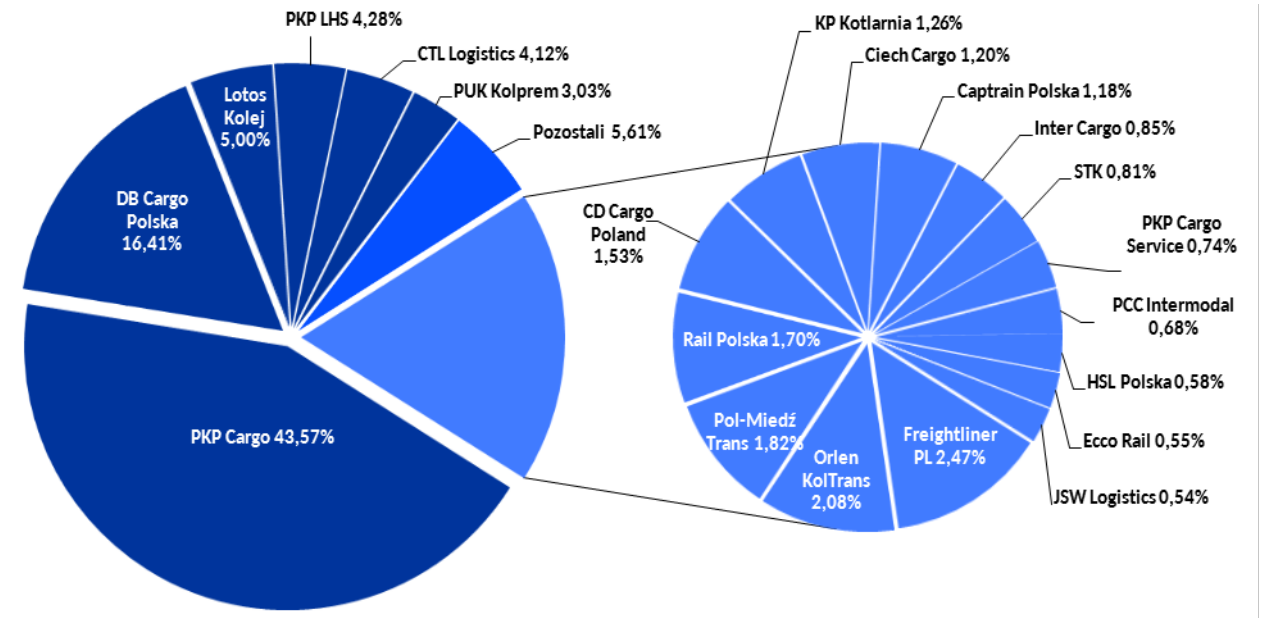
The analysis carried out in 2018 by the President of UTK demonstrated that railway undertakings adjusted the guaranteed amount of the civil liability insurance to the amounts specified in the regulations. As a result of changes in legislation, guaranteed amounts of the civil liability insurance of railway undertakings increased among railway undertakings previously insured for less than PLN 10 m. Before the change in legislation in 2017 63% railway undertakings were insured for amounts below PLN 10 m, with only 37% railway undertakings insured for a lower amount. After the change in 2018 96% railway

undertakings were insured for more than PLN 10 m. It is worth emphasising that among the entities covered by the insurance obligation for an amount of EUR 2.5 m surveyed in 2018, 44% had insurance with a guaranteed amount higher than the minimum required by law, and 8% had insurance for an amount exceeding PLN 50 m. The analysis of the insurance level of freight railway undertakings demonstrated that undertakings insured for more than PLN 50 m account for almost 15% of transport performance.

3.5. The freight railway undertaking market

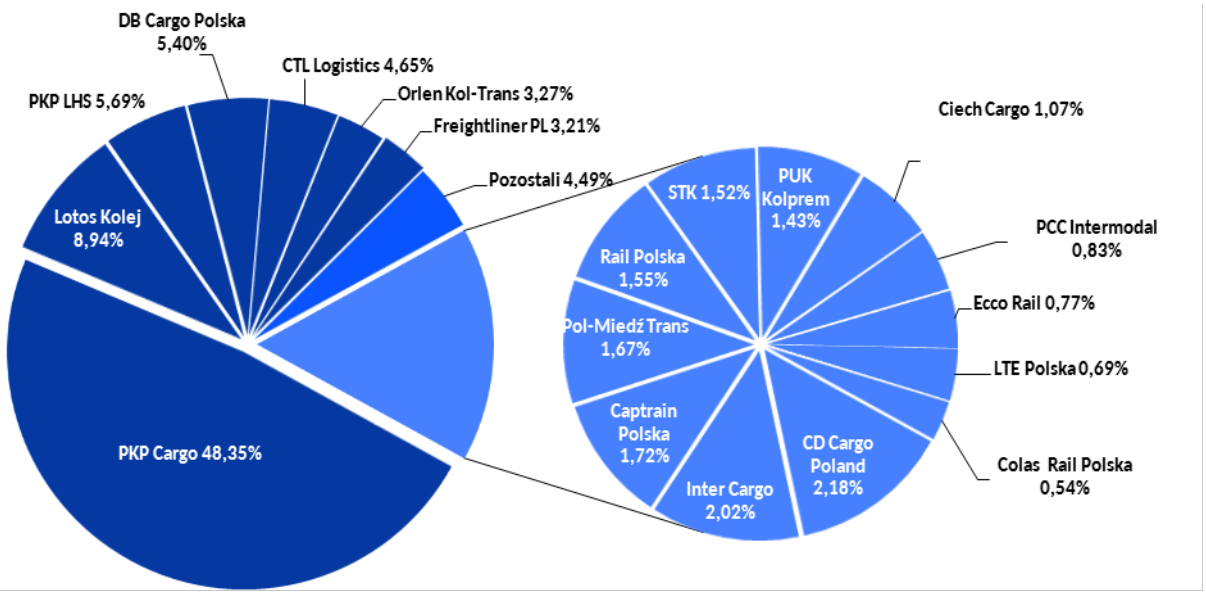
The leader on the Polish freight transport market is PKP Cargo, with a 43.57% share in the market according to the weight of transported goods. In 2018 the company transported more than 109 m tonnes, which constituted a rise in the transported weight of nearly 3 m tonnes in comparison to 2017. In the case of other railway undertakings the highest increases were observed for PCC Intermodal (of 0.6 percentage point), creating an increase of 1.6 m tonnes, Captrain Polska (0.4 percentage point) – 1.1 m tonnes, and Orlen KolTrans (0.3 percentage point) – 0.9 m tonnes.

Fig. 46. The market share of the largest railway undertakings by weight of transported goods as at the end of 2018



The market share by weight of transported goods exceeded 0.5% in 21 companies. As for transport performance, a market share above 0.5% was observed in 19 companies. The market share of PKP Cargo in terms of weight transported decreased by 0.67 percentage point as compared to 2017. At the same time, PKP Cargo recorded a decrease in the market share according to transport performance of 3.08 percentage points. Transport performance achieved by the company was 28.8 bn tonne-km and increased by approx. 0.6 bn tonne-km in comparison to 2017. As for companies in which the market share in terms of transport performance exceeded 0.5%, the highest rise was observed for PCC Intermodal (of 0.8 percentage point). Furthermore, a growth in the share was recorded by CD Cargo Poland (0.6 percentage point), Captrain Polska (0.6 percentage point), LTE Polska (0.5 percentage point), Inter Cargo (0.5 percentage point) and Orlen KolTrans (0.4 percentage point).

Fig. 47. The market share of the largest railway undertakings by transport performance as at the end of 2018



Tab. 16. The structure of the freight transport market by weight transported in Poland in 2014-2018 – data for railway undertakings with a market share of more than 0.5% as at the end of 2018.

railway undertaking	2014	2015	2016	2017	2018
PKP Cargo	47.94%	47.48%	43.87%	44.24%	43.57%
DB Cargo Polska	18.55%	17.71%	17.99%	17.88%	16.41%
Lotos Kolej	4.65%	5.61%	5.70%	5.56%	5.00%
PKP LHS	4.66%	4.30%	4.48%	4.20%	4.28%
CTL Logistics	3.11%	3.58%	4.31%	3.84%	4.12%
PUK Kolprem	2.44%	2.23%	2.73%	2.87%	3.03%
Freightliner PL	2.92%	2.52%	2.27%	2.27%	2.47%
Orlen KolTrans	1.24%	1.45%	1.61%	1.81%	2.08%
Pol-Miedź Trans	2.34%	2.33%	2.26%	2.20%	1.82%
Rail Polska	1.28%	1.39%	1.61%	1.68%	1.70%
CD Cargo Poland	-	0.15%	0.95%	1.33%	1.53%
KP Kotlarnia	1.21%	1.36%	1.13%	1.12%	1.26%
Ciech Cargo	0.65%	1.02%	1.23%	1.26%	1.20%
Captrain Polska	0.34%	0.42%	0.64%	0.77%	1.18%
Inter Cargo	-	0.23%	0.63%	0.78%	0.85%
STK	0.94%	0.75%	0.90%	1.03%	0.81%
PKP Cargo Service	0.43%	0.20%	0.30%	0.54%	0.74%
PCC Intermodal	0.0001%	-	-	0.04%	0.68%
HSL Polska	0.17%	0.29%	0.22%	0.26%	0.58%
Ecco Rail	0.37%	0.36%	0.60%	0.65%	0.55%

JSW Logistics*	0.25%	0.41%	0.66%	0.63%	0.54%
others	6.68%	6.50%	6.13%	5.05%	5.61%

* formerly ZPiS "SPEDKOKS"

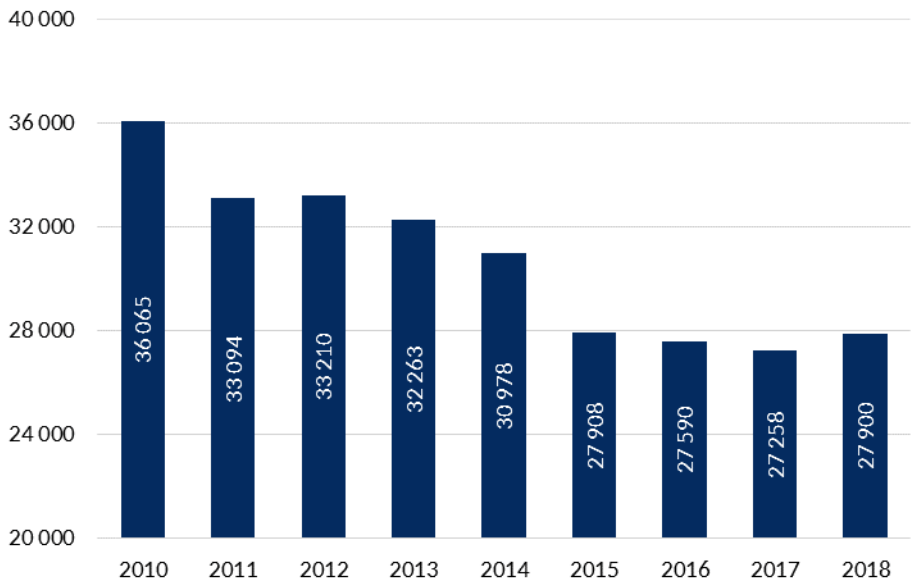
Tab. 17.The structure of the freight transport market by weight transported in Poland in 2014-2018 – data for railway undertakings with a market share of more than 0.5% as at the end of 2018

railway undertaking	2014	2015	2016	2017	2018
PKP Cargo	56.69%	55.66%	51.37%	51.43%	48.35%
Lotos Kolej	8.87%	9.91%	10.20%	9.76%	8.94%
PKP LHS	7.06%	6.24%	6.58%	5.68%	5.69%
DB Cargo Polska	5.10%	5.17%	5.21%	5.32%	5.40%
CTL Logistics	4.90%	5.75%	5.94%	4.47%	4.65%
ORLEN KolTrans	2.31%	2.23%	2.27%	2.84%	3.27%
Freightliner PL	2.87%	2.74%	2.83%	2.91%	3.21%
CD Cargo Poland	0.00%	0.08%	0.66%	1.55%	2.18%
Inter Cargo	-	0.07%	0.53%	1.50%	2.02%
Captrain Polska	0.28%	0.36%	1.05%	1.11%	1.72%
Pol-Miedź Trans	2.09%	1.96%	1.87%	1.89%	1.67%
Rail Polska	1.74%	1.63%	1.72%	1.74%	1.55%
STK	1.25%	1.09%	1.10%	1.60%	1.52%
PUK Kolprem	0.93%	0.94%	1.29%	1.30%	1.43%
Ciech Cargo	0.39%	0.87%	1.05%	1.05%	1.07%
PCC Intermodal	0.00%	-	-	0.02%	0.83%
Ecco Rail	0.54%	0.61%	0.94%	1.00%	0.77%
LTE Polska	-	-	-	0.22%	0.69%
Colas Rail Polska	-	-	-	0.25%	0.54%
others	4.98%	4.69%	5.39%	4.36%	4.49%

3.6. Employment at freight railway undertakings

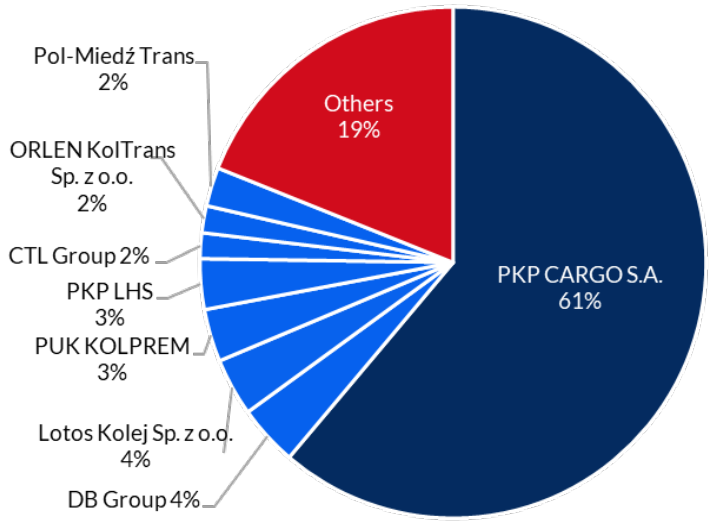
In 2018 the freight transport sector had 27,900 employees. The analysis of employment rates showed a continuous decrease in employment by railways since 2010. In 2018 the trend was reversed.

Fig. 48. Employment in the freight transport sector in the years 2010-2018 (number of people)



Employment in freight railway undertakings increased by 642. The highest increase in employment was recorded by PKP Cargo – of 265 people, followed by Ciech Cargo and Transchem, 156 and 152 people, respectively. The highest employment reductions occurred at Orlen KolTrans – of 278 people, and DB Cargo Polska – of 94 people.

Fig. 49. Employment structure at freight railway undertakings in 2018



PKP Cargo remains the largest employer on the market (62% share in terms of the number of employees). DB Cargo Polska and DB Cargo Spedkol had a 3.9% combined share in total employment. In total, over 86% of all employees of freight railway undertakings worked at 10 companies.

Tab. 18. Employment structure of all employees dealing directly with train traffic employed by freight railway undertakings in 2018[4]

No.	Regulated professions	Employees
1.	control engineer	48
2.	level crossing attendant	14
3.	traffic controller	503
4.	train manager	1,286
5.	shunter	886
6.	train driver	8,352
7.	signaller	92
8.	railway vehicle driver	579
9.	rolling stock inspector	2,074
10.	track supervisor	133
11.	adjuster	2,325
	Total	**16,292**

[4]Age structure calculated on the basis of FTEs for railway operations from 1 January to 31 December 2018. FTE should be interpreted as the total number of hours (including overtime) worked in a given job position divided by the number of hours worked annually in a full-time position.

Employees licensed to practice professions directly associated with train traffic accounted for 46% of all individuals employed with freight railway undertakings. The largest professional group among those dealing directly with train traffic were train drivers and adjusters & rolling stock inspectors.

Tab. 19.Age structure of all employees hired by freight railway undertakings in 2018[5]

Age structure of all employees			
age	< 30 years	30-50 years	> 50 years
employees	2,691	14,361	11,719
%	9%	50%	41%

Tab. 20.Age structure of train drivers hired by freight railway undertakings in 2018

Age structure of train drivers			
age	< 30 years	30-50 years	> 50 years
employees	742	4,028	3,364
%	9%	50%	41%

The presented employment age structure points to a large proportion of people > 50 years (41%). This relates to all employees, as well as to train drivers. Taking into consideration the possibility of early retirement of people working in positions directly connected with traffic, such a large proportion of this age group may lead to a generation gap faced by railway undertakings, with a negative impact on the operations of the respective companies. Furthermore, among freight railway undertakings employees aged < 30 years of age constitute a very small proportion. It is more than twice as small as for passenger railway undertakings.

The above is a consequence of employment restructuring in the freight transport sector in 2010-2017, which involved stopping the recruitment of new young employees. In the mentioned period the overall employment rate dropped by approx. 880 FTEs.

3.7. Financial performance of freight railway undertakings

In 2018 a substantial increase in operating revenue and costs of freight railway undertakings was observed, amounting to 16% and 14% respectively. Revenues of freight railway undertakings were higher than their operating costs by PLN 690 m. At the same time, revenues in the entire sector in 2018 were higher than in 2017 by PLN 250 m.

[5] ibidem.

Fig. 50. The business performance of freight railway undertakings (in PLN bn) in the years 2009-2018

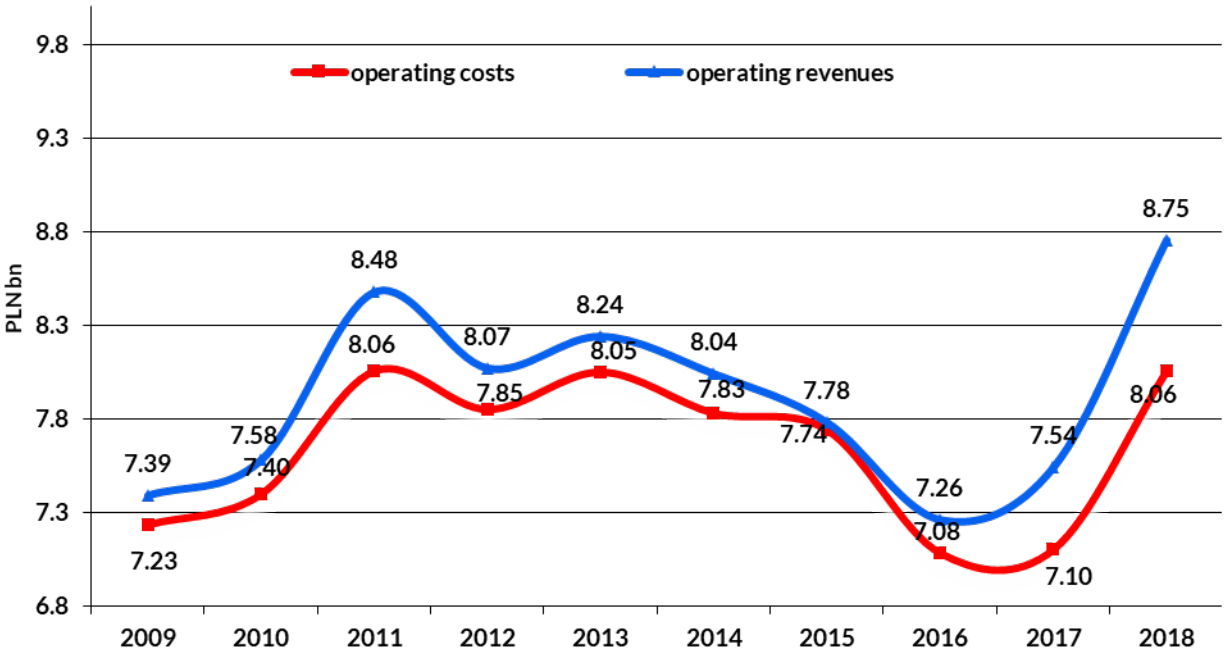
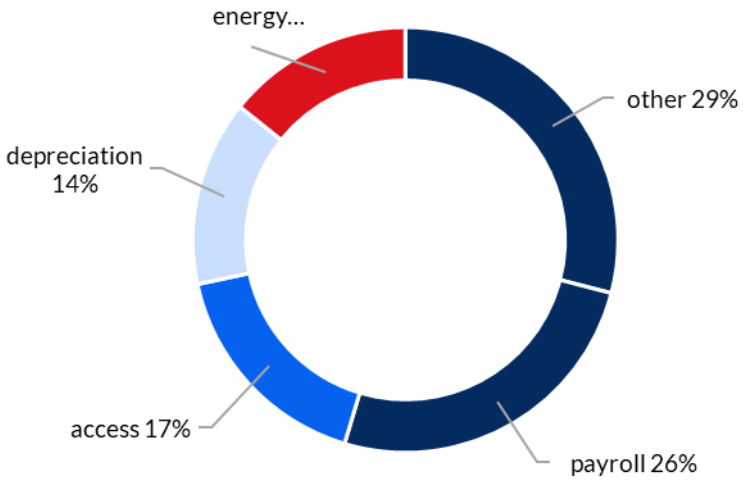


Fig. 51. Operating costs of freight railway undertakings (%) based on a sample of representative companies



In addition to infrastructure access costs, the main cost items in freight railway transport are payroll costs, traction energy (electricity and fuel) costs and depreciation. It is worth pointing out that energy expenditures had a greater share in the cost structure of freight railway undertakings – from 12% in 2017 to 14% in 2018.

In the case of freight railway undertakings the level of costs of purchasing paths from infrastructure managers was almost PLN 1.3 bn, which accounted for 17% of total costs of freight railway undertakings. The total charge for minimum access to infrastructure in 2018 was PLN 1,196 m, which means that the average cost per 1 train-km of provided path was PLN 13.59. The rate in 2018 was lower by PLN 0.27 from the rate per 1 train-km in 2017. Other charges related to access to infrastructure amounted to over PLN 89 m.

3.8. Freight transport in international transport

There were 33 licensed railway undertakings that dealt with international freight transport in 2018. In cross-border traffic (export, import and transit) nearly 82,442 thous. tonnes were transported and transport performance at 26,466,661 thous. tonne-km was achieved. In comparison to the previous year, transported weight increased by 10.8%, with a simultaneous growth in transport performance of 13.2%.

Fig. 52. The weight of transported goods in domestic and international transport in the years 2013-2018

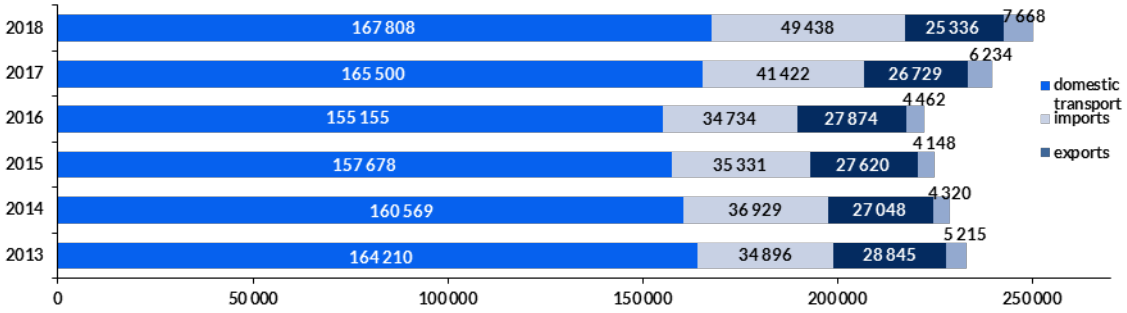
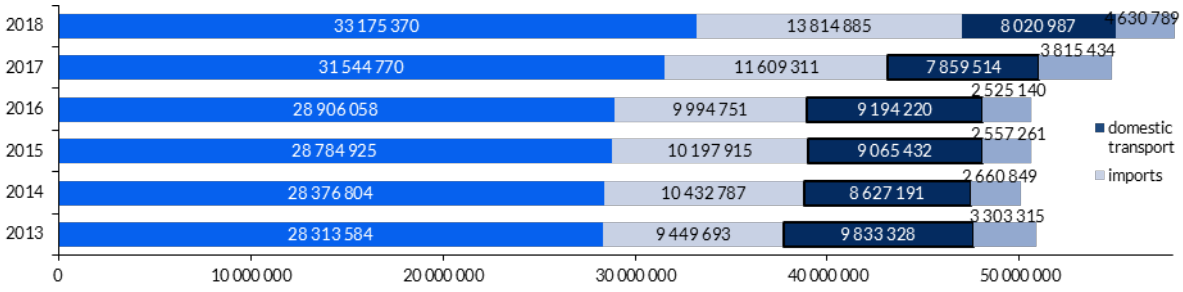


Fig. 53. Transport performance in domestic and international freight transport in the years 2013-2018



In 2018, as compared to 2017, imports recorded a year-on-year increase in the transported weight of goods of 19.4% to 49.4 m tonnes, and in transport performance of 19% to 13.8 bn tonne-km. The weight of transported goods was higher than the sum of the weight of goods exported from Poland and in transit. The same applies to transport performance.

In exports, in comparison to the previous year, transported weight volume decreased by 5.2%, with a simultaneous growth in transport performance of 2.1%. The weight of transported goods was 25.3 m tonnes and transport performance – 8.0 bn tonne-km.

In transit, when compared to 2017, there was a 23% increase in transported weight with a simultaneous 21.4% increase in transport performance. Transit in Poland equalled nearly 7.7 m tonnes of transported weight of goods, with transport performance of 4.6 bn tonne-kilometres. The share of transport in international transport, measured by transported weight of freight, is still relatively low. In the last three years its value ranged from 30.2% in 2016 and 31% in 2017 to almost 33% in 2018.

In 2018 over 2.3 m tonnes of goods more were transported in comparison to the previous year (a 1.4% increase). Transport performance in the analysed period increased by more than 1.6 bn tonne-kilometres (5.2%). Due to the distances in domestic transport (in 2018, approx. 321 km on average), its market share in terms of transport performance was accordingly higher.. At the end of 2017, the market share of international transport in terms of transport performance reached 42.5%, while in 2018 it was 44.4%.

The companies of PKP Group still dominated in international transport. At the end of 2018, their combined share amounted to 63.7% by weight and 62.2% by transport performance. Among the companies whose share exceeded 2% were DB Cargo Polska with a 6.7% share by weight and 8.4% by transport performance, CTL Logistics at 5.5% and 5.8%, Lotos Kolej with a share of, respectively, 3.3% and 4.1%, CD Cargo Poland at 3.2% and 3.2% , Inter Cargo with shares of 2.6% and 4.5% and Captrain Polska with shares of 2.2% and 2.4%.

Fig. 54. Railway undertakings' share in international transport in 2018 by weight (over 1.0%)

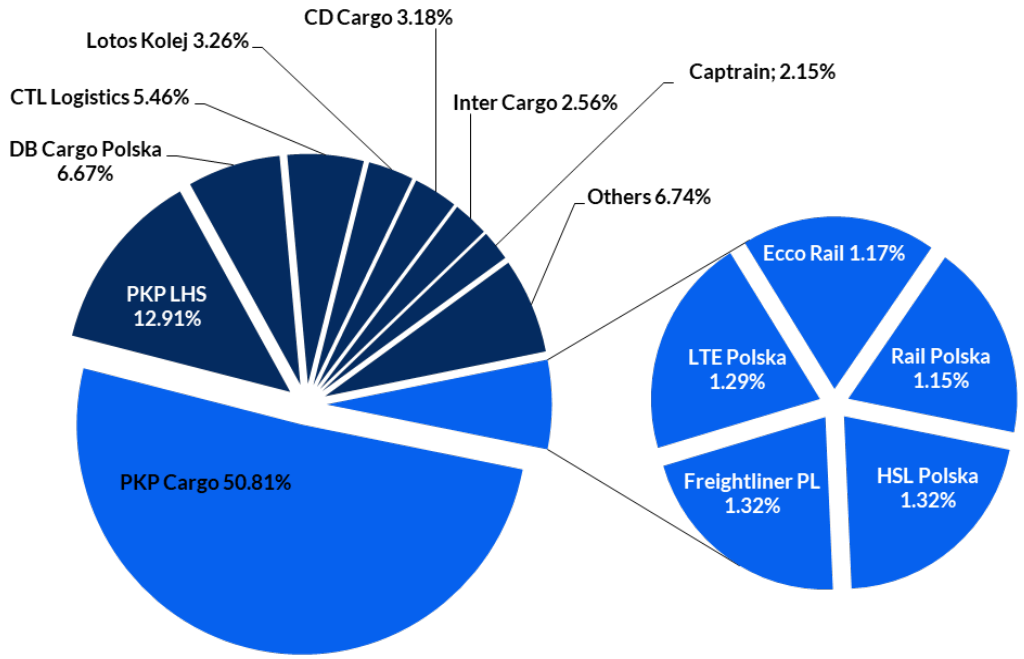
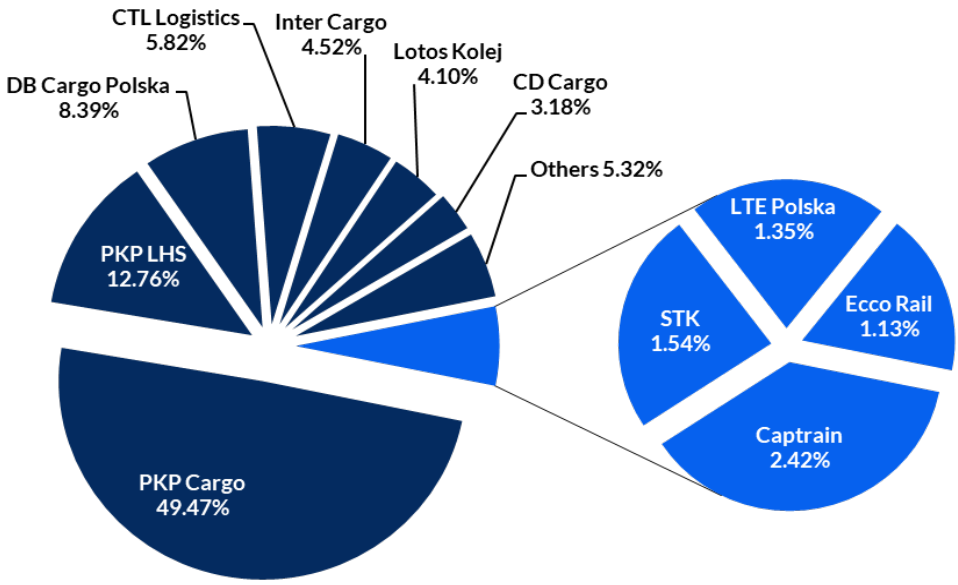


Fig. 55. The railway undertakings' share in international transport in 2018 by transport performance (over 1.0%)

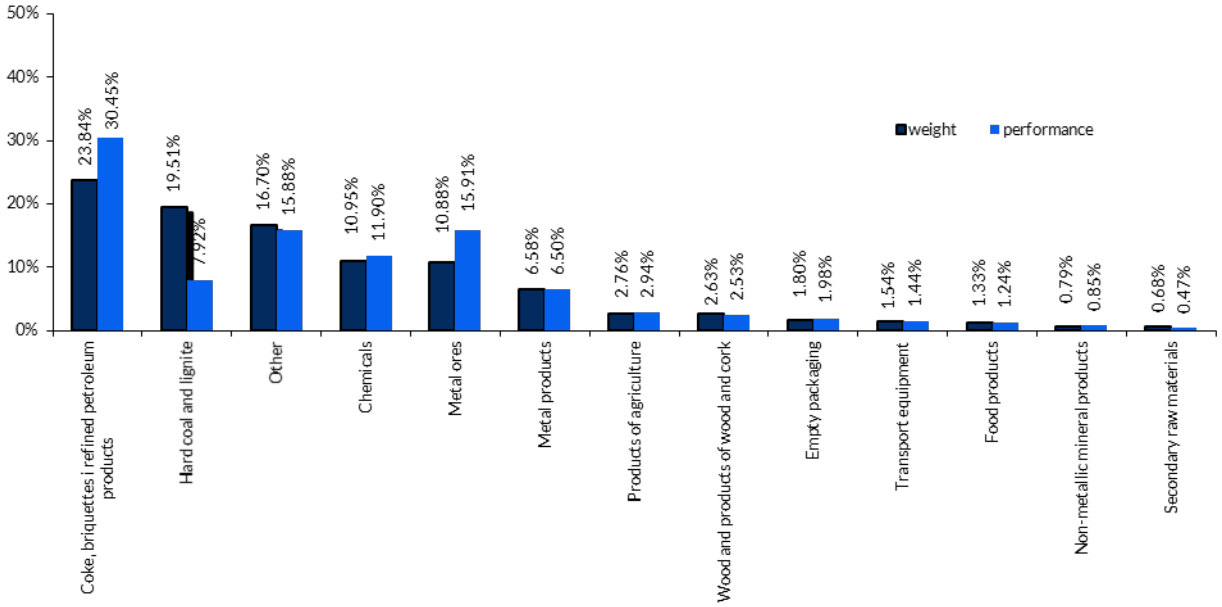


When analysing the structure of transported goods in international transport, similarly to the previous years, a significant share of hard coal transport can be noticed. In 2018 it was 22.7 m tonnes and in 2017 almost 18.9 m tonnes. The share of imports in the transport of hard coal at the end of 2018 grew considerably to 73%, while in 2017 it was 58%. The increase in coal imports resulted from the higher transport volume of this material from eastern locations, especially Russia.

In 2018 a lower share in hard coal exports was recorded from 36% in 2017 to 20% in 2018. In 2018 the major partners of Poland in the exports of goods were Germany, the Czech Republic, Austria, Slovakia, China, Italy, India and Ukraine. In imports, the main trading partners were Russia, Ukraine, Belarus, Germany, the Czech Republic and China. Apart from coal, in this market segment the transport of raw materials such as coke, briquettes and refined petroleum products was still predominant. Coke, briquettes and refined petroleum products accounted for 23.8% of transported goods by weight and 30.5% by transport performance, while hard coal and lignite – for 19.5% and 7.9%, respectively.

A 16.7% market share by weight and 15.9% by transport performance was held by freight categorised in the group "other", which mainly included "Unidentifiable goods" and all goods with a market share below 1% (e.g. textiles and textile products; machines, appliances, electrical and electronic equipment; furniture, other manufactured goods n.e.c.).

Fig. 56. The structure of goods transported internationally in 2018



Poland's largest trading partners, similarly to 2017, were: Russia, Germany, Ukraine and the Czech Republic. For this reason, the share of rail transport to these countries was also the highest, accounting for 55.4% of total transported weight. In terms of transport performance, it reached a level of 48.6%.

As regards the place of dispatch and destination of goods (according to waybills), transportation between Poland and Russia – 18.5% of the total volume of goods (13.8 m tonnes) and between Poland and Germany – 15.2% (11.3 m tonnes) constituted the largest shares. An important partner in trade was also Ukraine. In 2018 the share of transport between Poland and Ukraine by weight amounted to 13.6% (10.2 m tonnes) and between Poland and the Czech Republic – 8.1% (6.1 m tonnes).

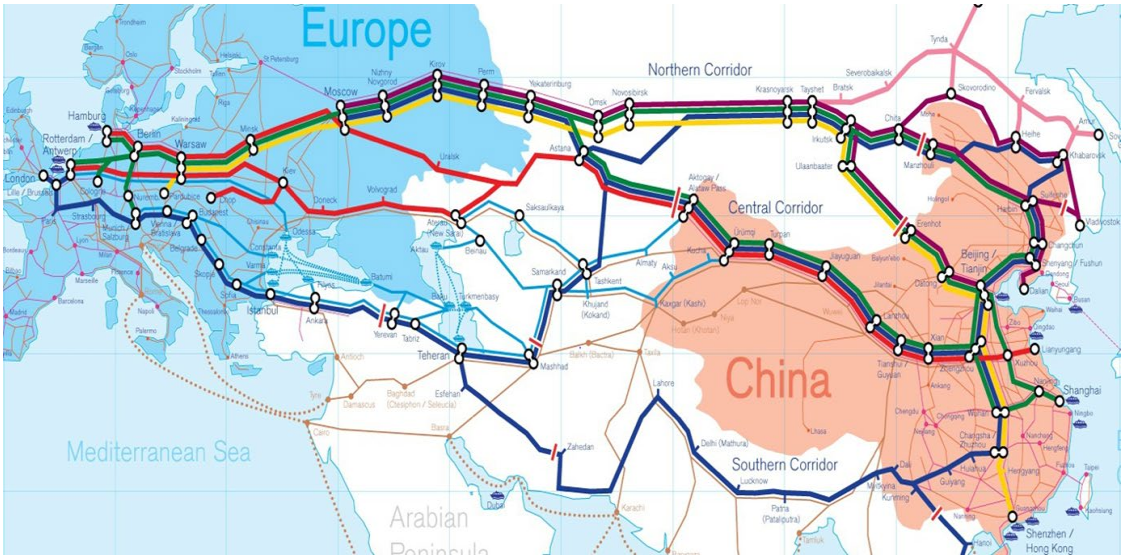
The statistical data on international trade also indicate a consistent growth in transport between Poland and China. For freight transported from China, Poland is an important transit country for cargo transported to Germany, France and Italy. Due to its geographical location (the most convenient connection by land from Asia to Western Europe), our country is expected to take advantage of the global trend and the volume of intermodal transport in transit will continue to grow. In 2018 approx. 324,000 TEU were transported between China and Europe. The main connections are between 40 Chinese and 40 European cities. The major European destinations include Duisburg, Hamburg, Nuremberg (Germany), Łódź, Małaszewicze (Poland), Tilburg (the Netherlands). Transport from China is provided from Zhenzhou, Wuhan, Hefei, Chengdu, Urmqi, Lanzhou, Yiwu, Chongqing, Tinjin, Xian and Shenzen. 77% of the transport takes place along the China – Kazakhstan – Russia – Belarus – EU transport corridor.

In 2018 approx. 6,300 trains crossed the border between Belarus and Poland. The main rail border crossing for the New Silk Road is Terespol/Brest with terminals in Małaszewicze and Brest. A much lower transshipped volume was recorded in other border crossings: Siemianówka-Svislach, Kuźnica Białostocka-Grodno (at the border with Belarus) and Braniewo-Mamonovo (at the border with Russia).

Trade within the New Silk Road takes place through three main Euro-Asian transport corridors.

Transport to and from Poland takes place along the northern or central corridor.

Fig. 57. Main Euro-Asian corridors on the New Silk Road



Source: www.scandinavian.com.pl

3.9. Intermodal transport

The data collected by UTK shows that intermodal transport in 2018 developed dynamically and saw a growth of all parameters as compared to the 2017 results. The analysis of the data points to a growing interest in intermodal transport. The number of railway undertakings providing services in this market segment increased. Intermodal transport in 2017 was provided by 18 railway undertakings, while in 2018 by 21. Compared to the total number of companies providing freight transport, this is still low. However, it should be pointed out that in 2012 there were only 9 and in 2016 13 such undertakings.

Tab. 21.The list of undertakings engaged in intermodal rail transport in the years 2009-2018

railway undertaking	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
PKP Cargo	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
PKP LHS	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
DB Cargo Polska	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
DB Kolchem	✔									
CTL Rail					✔	✔	✔			
CTL Logistics	✔		✔	✔	✔	✔	✔	✔	✔	✔
CTL Express	✔	✔	✔	✔						
Captrain Polska					✔		✔	✔	✔	✔
CD Cargo Poland								✔	✔	✔
Ecco Rail					✔	✔	✔	✔	✔	✔
Eurotrans						✔	✔	✔	✔	✔
Freightliner PL						✔	✔	✔	✔	
Inter Cargo										✔
Karpiel						✔			✔	✔
Kolej Bałtycka									✔	
Lotos Kolej	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
LTE Polska									✔	✔
Majkoltrans				✔					✔	✔
Olavion										✔
PCC Intermodal									✔	✔
Pol-Miedź Trans									✔	✔
Metrans*						✔	✔	✔	✔	✔
Rail Polska				✔	✔	✔	✔	✔	✔	✔
STK			✔	✔	✔			✔		✔
Transchem										✔
ZIK Sandomierz										✔

*formerly Polzug

Global statistics point to an increase in the number of transported containers. The use of containers increases in intercontinental traffic. Due to its geographical location, Poland is expected to take advantage of the global trend, and intermodal transport will continue to grow.

The intermodal transport market is open and creates extensive development opportunities. In recent years the significance of entities with a lower market share in this segment has been observed, e.g. of PCC Intermodal and Metrans Polonia, entities combining the roles of railway undertakings and logistics operators. A growing number of intermodal railway undertakings requires all entities to work on competitive service ranges to respond to client needs. For continuing development of intermodal transport, it is necessary to provide appropriate conditions for these services, i.a. appropriate capacity of the railway network and fast connections. This necessitates strategic plans for the following years to stimulate further development of this market segment.

In 2018 in intermodal transport approx. 17 m tonnes of freight were transported, while in 2017 it was 14.7 m tonnes, meaning a growth of 2.3 m tonnes (approx. 15.6%). In terms of the freight weight transported, intermodal transport had a share of 6.8% in the rail transport market, which is 0.7 percentage point more than in 2017.

Transport performance in intermodal transport was at the level of 6.2 bn tonne-km. In comparison to 2017, a growth of approx. 0.8 bn tonne-km was recorded (14.8%). In terms of the transport performance, in 2018 intermodal transport had a share of over 10.3% in the rail transport market, which is nearly 0.5 percentage point more than in the previous year. This was the best performance ever recorded in the Polish history of intermodal rail transport. Rail freight undertakings transported a record-breaking number of cargo units in 2018. For the first time the market reached 1,259 thous. units, of which nearly 1,212 were containers. Compared to 2017, the number of transported units grew by approx. 16.4%. The analysis of intermodal transport in terms of the number of transported TEUs showed that 1,894 TEUs were transported by rail in 2018, which is a rise of 13.6% in comparison to 2017.

Fig. 58. Intermodal rail transport in Poland (in thous. tonnes)

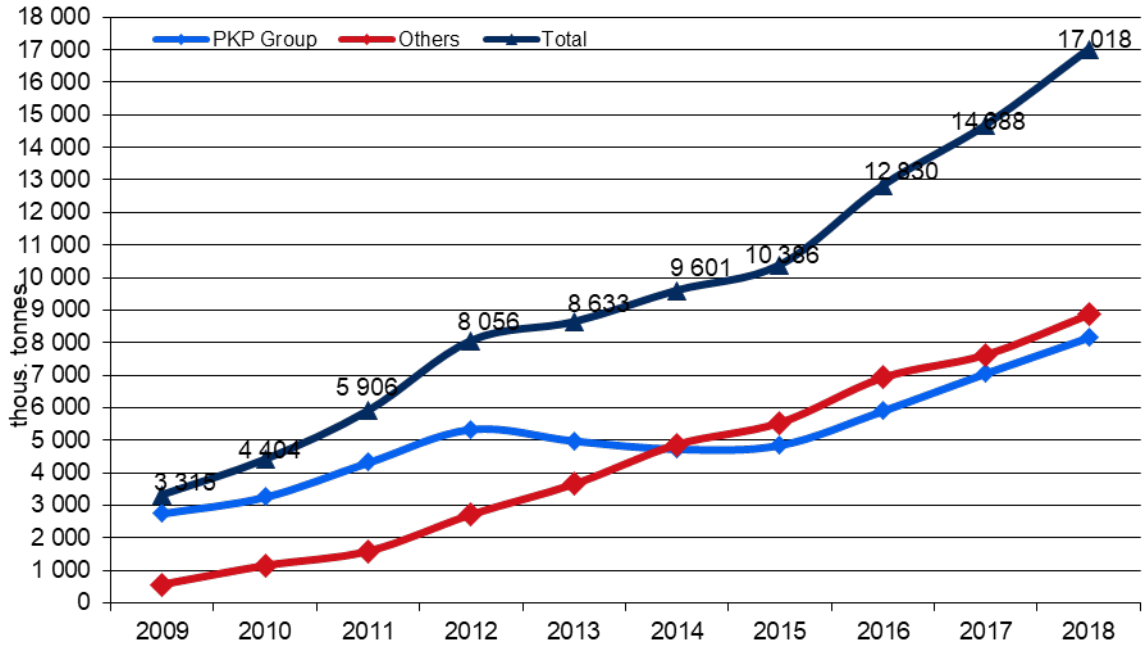


Fig. 59. Intermodal rail transport in Poland (in thous. tonne-km)

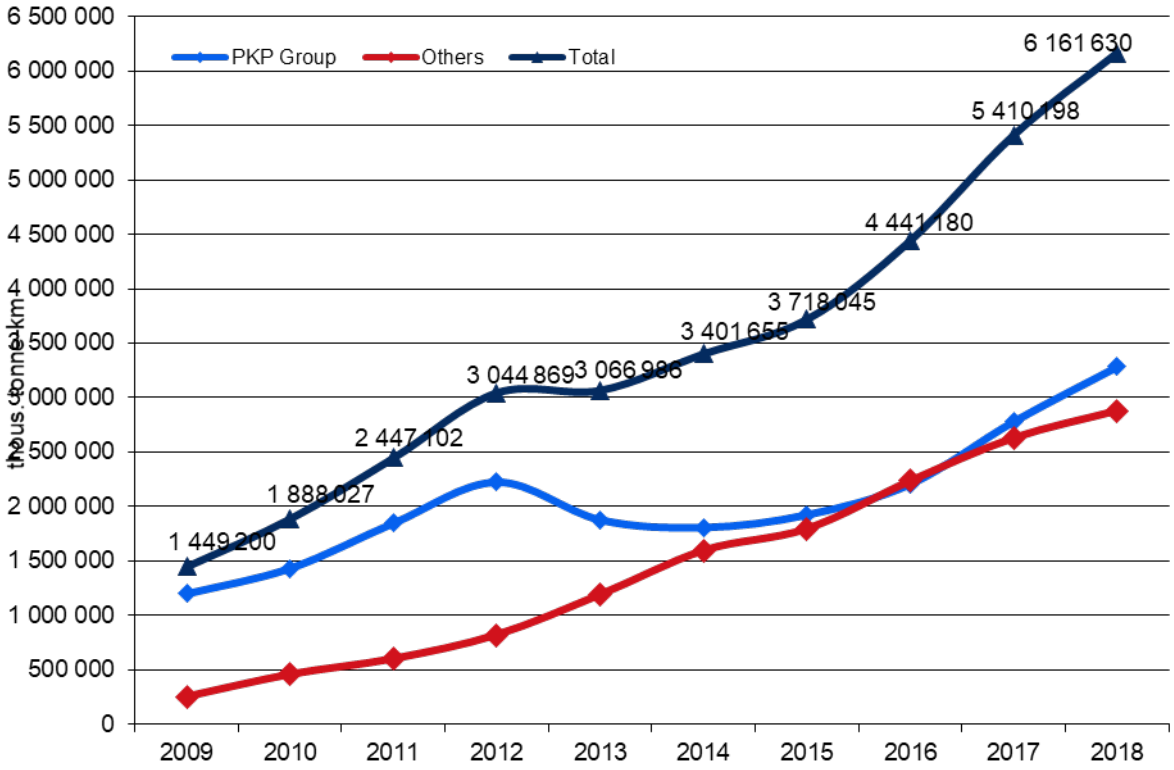


Fig. 60. Intermodal rail transport in Poland (in thous. units)

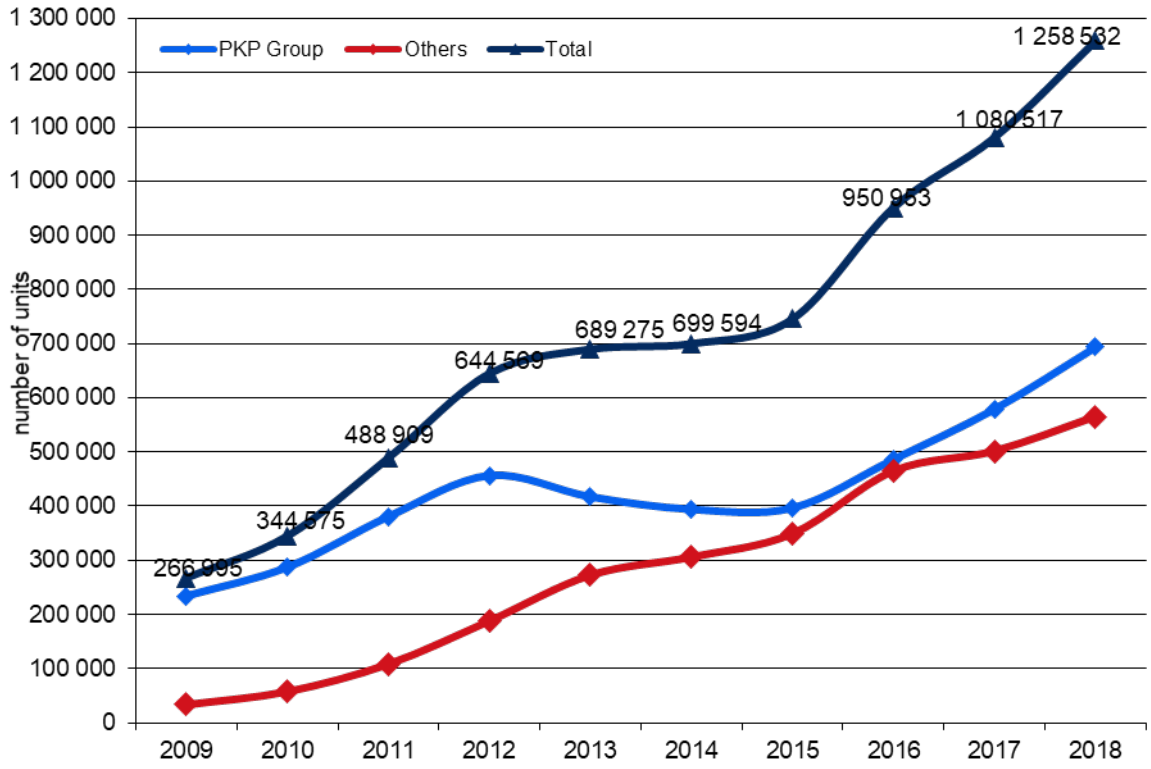
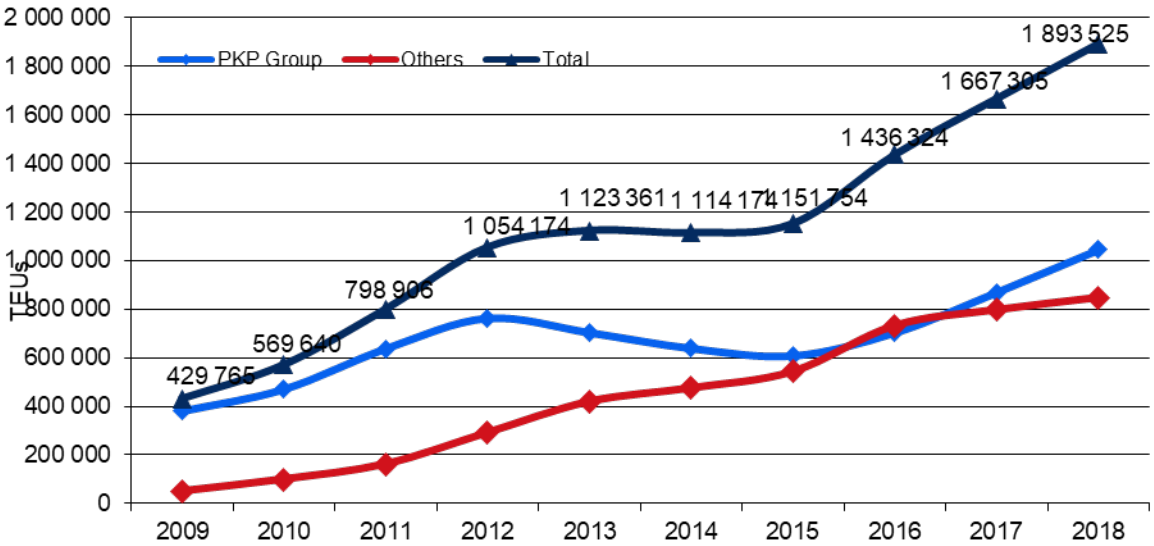


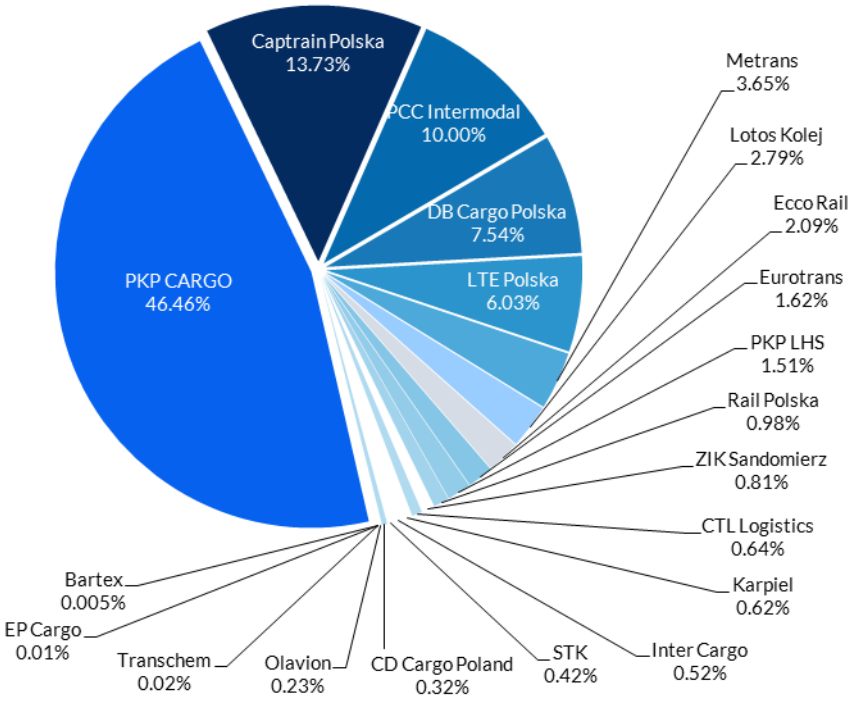
Fig. 61. Intermodal rail transport in Poland (in thous. TEUs)



In 2018, similarly to previous years, PKP Cargo achieved the highest scale in terms of transported weight and transport performance for intermodal transport. The market share of this railway undertaking was 46.5% (by weight) and 52.3% (by transport performance). The significance of other companies on the

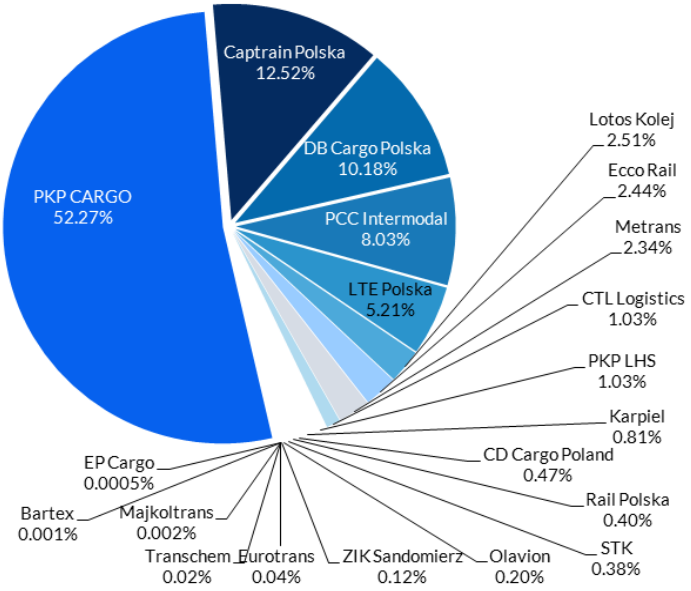
intermodal market is growing each year. A considerable share in terms of transported weight in intermodal transport in 2018 was also held by Captrain Polska and DB Cargo Polska, PCC Intermodal and LTE Polska. In total they transported 37.3% of weight. In 2018 a considerable decrease in intermodal transport provided by Lotos Kolej was observed as compared to the 2017 results. The undertaking focused its operations on transporting other freight groups.

Fig. 62. The share of railway undertakings in the intermodal transport market by weight in 2018



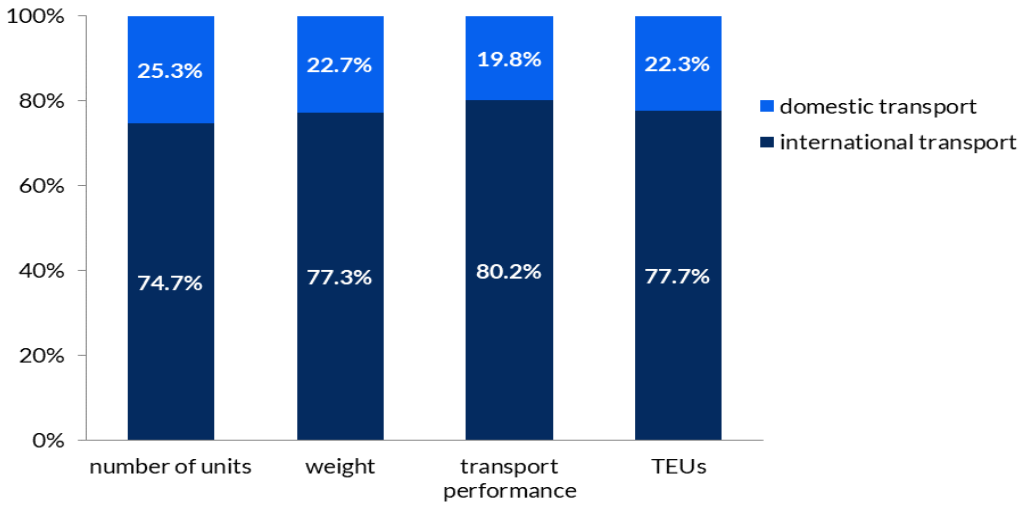
In terms of transport performance, in addition to the dominating PKP Cargo, the highest market share was held by Captrain Polska, DB Cargo Polska, PCC Intermodal and LTE Polska. The mentioned railway undertakings had a total 35.9% market share by transport performance. The gradually increasing market share of Captrain Polska is worth pointing out. At the end of 2018 the company reached a 13.7% share in transported weight and 12.5% in transport performance. In 2017 the company's share was 8.7% in transported weight and 7.3% in transport performance, while in 2016 it was 6.5% and 6.4%, respectively.

Fig. 63. The share of railway undertakings in the intermodal transport market by transport performance in 2018



The share of domestic transport in intermodal transport was low, and decreased by nearly 7.8 percentage point as compared to 2017. In terms of transport performance domestic transport amounted to only 19.8%. Transport weight in domestic transport in 2018 accounted for 22.7%, with the remaining 77.3% corresponding to international transport. According to the number of transported units, imports accounted for 32.7%, exports for 26.7% and transit for 15.2% (a total of over 74.6%). The share of domestic transport was approx. 25.3%.

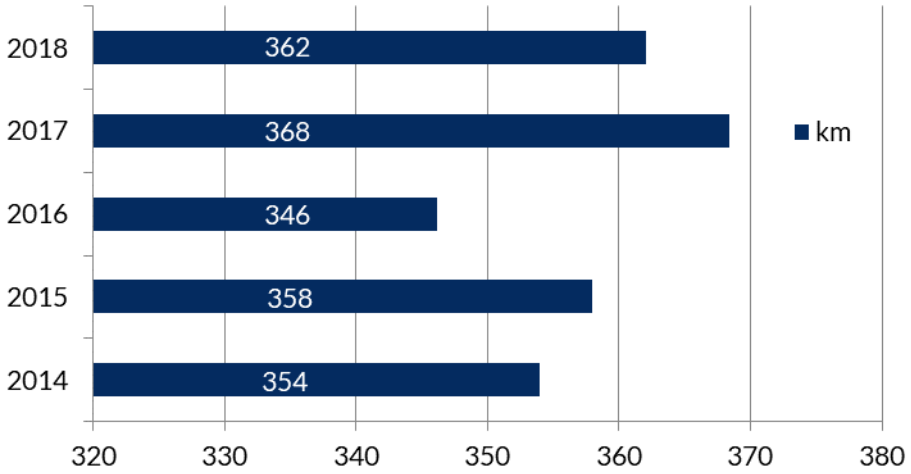
Fig. 64. Share of international transport in intermodal transport in 2018



Due to the high costs of transport by rail and a low commercial speed, rail transport's competition with road transport is hindered. Average distances for intermodal transport are between 350 and 370 km.

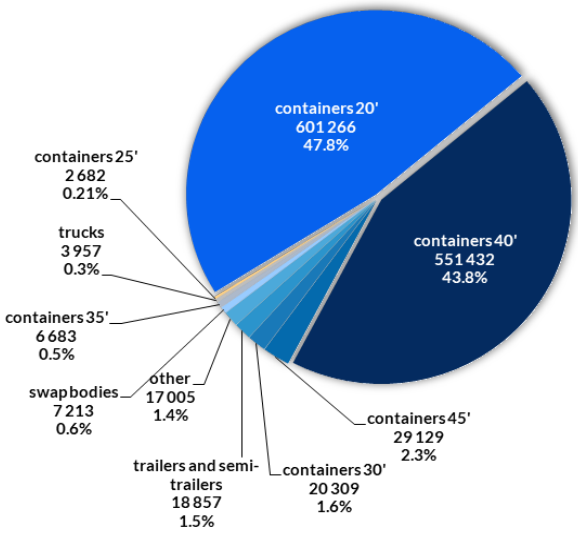
Their profitability with the use of railways increases with distance. For an effective transport system, it is necessary to ensure appropriate parameters of linear and service facilities. It is important to ensure the proper accessibility of terminals not only for road transport but also for railways. Infrastructure modernisation works should be appropriately planned not to interfere with train traffic or cause delays.

Fig. 65. Average distance in intermodal transport in 2014-2018 (in km)



Intermodal transport mainly involves container carriage. Their proportion in the total number of units at the end of 2018 was 96.3%. 20- and 40-foot containers prevailed, accounting for 47.8% and 43.8% of the total number of units transported in intermodal transport, respectively. The share of other containers amounted to 0.2% for 25-foot and 1.6% for 30-foot containers, 0.5% for 35-foot containers and 2.3% for 45-foot containers. Vehicle trailers and semi-trailers accounted for 1.5% of units used, and swap bodies for 0.6%.

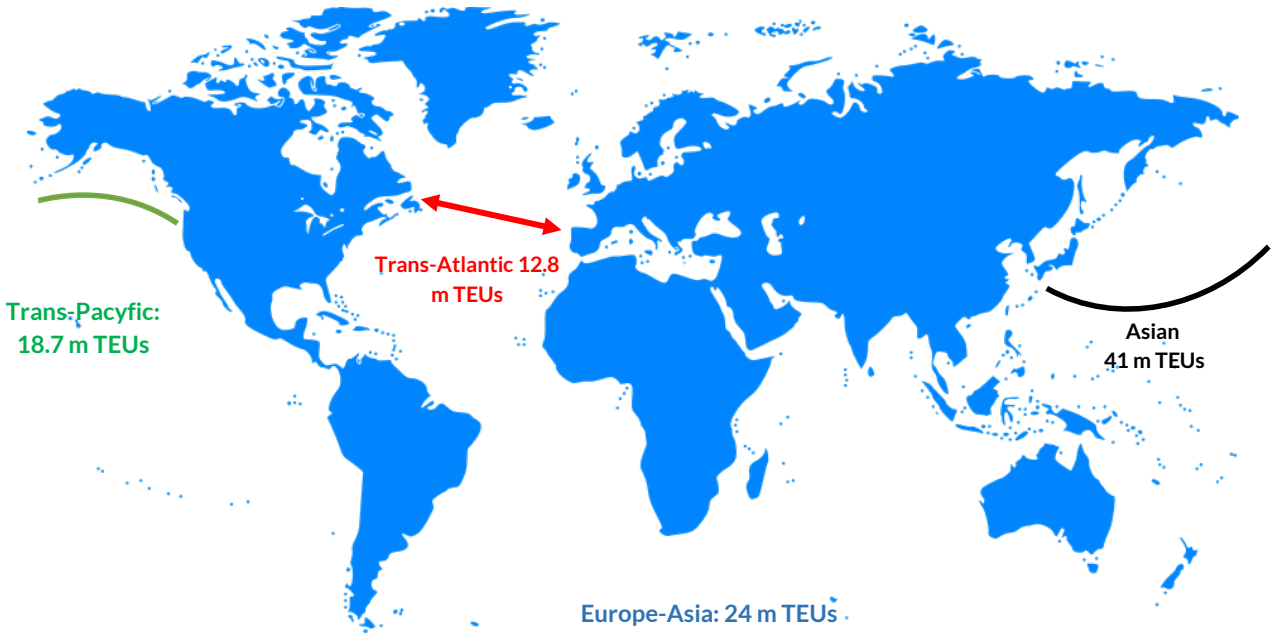
Fig. 66. The share of specific types of transport units in 2018



3.10. Intermodal transport in the world and in Europe

Intermodal transport accounts for 90% of the global trade. In 2018 in ports of the world approx. 790 m TEUs were transshipped, with a 4.7% growth in comparison to the previous year. In Asian transport more than 41 m TEUs were recorded, 18.7 m TEUs in Trans-Pacific transport, 12.8 m TEUs in Trans-Atlantic transport and more than 24 m TEUs in Euro-Asian transport.

Fig. 67. TEU flow in intercontinental connections: Trans-Pacific, Trans-Atlantic, Asia-Europe



Source: www.containerstatistics.com, www.marinepoland.com

Asian ports remain the largest ports in the world. In the top ten ports of the world in terms of transhipments, there are 7 Chinese ports, generating more than 170 m TEUs and accounting for almost 22% of global turnover.

Tab. 22.Transshipments in the largest ports of the world in the years 2017-2018

port	location	2017 m TEU	2018 m TEU	change
Shanghai	China	40.2	42.0	4%
Singapore	Singapore	33.7	36.6	9%
Shenzhen	China	25.2	25.7	2%
Ningbo-Zhoushan	China	24.6	26.0	6%
Hong Kong	China	20.8	19.6	-6%
Busan	South Korea	20.5	21.6	5%
Guangzhou	China	20.4	21.7	6%
Qingdao	China	18.3	19.3	6%
Dubai	United Arab Emirates	15.4	15.0	-3%
Tianjin	China	15.0	16.0	6%
Rotterdam	The Netherlands	13.7	14.5	6%
Port Klang	Malaysia	12.0	12.0	0%
Antwerp	Belgium	10.5	11.1	6%
Xiamen	China	10.4	10.7	3%
Kaohsiung	Taiwan	10.3	10.4	2%
Dalian	China	9.7	9.8	1%
Los Angeles	USA	9.3	9.5	1%
Hamburg	Germany	8.8	8.7	-1%
Tanjung Pelepas	Malaysia	8.3	9.0	8%
Long Beach	USA	7.5	8.1	7%

Source: prepared by the UTK on the basis of One Hundred Ports, Maritime Intelligence, Lloyd's List, www.mardep.gov.hk

The port with the largest transshipment volume in Europe is the Rotterdam port, where in 2018 more than 14.5 m TEUs were transshipped. In the same period in the Gdańsk port, nearly 2 m TEUs were transshipped. The port increased container transshipments by 23% as compared to 2017. The Gdańsk port is among the 15 largest European ports.

Tab. 23.Transshipments in selected European ports in the years 2017-2018

No.	port	location	2017 m TEU	2018 m TEU	change
1	Rotterdam	The Netherlands	13.7	14.5	6%
2	Antwerp	Belgium	10.5	11.1	6%
3	Hamburg	Germany	8.8	8.7	-1%
4	Bremerhaven	Germany	5.5	5.5	-1%
5	Valencia	Spain	4.8	5.1	6%
6	Algeciras	Spain	4.4	4.8	9%
7	Felixstowe	United Kingdom	3.8	4.2	10%
8	Piraeus	Greece	4.1	4.9	21%
9	Gioia Tauro	Italy	2.4	2.3	-6%
10	Marsaxlokk	Malta	3.1	3.3	5%
11	Le Havre	France	2.9	2.9	0%
12	Genoa	Italy	2.6	2.6	-0.5%
13	Gioia Tauro	Italy	2.4	2.3	-6.0%
14	Southampton	United Kingdom	2.0	2.0	-0.1%
15	Gdańsk	Poland	1.6	1.9	23%
Duisburg – inland port		Germany	4.1	4.1	0%

Source: www.porteconomics.eu, port statistics.

3.11. Intermodal terminals in Poland

In 2018 in Poland there were 37 terminals transshipping intermodal transport units:

- 6 port terminals: Gdynia (2), Gdańsk (2), Szczecin (1), Świnoujście (1);
- 25 inland terminals:
  - 1 in Silesia, combining standard-gauge and wide-gauge infrastructure, PKP LHS (Euroterminal Sławków);
  - 3 terminals which were not active in 2018 (OT Port Świnoujście, GCT - Gdynia Container Terminal, Lublin Container Terminal - Drzewce);
  - 1 terminal which in 2018 discontinued its operations (Loconi Intermodal Poznań Górczyn).
- 6 border terminals – 5 at the border with Belarus and one at the border with Russia.

Intermodal terminals occupy an area of approx. 490 ha. Their estimated annual throughput in 2018 was 8,547,720 TEUs, of which:

- ports have a potential throughput of 5,126,000 TEUs (approx. 60.5%);
- border terminals on the New Silk Road have a throughput of 663,830 TEUs (approx. 7.5%);
- inland terminals – 2,757,890 TEUs (approx. 32.5 %).

The supply of cargo area of intermodal terminals in 2018 was at 170,949 TEUs, of which ports account for 97,000, terminals located at the border – 16,300 TEUs and inland terminals – 57,649 TEUs.

The supply of storage and manufacturing space located in Poland in 2018 was 15.7 m sq. m.

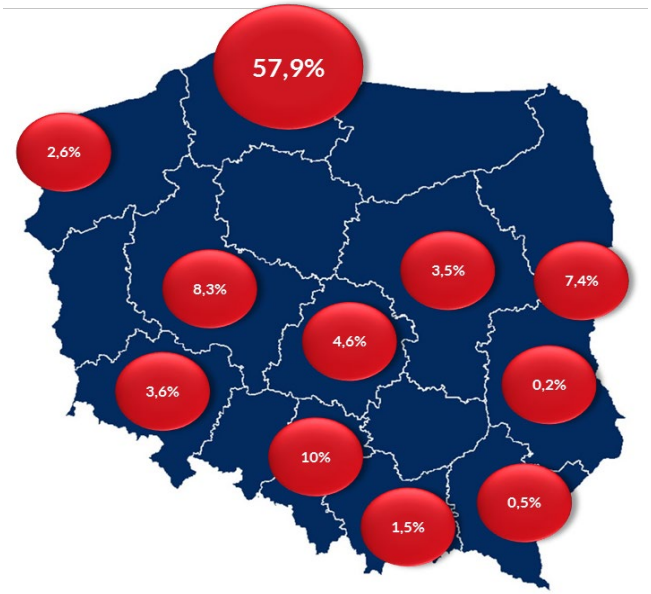
Below is a list of intermodal terminals in Poland by the highest annual throughput.

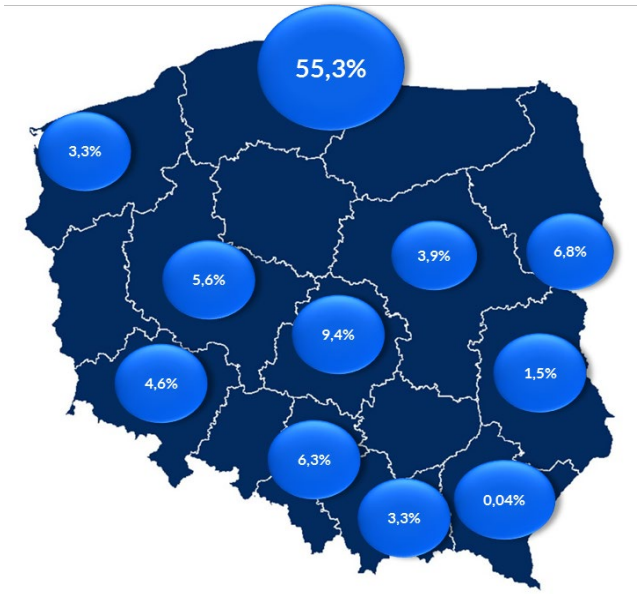
Intermodal terminals in Poland (total area, storage area; throughput)

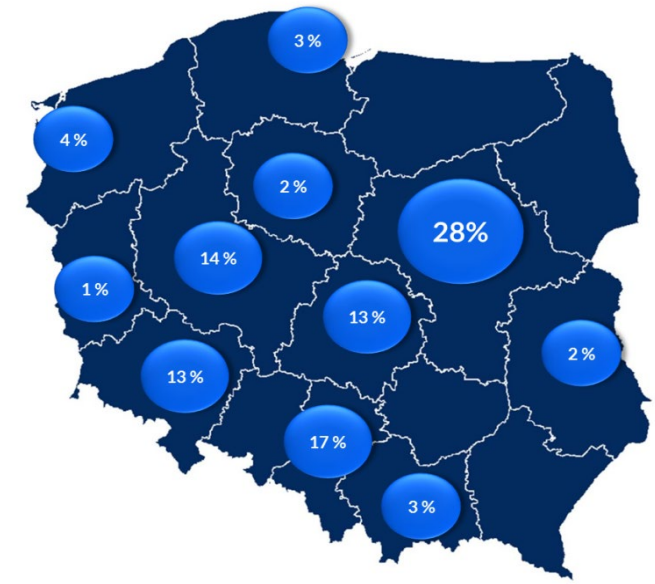
No.	name and location	total area of the terminal [ha]	storage area [TEU]	annual throughput [TEU]
1	Deepwater Container Terminal DCT Gdańsk S.A.	49	55,000	3,000,000
2	BCT – Baltic Container Terminal – Gdynia	66.2	20,000	1,200,000
3	Gdynia Container Terminal	19.6	12,500	636,000
4	Rail Hub Terminal Gadki - Metrans Polonia	32	1500	385,400
5	Euroterminal Sławków Sp. z o.o.	91	3500	284,810
6	PCC Intermodal – Terminal PCC Kutno	11	4000	250,000
7	Metrans Terminal Dąbrowa Górnicza	16	1400	233,600
8	Centrum Logistyczne Małaszewicze	14.06	2000	223,830
9	Schavemaker Kąty Wrocławskie	5	3700	180,000
10	Andrex Logistics - Siemianówka	6	3000	180,000
11	PCC Intermodal – Terminal PCC Gliwice	5	2900	150,000
12	DB Port Szczecin Sp. z o.o.	12.7	3500	150,000
13	Adampol - Małaszewicze	3	10,000	140000
14	Centrum Logistyczno - Inwestycyjne Poznań II - CLIP Logistics - Swarzędz	8	4500	135,000
15	PKP Cargo Connect - Container Terminal - Gliwice	6.5	1800	128,000
16	PCC Intermodal - PCC Brzeg Dolny	9	2464	110,000
17	Brzesko Container Terminal	10.5	5000	108,000
18	Loconi Intermodal Container Terminal Warsaw	8	2000	100,000
19	PKP Cargo Connect - Container Terminal Warsaw	6.8	3000	100,000
20	Loconi Intermodal – Container Terminal Szamotuły	2	1200	100,000
21	Metrans Container Terminal Pruszków	4.46	1500	96,000
22	Spedcont - Container Terminal Łódź Olechów	8.4	5000	80,000
23	Europort – Małaszewicze Duże	13	1300	80,000
24	Gdański Terminal Kontenerowy S.A. Gdańsk	6.7	4000	70,000
25	OT Port Świnoujście	20	2000	70,000
26	Włosienica Container Terminal - Baltic Rail	10	780	50,000
27	PKP CARGO Centrum Logistyczne Medyka - Żurawica sp. z o.o.	2	60	43800
28	PKP Cargo Connect - Container Terminal - Poznań Franowo	2.14	1000	40,000
29	Rail Terminal Rzepin	1.6	500	40,000
30	Cargosped Terminal Braniewo	13.6	0	40,000
31	Loconi Intermodal Container Terminal Poznań	2	1000	40,000
32	Loconi Intermodal Container Terminal Radomsko	6.41	2500	33,280
33	Erontrans Container Terminal in Stryków	1.6	2000	16,000
34	PCC Intermodal - Terminal Kolbuszowa	-	400	16,000
35	Siechnice Container Terminal - Baltic Rail	10	1445	15,000
36	Lublin Container Terminal - Drzewce	2.5	2500	13,000
37	Erontrans Container Terminal in Radomsko	1.2	2000	10,000
	TOTAL	**487**	**170,949**	**8,547,720**

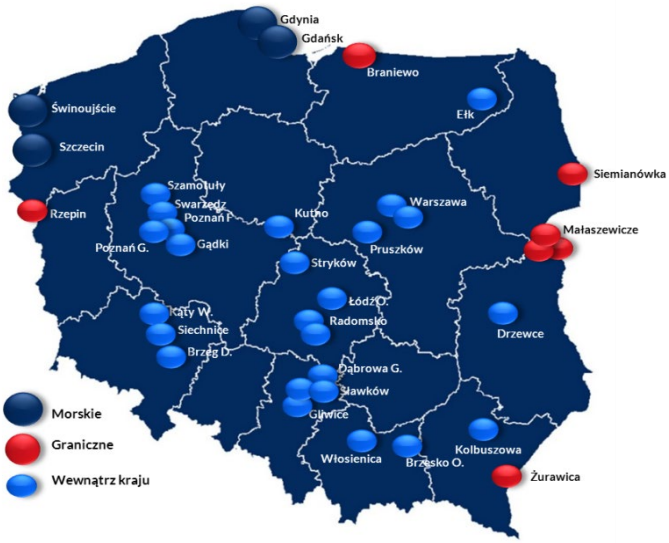
Source: prepared by UTK based on its data.

Fig. 68. The locations, supply of storage space and throughput of intermodal terminals. The distribution of the supply of storage and manufacturing space in Poland in percentages







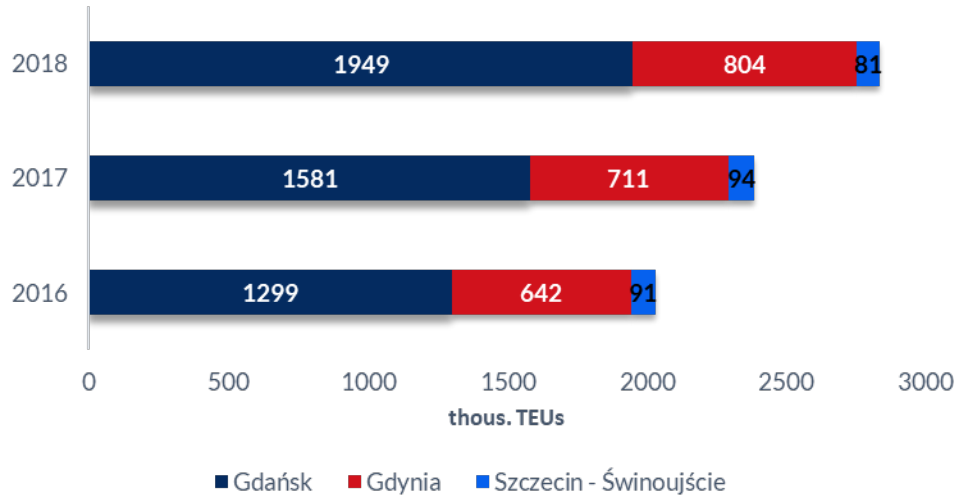


Source: prepared by UTK based on its data and the website www.magazyny.pl.

3.12. Transshipments in sea ports and main intermodal connections from ports in Poland

The major source of the volume of intermodal cargo reaching our country are Tricity ports – Gdynia (GCT, BCT) and Gdańsk (DCT, GTK), and, to a lesser extent, Western European ports, among which Hamburg plays a dominant role. It is also the largest port from which cargo is transported to the Czech Republic and Slovakia in transit through Poland. In 2018 in Polish ports a total of over 2.83 m TEUs was transshipped: 69% in Gdańsk, 28% in Gdynia, and only 3% in Szczecin.

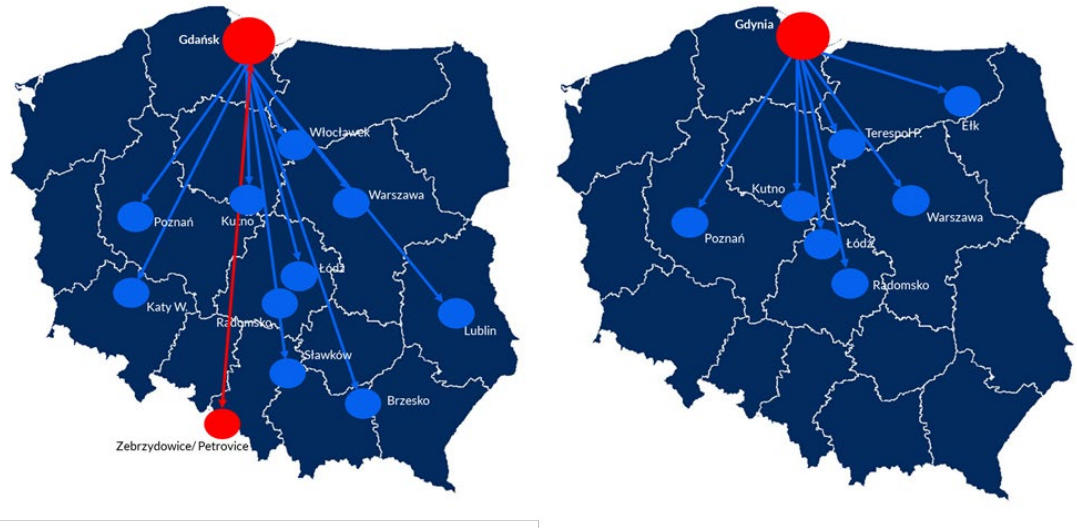
Fig. 69. Transshipment in Polish ports in the years 2016-2018 (in thous. TEUs)



Source: prepared by UTK based on terminal statistics.

Nearly 100% of goods transshipped in Polish ports reach their recipients in the country. The main directions of intermodal connections from Gdynia and Gdańsk cover transport to and from terminals located near Poznań, Kutno, Łódź, Radomsko and Warsaw.

Fig. 70. Main intermodal connections from ports in Gdynia and Gdańsk



Source: prepared by UTK based on its data.

Basic information on the key sea terminals in Gdańsk and Gdynia:

Gdańsk (DCT):

DCT is the second largest (after Saint Petersburg) sea intermodal terminal on the Baltic Sea.

The terminal serves the largest container ships in the world owned by members of:

- Ocean Alliance (CMA CGM, COSCO, Evergreen, OECL);
- ZM (Maersk, MSC).

At DCT in 2018 1.93 m TEUs were transshipped, reaching a 23% year-on-year growth, of which:

- 41% of the volume was carried through road transport;
- 21% of containers were transported through railways;
- 38% were transshipped to smaller ships and distributed to smaller ports.

The Gdańsk DCT terminal served 5000 trains. The main directions of the trains were Lower Silesia, Greater Poland, Lower Silesia, central Poland (Łódź, Radomsko, Stryków), the Warsaw region. In 2018 only 50 international train pairs were in operation transporting containers from the Northern Port through the Zebrzydowice/Petrovice border crossing to the AWT terminal in Paskov, accounting for 1% of all railway connections to and from Gdańsk. The remaining 99% of trains were involved in domestic transport.

Gdynia Port (BCT):

BCT in Gdynia is the second largest sea intermodal terminal in Poland and third on the Baltic Sea. Due to the depth of the port basin, the largest ships of the world cannot enter this port. In 2018 817,446 TEUs were transshipped at the terminal, of which

- 86% was carried through road transport;
- 14% departed or arrived by rail.

In 2018 the terminal served approx. 2,300 trains

3.13. The transport of dangerous goods

In 2018 the transport of dangerous goods was operated by 30 carriers, i.e. by two more than in 2017. An increase was observed both in the weight of goods and the transport performance: weight: 27.7 m tonnes (25.9 m tonnes in 2017), performance 9.1 bn tonne-km (8.5 bn tonne-km in 2017);

The share of dangerous goods transport in the rail market changed slightly: 11.1% by weight (10.8% in 2017), 15.2% by transport performance (15.5% in 2017).

The average transport distance almost did not change – 328 km (329 km in 2017).

The transport of dangerous goods involves mainly domestic transport. Only slight changes were recorded in this period: in 2018 domestic transport accounted for 66.4% (67.6% in 2017) by weight and 72.9% (74.8% in 2017) by transport performance. In 2018 the imports of dangerous goods by rail was at the level of 15.3%, exports – 9.1% and transit – 2.6% (in 2017, correspondingly, 14.6%, 7.4% and 3.2%).

Dangerous goods are examined in line with the Regulation concerning the International Carriage of Dangerous Goods by Rail (RID)[6].

Tab. 24.Classes of goods according to RID

Class according to RID	Name
1.	explosive substances and articles
2.	gases
3.	flammable liquids
4.1	flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives
4.2	substances liable to spontaneous combustion
4.3	substances which, in contact with water, emit flammable gases
5.1	oxidising substances
5.2	organic peroxides
6.1	toxic substances
6.2	infectious substances
7	radioactive material
8	corrosive substances
9	miscellaneous dangerous substances and articles

In 2018 flammable liquids – class 3 according to RID (crude petroleum and petroleum products, e.g. fuels, diesel oil) continued to be the most important commodity group, with a market share by transported weight of 63.2% (66.5% in 2017) and 64.3% by transport performance (66.2% in 2017).

According to the classification of dangerous goods (RID), in addition to flammable liquids, the highest share in transport was recorded for goods from the following classes:

- 9. Miscellaneous dangerous substances and articles – 12.1% by weight and 15.1% by transport performance (9.4% and 13.8% in 2017);
- 2. Gases – 12.0% by weight and 9.4% by transport performance (12.5% and 10.2% respectively);

[6]Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), section 2.1.1.1 (Journal of Laws of 2017, item 1355)

- 8. Corrosive substances – 5.8% by weight and 4.6% by transport performance (5.8% and 4.7% respectively).

Fig. 71. The share of transport of particular groups of dangerous goods (according to RID) in 2018 (by weight)

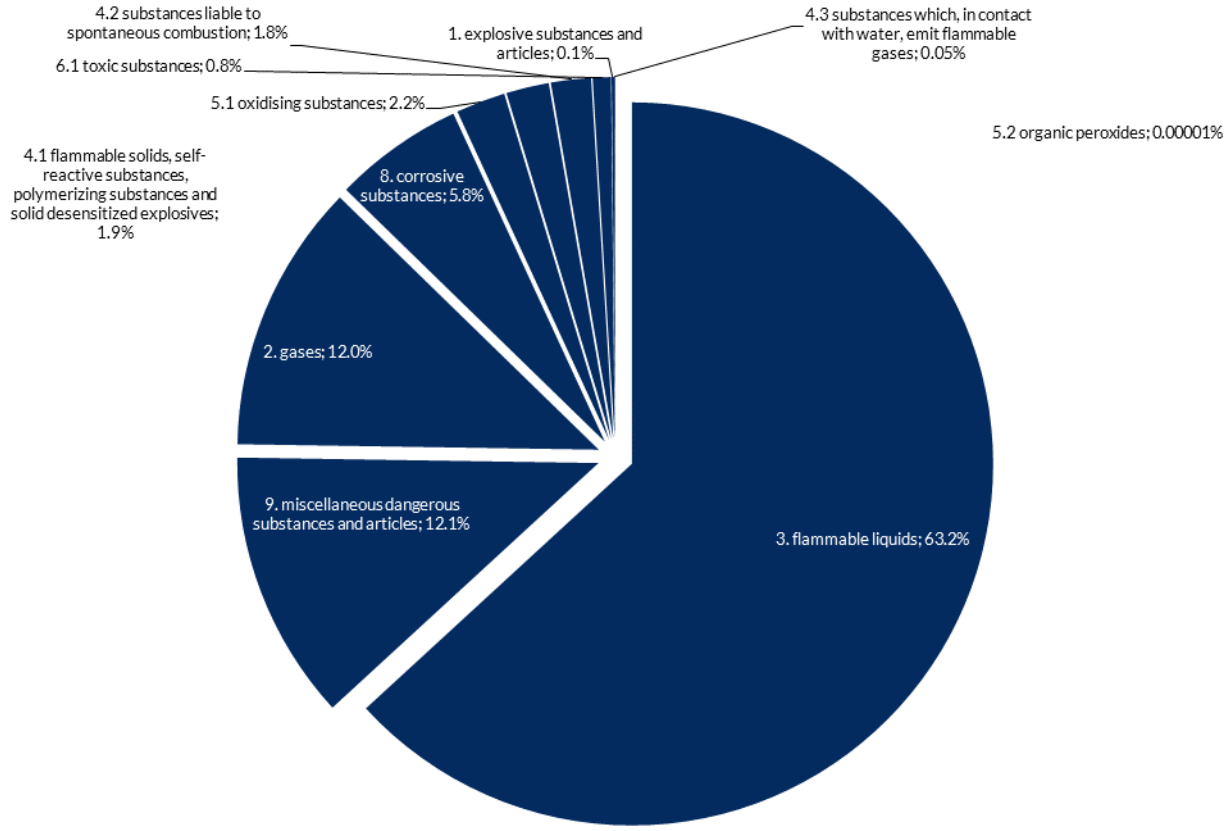
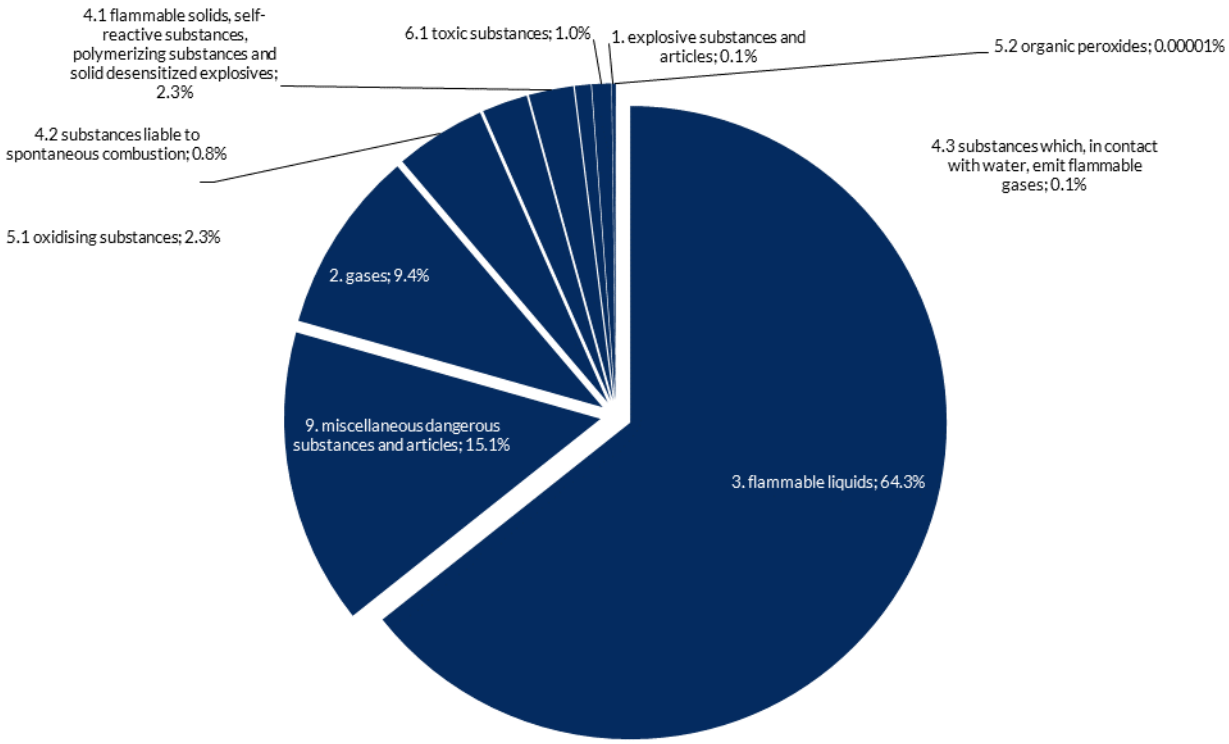


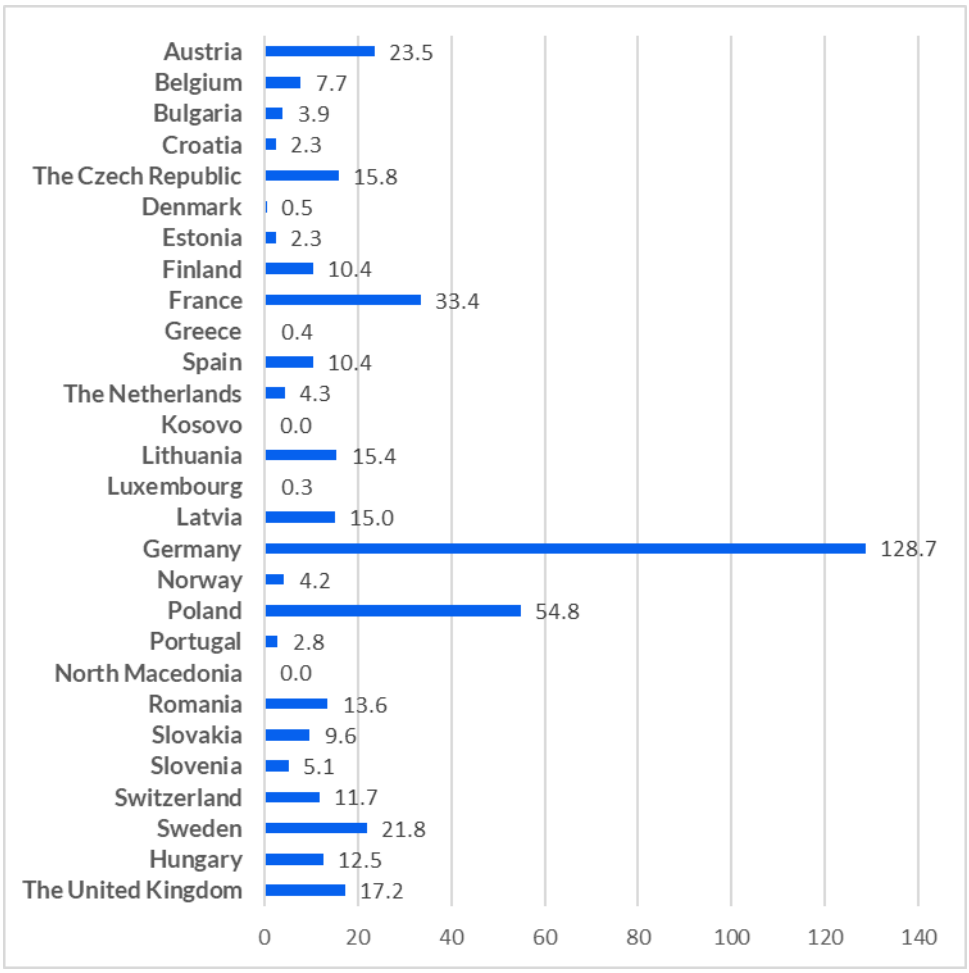
Fig. 72. The share of transport of individual groups of dangerous goods (according to RID) in 2018 (by transport performance)



3.14. Freight railway transport in Poland as compared to Europe

The most current and complete data on the freight transport market in Europe are based on comparisons found in the IRG-Rail report for 2017. Total transport performance in freight transport in 2017 (in 28 countries covered by IRG-Rail's analysis) reached 451 bn tonne-km. The majority, i.e. 128.7 bn tonne-km, were performed in Germany. The second largest market was Poland (54.8 bn tonne-km) and France was the third (33.4 bn tonne-km). Germany, Poland and France together accounted for almost 50% of total transport performance of the surveyed group's countries.

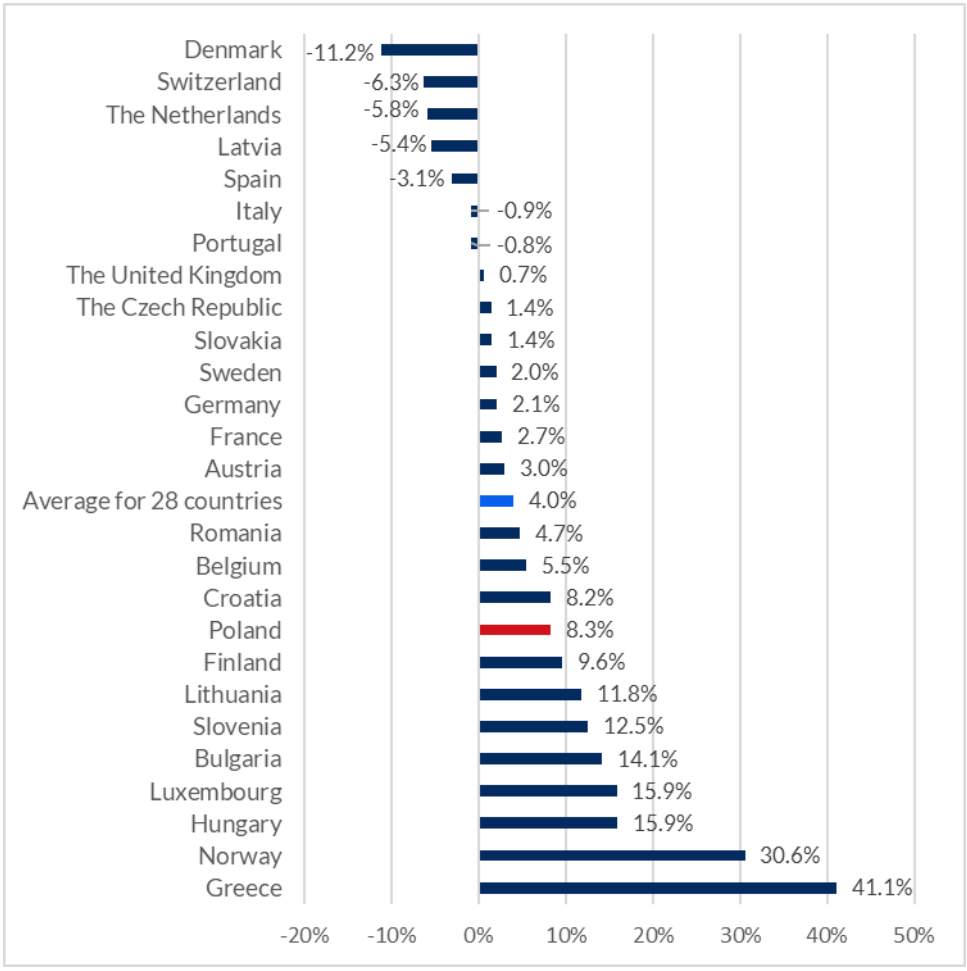
Fig. 73. Transport performance volume in 28 European countries in 2017 (bn tonne-km)



Source: IRG-Rail

As far as the change rate of transport performance between 2017 and 2016 is concerned, a 4% market growth was observed.

Fig. 74. Change rate of the transport performance volume in 28 European countries (2017/2016)



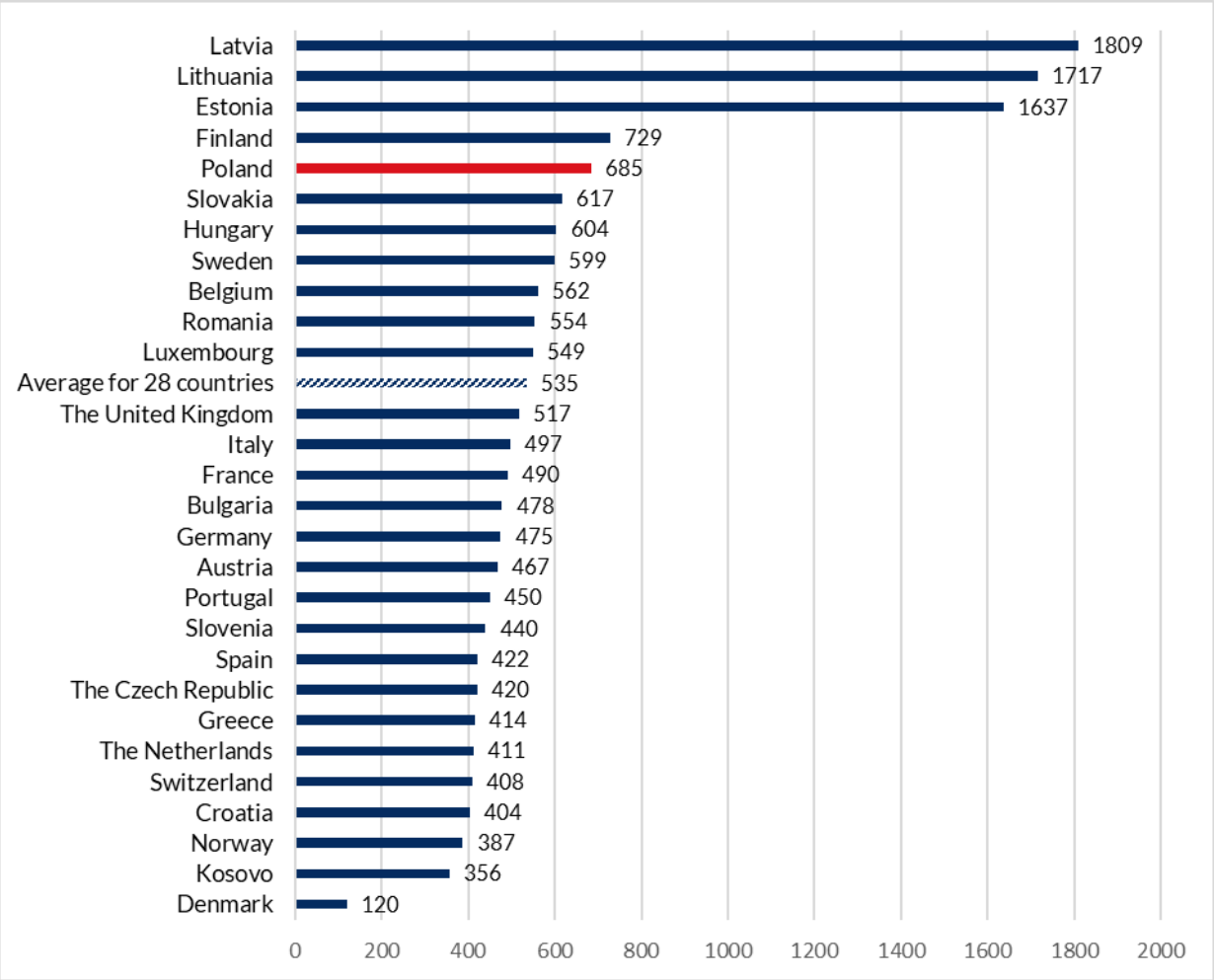
Source: IRG-Rail

In the analysed countries large differences could be observed in the change rate of transport performance between 2017 and 2016 – from -11.2% in Denmark to +30.6% in Norway and +41.1% in Greece. A drop was recorded in seven countries, where the demand for transport services increased in 18 countries. In Greece a high increase can be attributed to solving some of the earlier problems (for instance, traffic was stopped at the Thessaloniki – Idomeni section for approx. 2.5 months due to the line's being taken over by immigrants). Furthermore, a rise occurred in the freight transport volume between two largest commercial ports in Athens and Thessaloniki.

In Norway a 31% growth can be explained with a high share of intermodal transport carried out by two competing companies. An important factor contributing to this positive change in 2017 in Norway was a relatively high reliability of railway infrastructure as compared to previous years.

It is worth pointing out that in Poland in 2017, as compared to 2016, a rise of 8.3% was observed (from 50.6 bn tonne-km to 54.8 bn tonne-km) and in 2018, in comparison to 2017, it was even higher, at 8.8% – from 54.8 bn tonne-km to 59.7 bn tonne-km. In order to compare the markets of the respective countries, IRG-Rail also applies the indicator to the average load capacity of trains, calculated as a quotient of transport performance and operational performance expressed in the average weight of the cargo per an average freight train. For the 28 analysed European countries, the indicator amounted to 535 tonnes.

Fig. 75. The average load capacity of a freight train in 28 European countries in 2017 (tonnes/train)



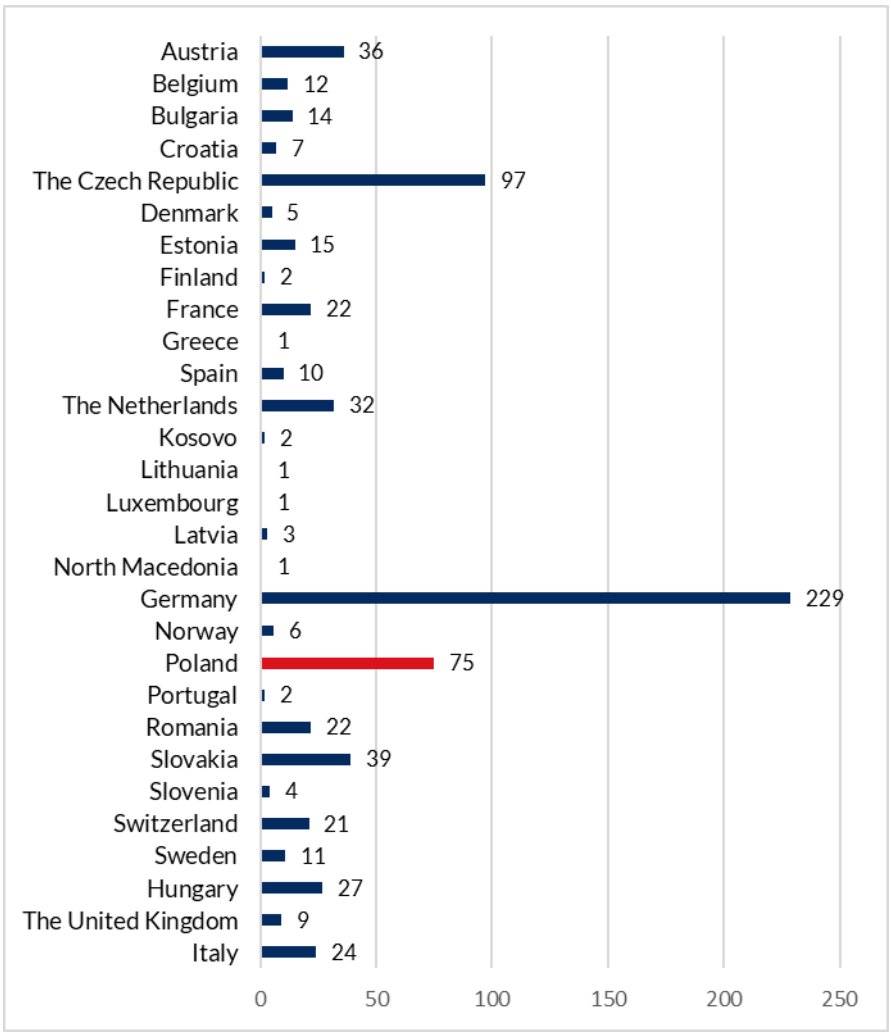
Source: IRG-Rail

The average weight of freight trains in Lithuania, Latvia and Estonia is evidently different from other countries. Due to the specific nature of the market and the use of wide-gauge infrastructure (1520 mm) in trade exchange with Russia, it is possible to operate freight transport with longer and heavier trains, whose average weight exceeds 1,800 tonnes. In addition to the three countries, trains with an average weight above 600 tonnes per train are used by transport operators in: Finland (729 tonnes per train), Poland (685 tonnes per train), Slovakia (617 tonnes per train) and Hungary (604 tonnes per train). The lowest train weight was recorded in Denmark – on average 120 tonnes per train.

It is worth noting that the average load capacity of a freight train in Poland dropped slightly in 2018 to 678 tonnes per train from 685 tonnes per train in 2017.

The freight transport market in Europe in terms of the number of railway undertakings is very scattered. In 2017 730 railway undertakings operated on the European market (29 countries under analysis), of which more than 10% in Poland (75 licensed railway undertakings). It should be mentioned that a more scattered market is found in Germany (229 companies) and the Czech Republic (97).

Fig. 76. The number of active freight railway undertakings in 29 countries in 2017



Source: IRG-Rail

4. The railway infrastructure

4.1. The operations of infrastructure managers

Railway infrastructure managers are entities responsible for managing railway infrastructure or, in the case of building new infrastructure, an entity dealing with its construction as the project owner.

In line with the regulations currently in force, infrastructure managers and siding users are obligated to draw up the railway network statutes. The statutes should identify railway lines, sidings and other railway roads managed by the entity and specify whether they are available, out of service or private. The document is of importance to the infrastructure manager and railway undertakings, as it determines the rules of providing access to infrastructure and of collecting access charges. If infrastructure is used only for the purposes of its owner or manager without assigning to it the status of privately owned infrastructure, the manager may be subject to a fine.

Managers of railway infrastructure with a track width of 1,435 mm are obligated to provide railway undertakings with access to the infrastructure based on equal treatment principles.

The obligations does not apply in the following cases:

- railway infrastructure used solely for passenger transport operated by a railway undertaking which also manages the infrastructure without providing other railway undertakings with access to it;
- privately owned railway infrastructure, i.e. that which exists solely for use by the infrastructure owner or manager other than passenger transport.

The infrastructure manager may also decide not to apply the provisions of chapter 6 of the Rail Transport Act relating to the provision of access to railway infrastructure and charges for using the infrastructure in the following cases:

- the railway network is intended solely for province and local transport;
- the railway infrastructure forms part of a service facility;
- the railway infrastructure was defined as local railway infrastructure with no strategic significance for the operation of the rail market in a European Commission decision.

The infrastructure manager must inform the President of UTK of its decision.

In addition to the main infrastructure manager PKP PLK, the following infrastructure managers operate in Poland: CTL Maczki-Bór, DSDiK, Euroterminal Sławków, Infra Silesia, KP Kotlarnia – Linie Kolejowe, Pomorska Kolej Metropolitalna, PMT Linie Kolejowe, Cargotor, JSK and UBB Polska.

There are also infrastructure managers on the market which combine the functions of managers and railway undertakings by managing railway infrastructure and operating railway transport along lines designated solely for urban or suburban railway transport and wide-gauge lines. These are:

- PKP SKM – the manager also has the obligation to provide access to infrastructure for licensed railway undertakings;
- WKD – the manager does not provide access to infrastructure for railway undertakings;
- PKP LHS – the manager does not provide access to infrastructure for railway undertakings.

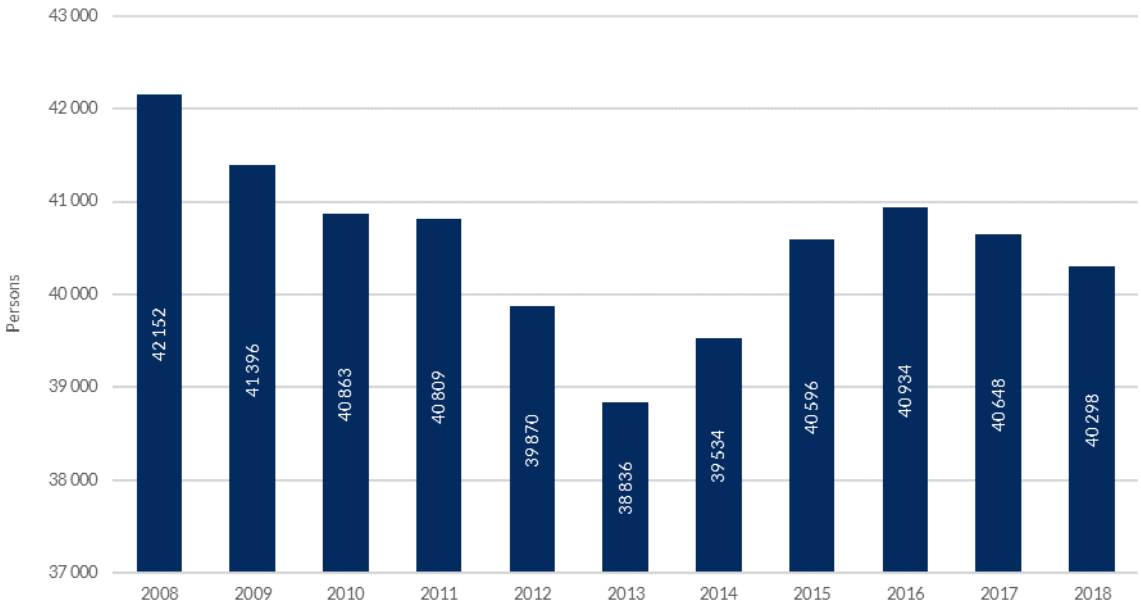
Furthermore, narrow-gauge railways can combine the function of a manager and railway undertaking.

4.2. Employment by infrastructure managers

As at the end of 2018 line infrastructure managers employed 39,850 people, i.e. by 2% less than in 2017, in which 40,648 employees were recorded. The change was associated mainly with a decrease in employment at the largest infrastructure manager, i.e. PKP PLK (365 individuals). 97.4% of all people employed by infrastructure managers were hired by the company.

A substantial decrease in employment was recorded by PMT Linie Kolejowe – of 136 people, and JSK, also of 136 people. A high increase in employment was achieved by PKP LHS – of 346 people, and by Pomorska Kolej Metropolitalna – of 44 people. The analysis did not cover the following entities: WKD, UBB Polska and siding users.

Fig. 77. Employment in the infrastructure managers sector in the years 2010-2018



Tab. 25. Employment structure with regard to regulated professions at infrastructure managers in 2018

regulated professions	employees
total	**19,885**
traffic controller	8,852
signaller	5,001
control engineer	2,177
level crossing attendant	1,921
track supervisor	1,427
train driver	431
railway vehicle driver	35
adjuster	19
train manager	15
train inspector	7

Employees dealing directly with train traffic accounted for 46% of all individuals employed with infrastructure managers.

Tab. 26. Age structure of all employees hired by infrastructure managers in 2018[7]

Age	< 30 years	30-50 years	> 50 years
employees	4,782	16,777	18,736
%	12%	42%	46%

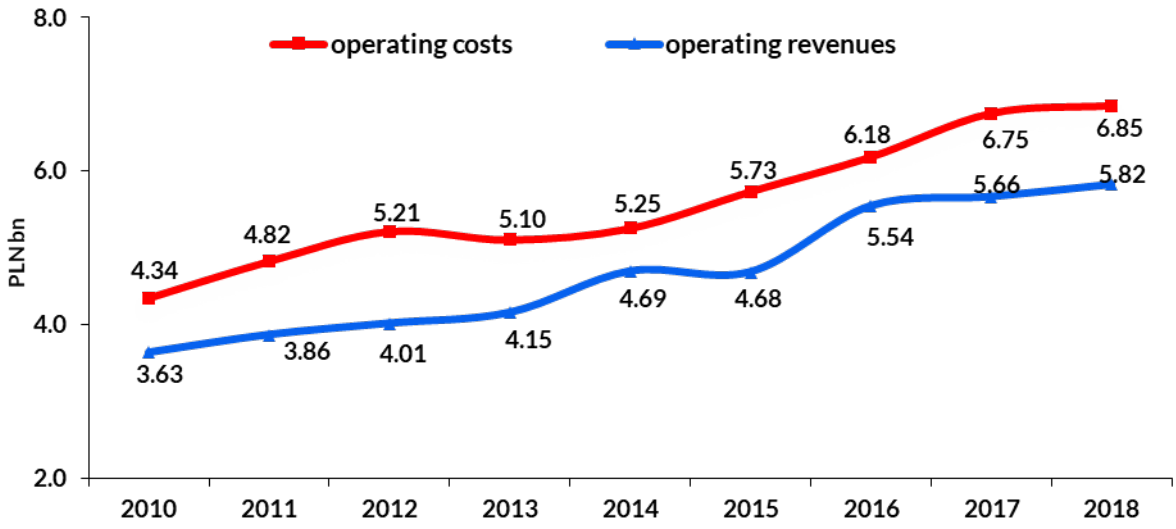
The age structure of infrastructure managers is characterised by a high number of employees older than 50 years of age and a low employment rate of people under 30. This creates a risk of the so-called generation gap, especially in operations directly connected with train traffic, where employees can benefit from early retirement entitlements, and newly employed persons require specialist training and professional licences, the obtaining of which is time-consuming.

4.3. Financial results of infrastructure managers

2018 saw another rise in the revenue of infrastructure managers as compared to the previous year. However, the increase was minor, amounting to 0.6%.

[7] Age structure calculated on the basis of FTEs for railway operations from 1 January to 31 December 2018. FTE should be interpreted as the total number of hours (including overtime) worked in a given job position divided by the number of hours worked annually in a full-time position.

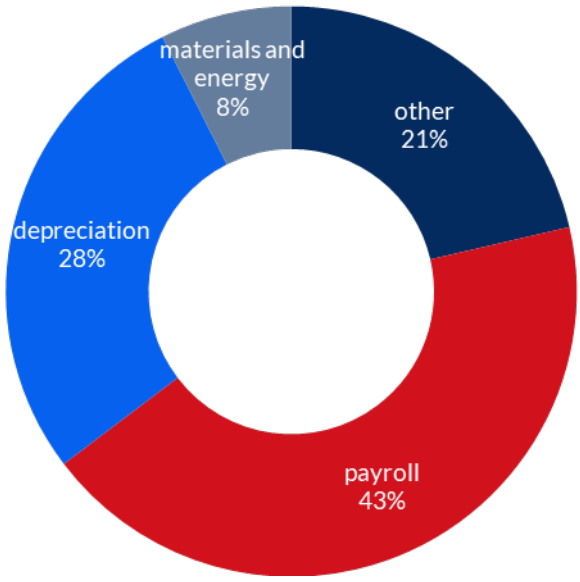
Fig. 78. The operating performance of infrastructure managers (in PLN bn) in the years 2010-2018



In 2018 PKP PLK received a subsidy (together with the Railway Fund) amounting to PLN 3.2 bn, which was lower by PLN 39.5 m as compared to 2017.

In 2018 the operating costs of infrastructure managers increased by over 0.6%, i.e. PLN 6.75 bn to the record-breaking level of PLN 6.79 bn. In 2018 the difference between revenues and operating costs was over PLN 1.07 bn, while in 2017 it was PLN 1.09 bn.

Fig. 79. Cost structure of the operations of infrastructure managers in 2018



The main costs of infrastructure managers' operations are payroll costs and depreciation. Payroll costs in 2018 amounted to PLN 2,917.54 m, and depreciation to PLN 1,898.16 m.

Tab. 27.Sources of financing for infrastructure maintenance and development

funds	PLN m
own funds	1,798.78
public domestic funds	3,411.11
European Union	4,695.96

Infrastructure maintenance expenditures in 2018 amounted to PLN 2,799 m, while expenditures on railway lines modernisation were at the level of approx. PLN 7,096 m, on building new infrastructure – PLN 13 m (mainly expenditures by PKM – PLN 8.5 m and PKP PLK – approx. PLN 3.4 m).

4.4. Railway line parameters

The length of the railway lines operated in 2018 by all infrastructure managers, including standard-gauge and wide-gauge railways, was 19,347 km, which means a growth of 55.7 km as compared to 2017. The largest infrastructure manager (PKP PLK) had 18,536 km active lines – 23 km more than in 2017. Also, 2043 km of lines placed out of service were also managed by the entity. In total the company managed 20,579 km of lines (63 km less than in 2017). PMT Linie Kolejowe extended the railway network under its management by nearly 33 km – this included sidings whose status was changed into railway lines.

The longest wide-gauge network (395 km) was managed by PKP LHS. Its length in 2018 did not change in comparison to 2017.

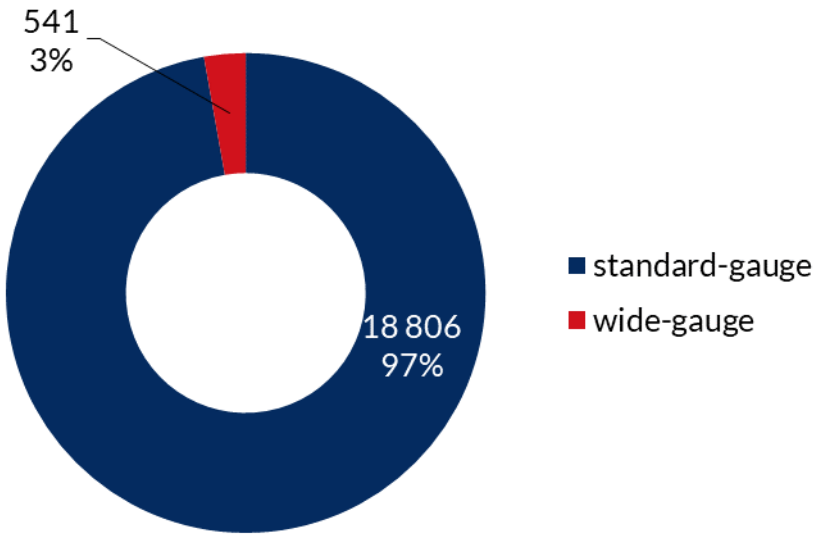
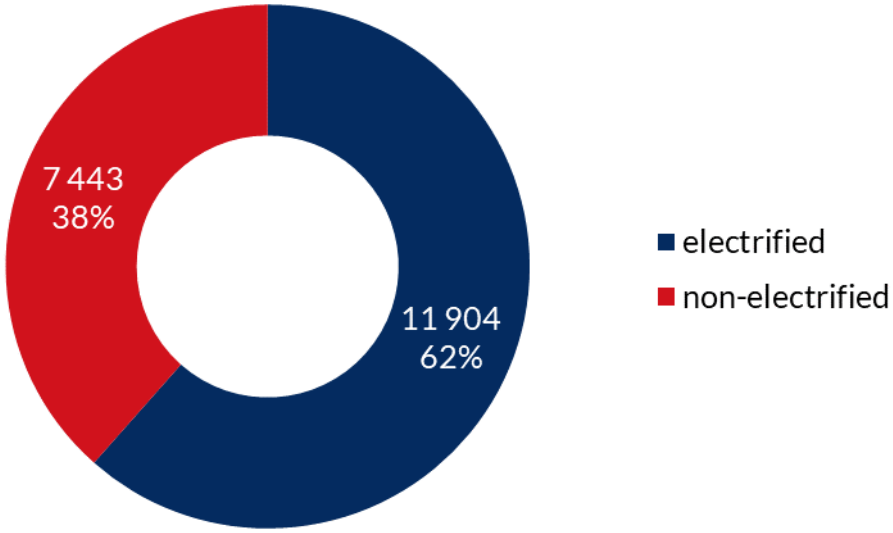


Fig. 80. The structure of railway lines operated in Poland in 2018 by track gauge (in km)

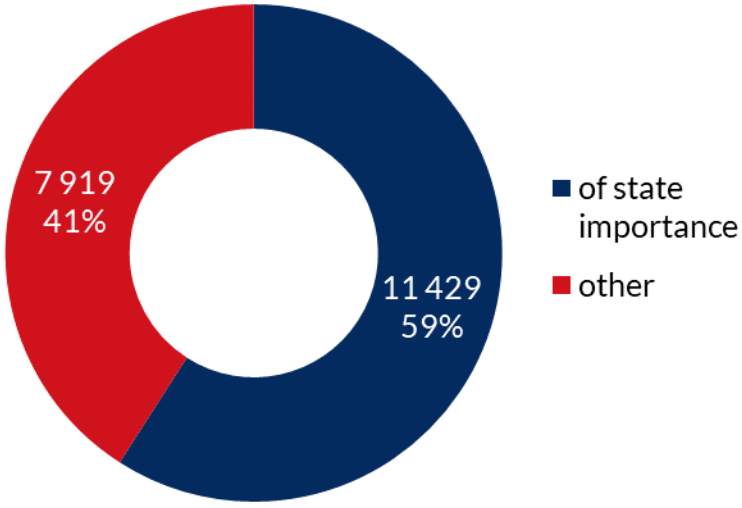
The length of the operated wide-gauge lines included railway lines of three managers: PKP LHS (394.65 km), PKP PLK (142.1 km) and Euroterminal Sławków (4.14 km).

Fig. 81. The structure of railway lines operated in Poland in 2018 by electrification level (in km)



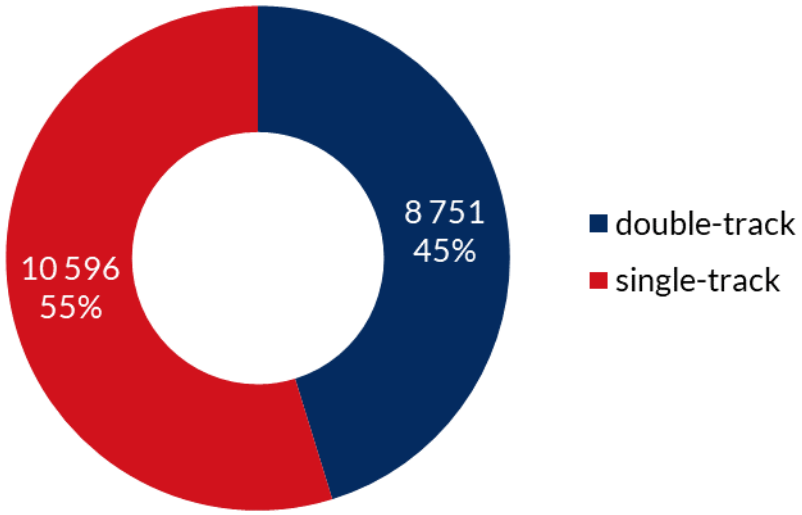
The length of electrified railway lines operated by all infrastructure managers in Poland increased by 39.6 km from 11,864.3 km in 2017 to 11,903.9 km in 2018. In the case of wide-gauge lines, only 14 km are electrified.

Fig. 82. The structure of railway lines operated in Poland in 2018 by the importance of the line (in km)



Lines of state importance in 2018 were managed solely by PKP PLK. They constitute 68% of lines operated by the company and 65% of all lines in Poland. The length of lines of state importance increased by 38 km in comparison to 2017.

Fig. 83. The structure of railway lines operated in Poland in 2018 by the number of tracks (in km)

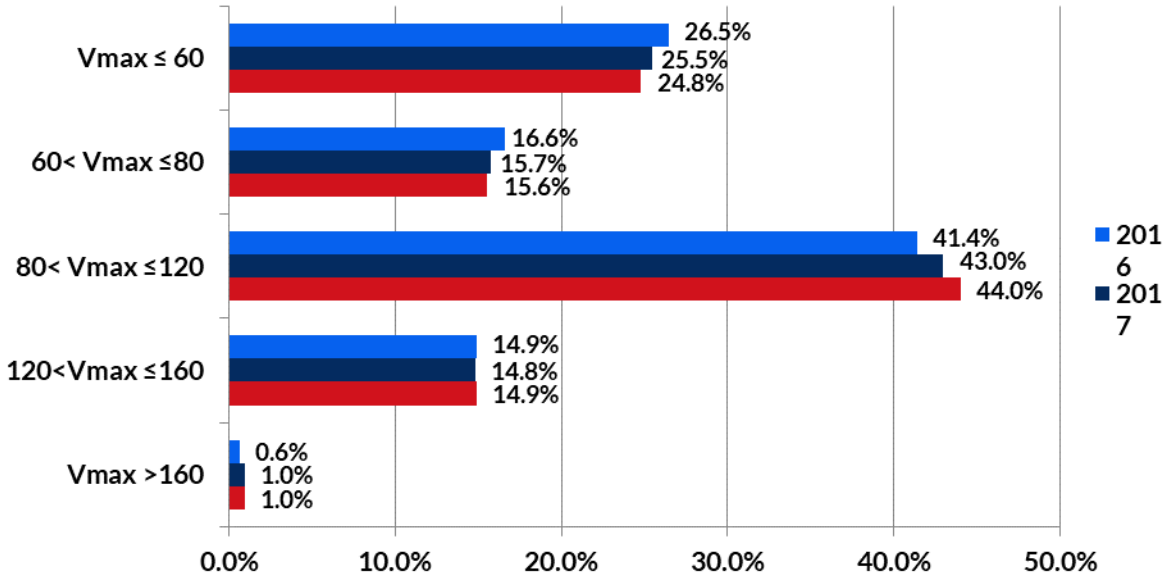


The total length of double-track lines at the end of 2018 amounted to 8,751 km, i.e. 11 km more than a year earlier. Single-track lines still account for the majority of railway lines in Poland, which in many cases is a source of problems with their capacity. A substantial majority (91%) of double-gauge lines is electrified, while non-electrified tracks prevail among single-track lines (63%). All wide-gauge lines in Poland are single-track lines.

The average density of railway lines was 6.19 km/100 sq. km in 2018 in comparison to 6.17 km/100 sq. km in 2017. The railway network density in the respective provinces is measured in km of lines per 100 sq. km of area in 2018 remained at a similar level. The highest growth in the length of lines was observed in the Podlaskie and Lubuskie Provinces, amounting to 26 km and 25 km, respectively. A slight increase was recorded in the length of railway lines in the Małopolskie and Opolskie Provinces – of 9 km each. A slight growth was observed in the Dolnośląskie Province – of 9 km of lines.

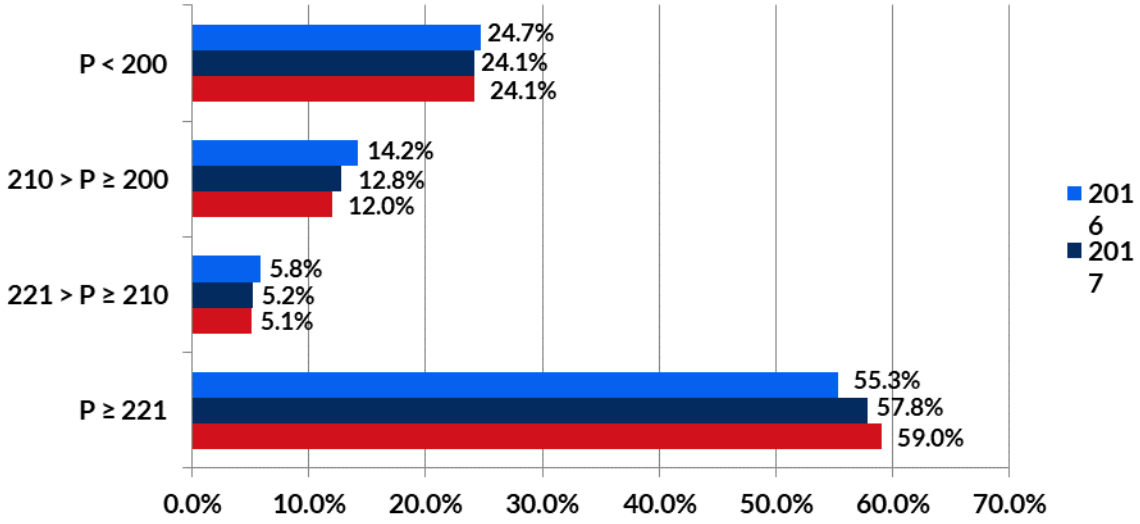
The highest density of lines was in the Śląskie Province (15.8 km/100 sq. km) and the lowest in the Podlaskie Province (3.8 km/100 sq. km). Among all provinces, the largest proportion of the railway network length is in the Śląskie Province (10.1%) and the lowest in the Świętokrzyskie Province (3.7%).

Fig. 84. The structure of railway tracks operated in Poland in the years 2016-2018 by accessible speed



In recent years accessible speeds of railway networks have increased. In 2018 the percentage of lines on which accessible speed falls within a range from 80 to 120 km/h grew by 1 percentage point. In the case of inter-province passenger connections, this is often insufficient for the provision of services. The required train speed for this type of connections is from 120 to 160 km/h. In Poland there is still a high proportion of tracks with the lowest parameters with regard to accessible speed. In 2018 tracks with a maximum speed of up to 60 km/h and in the range from 60 to 80 km/h accounted for, respectively, 24.8% and 15.6%.

Fig. 85. The structure of railway tracks operated in Poland in the years 2016-2018 by permissible axle load (in kN)



In recent years, due to modernisation works, the share of railway lines with a permissible axle load of 221 kN increased. In 2016 it exceeded 55% and in 2017 reached almost 58%. At the end of 2018 the share of railway tracks with a permissible axle load of 221 kN amounted to 59%.

Infrastructure with a permissible axle load below 200 kN accounted for 25% of the total track length in Poland. Such a high proportion of tracks with a low axle load poses a problem with regard to the provision of freight transport services.

4.5. Service facilities

In the amended Rail Transport Act on 30 December 2016, a new type of infrastructure was introduced: service facilities. These should be made available by operators on equal and non-discriminatory basis to all railway undertakings which apply for access to them. The facility's operator must draw up rules and regulations of access to the facility, a price list and statues of the facility.

The powers of the President of UTK in the area of supervising fair and non-discriminatory treatment of railway undertakings by the operators of service facilities in terms of access to these facilities include:

- controlling the accuracy of the facility's rules and regulations and their application;
- supervising the conclusion of agreements with service facility operators;
- controlling the accuracy of determining and collecting charges by operators and of the use of the service facility.

In 2018 the President of UTK considered complaints lodged by railway undertakings and carried out administrative proceedings related to the provision of access to service facilities;

- administrative proceedings regarding the rules of providing access to service facilities;
- administrative proceedings regarding charges for the use of service facilities;
- administrative proceedings related to complaints on access to service facilities regarding the provision of specific services;
- proceedings related to complaints lodged by railway undertakings on the dates of introducing new charges for access to passenger stations within the validity period of the current timetable;
- proceedings related to a failure to make available access tracks to a siding;
- proceedings related to the decommissioning of access tracks to a siding;
- cases related to incorrect classification of railway infrastructure.

In 2018, in line with Article 36h of the Rail Transport Act, the President of UTK kept the Register of Service Facilities. The data are entered in the register by service facilities operators through an app

specially designed by UTK enabling them to quickly transmit the required data through the Internet. An additional functionality of the app provides the possibility of identifying the location of a service facility on the map. The app can also be used to communicate to the President of UTK the address of the website with the rules and regulations of the facility. The app can be downloaded from https://roiu.utk.gov.pl/. The connection with the app is coded, which ensures full confidentiality of the transmitted data. As at the end of December 2018, 4,658 facilities were registered. The highest number of facilities, i.e. 3,368, is provided by the infrastructure manager PKP PLK. These include marshalling yards, passenger stations, terminal load tracks and storage tracks. Another operator, PKP S.A., provides access to 577 railway stations.

In December 2017 Commission Implementing Regulation (EU) 2017/2177 of 22 November 2017 on access to service facilities and rail-related services entered into force. The Regulation has been valid since 1 June 2019 (except for Article 2, which has applied since 1 January 2019). In 2018 all railway regulatory bodies of the European Union, including the President of UTK, prepared for the implementation of this Regulation. The provisions of Article 2 of Regulation 2017/2177 authorised regulatory bodies to release service facilities operators from the obligation to apply all or part of the Regulation's provisions. In 2018 regulatory bodies of the European Union developed common rules of granting such releases to service facilities operators who applied for them. The rules were published on UTK's website. The President of UTK did not receive any applications from operators to issue the release decisions in question.

4.6. Infrastructural investments and the interoperability of the rail system

2018 is one of the most dynamic periods in the implementation of infrastructural investments in Polish railway infrastructure, including the key National Railway Programme (NRP). The infrastructure manager intensified its efforts both in terms of singing new contracts and launching construction works, as well as in commissioning the projects completed by contractors. The tasks carried out in 2018 had an unprecedented scale – the value of NRP projects was PLN 10 bn, 1,300 km of tracks and 200 platforms were modernised, and approx. 1,000 turnouts were built. In 2018 key contracts were signed for:

- the construction of the ERTMS/GSM-R system infrastructure on railway lines;
- level 2 ERTMS/ETCS systems on line E 20 (Kunowice – Terespol);
- works on railway line No. 93 on the Trzebinia – Oświęcim – Czechowice-Dziedzice section;
- works on railway line E59 on the Poznań Główny - Szczecin Dąbie section;
- construction of the Szczecin Metropolitan Railways;
- works on railway lines Nos 97, 98, 99 97, 98 and 99 on the Skawina – Sucha Beskidzka – Chabówka – Zakopane section.

The construction works covered most of the country's area, reaching the highest intensity in southern Poland, Masovia, Greater Poland and the Zachodniopomorskie Province. The major works were completed on the ring rail line in Warsaw, Warsaw – Lublin railway line No. 7, Warsaw – Poznań E20 route, Kraków – Katowice E30 route and Warsaw – Grodzisk Mazowiecki line No. 447.

Due to the investments made, the operational parameters of railway lines, such as maximum speed and permissible axle load,have increased. These modernisations largely contribute to meeting the essential interoperability requirements specified in TSI for a given subsystem[8].

The intensified investments are associated with number of challenges related to keeping the required implementation rate of the works, access to building materials and changing economic conditions having an impact on the value contracts and the punctuality of their completion. They also contribute to

[8]Analysis based on PKP PLK's press releases.

passenger traffic hindrances, bypasses on key paths and the necessity to use substitute transport. The upgrades will increase the speed and comfort of travel and improve the capacity of railway lines.

In March 2018 PKP PLK signed an agreement for the network implementation of a GSM-R digital communications system. This interoperability standard guarantees improved quality and safety of connections and ensures data transmission for the purposes of level 3 ETCS system. Transition from the analogue to the digital system is a new quality in the Polish network. It brings change to the everyday work of thousands of train drivers, traffic controllers and other employees.

On the initiative of the President of UTK at the Ministry of Infrastructure in 2017, a working group was established with the task of developing transition rules from the analogue to the digital system. UTK frequently hosted a discussion forum with the participation of infrastructure managers, railway undertakings, sidings users, notified bodies and governmental institutions. During these meetings the basic assumptions of migration to GSM-R were discussed. UTK combined these measures with the postulates for ensuring the appropriate funding for railway undertakings to finance ERTMS equipment.

In mid-2018 UTK carried out a survey on the presence of GSM-R and ETCS equipment in trains. Its results contributed to formulating some postulates of the plan to implement GSM-R adopted in the form of a Supplement to the National implementation plan of the 'control-command and signalling' technical specifications for interoperability.

In 2018 the infrastructure manager PKP PLK was forced to finally settle with the European Commission investments within the 2007-2013 financial perspective (the so-called non-functioning projects). The main objective of the activities of UTK, which was included in the work on these processes, was to obtain a confirmation that projects which had not been completed yet met the essential requirements. This fact was appropriately confirmed by using compliance assessment procedures arising from national and European legislation. UTK's activities fully confirmed legal requirements relating to the necessity of inspecting the train detection system (track-side equipment for detecting the presence or absence of trains along the entire railway line or on a local section) or the obligations to issue declarations of conformity to type for products included in the catalogue contained in the Regulation of the Minister of Infrastructure and Development of 13 May 2014 on entry into service of specific types of railway structures, appliances and vehicles (Journal of Laws item 720).

The implementation of infrastructural investments, taking into consideration interoperability requirements, is connected with the creation of clear and transparent guidelines for railway traffic. A failure to follow the procedures for subsystems compliance assessment, or individual rail products, can have a negative impact on meeting the essential requirements by the respective subsystems and reaching the interoperability of the railway system. The growing number of entities carrying out various investments and of notified bodies poses a challenge in the context of meeting essential requirements. An increasing number of contractors involved in upgrades, on the one hand, has a positive impact on market competition. On the other, contracts are being performed by entities which do not specialise in the field of railway works and do not understand interoperability requirements, and due to the tendency to select contractors offering the lowest prices, they may not conform with these requirements. A similar tendency can be observed for notified bodies. In 2018 the highest number of notified bodies operated on the market, with 7 bodies carrying out EC verification in the areas of infrastructure and rolling-stock. Bodies from Italy and Sweden also attended the verification processes. A strong orientation towards price competition resulted in the fact that the verification process did not always reveal the best quality of these bodies.

The proper performance by contractors and notified bodies requires suitable supervision. For several years UTK has built systemic solutions for infrastructural investment supervision. UTK's main objective is to verify the main infrastructural investment and to check the performance of duties by the respective entities involved in the process through contracts (infrastructure managers, contractors, bodies). Checks are carried out for pending investments at infrastructure managers, and interoperability components are inspected.

In 2018 actions aimed at a detailed verification of the respective aspects of the investment were continued. Inspections were performed to find whether the respective TSI parameters were achieved. UTK inspectors also verified whether the confirmation of meeting interoperability requirements took place in the presence of notified bodies and whether these bodies were engaged from the beginning of the contract's implementation starting from the design phase. Certification of the investment already at the design phase eliminates subsequent problems related to the accuracy of the project documentation and the performance of additional construction works. Similarly to the previous years, supervisory activities were supported with information activities. In 2018 essential guidelines for contractors and infrastructure managers were communicated through the position of the President of UTK on the assessment of the compliance of structural subsystems and revising the position on certifying conformity to type. In addition, for the purpose of building good practices as part of the implementation of infrastructural investments, under the UTK Academy the first practical workshops for the contractors of railway lines upgrades. These measures will be continued in the following years, especially in the area of investment supervision and building awareness of the respective market participants of their responsibility during the implementation of the investment.

One of the main problems of the Polish railway system is adjusting the railway infrastructure to interoperability requirements in terms of the accessibility of railway stations, platforms and public zones for people with limited mobility. Despite the fact that the image of Polish railways is changing, and more and more railway stations are accessible for people with limited mobility, the situation still requires improvement. TSI PRM requirements have not been widely applied, and even in the case when entities claimed having observed them, the required checks with the participation of the notified body had not been performed. In 2018 PKP S.A. decided to carry out a full certification of railway stations and to evaluate in terms of meeting TSI PRM requirements. This decision was influenced by the position of the President of UTK containing the requirement to use TSI PRM for railway station-related projects and their certification. UTK will still work on building awareness of the obligations to apply the rules arising from TSI PRM also among all entities managing railway stations in the country, including local government entities which become owners of railway stations.

4.7. The capacity of the line railway infrastructure

The capacity of the railway lines infrastructure is one of the essential factors impacting the organisation of railway transport in the passenger and freight services. The diversity of transport and the presence of transport peaks requires the arrangers of train timetables to reconcile the needs of all railway traffic participants with the current capabilities of the railway infrastructure.

This chapter focuses on the locations and the issues which are not a result of revitalisation or modernisation works. On the basis of information communicated by licensed railway undertakings, the remaining problems with the throughput of the linear railway infrastructure can be divided into four categories relating to the technical and organisational aspects:

- capacity deficiencies during transport peaks;
- the operation of single-track lines;
- the condition of the railway infrastructure;
- working time limitations in traffic posts;

For passenger railway undertakings providing transport in highly urbanised areas, throughput deficiencies are a major obstacle to increasing the number of services during the morning and afternoon transport peaks. It is often connected with the accumulation of the local traffic and long-distance trains. The locations where the accumulation is observed are as follows:

- **Railway line No. 1: Warszawa Zachodnia – Katowice** (km 292.896 – 315.653), the Dąbrowa Górnicza Ząbkowice – Katowice Zawodzie section;
- **Railway line No. 2: Warszawa Zachodnia – Terespol** (km 11.753 – 40.595), the Warszawa Rembertów – Mińsk Mazowiecki section;
- **Railway line No. 3: Warszawa Zachodnia – Kunowice** (km 298.997 – 304.656), the Poznań Wschód – Poznań Główny section;
- **Railway line No. 8: Warszawa Zachodnia – Kraków Główny** (km 262.098 – 319.440), the Kozłów – Kraków Główny section;
- **Railway line No. 9: Warszawa Wschodnia – Gdańsk Główny** (km 10.100 – 148.226), the Warszawa Praga – Działdowo section;
- **Railway line No. 137: Katowice – Legnica** (km 0.000 – 6.166), the Katowice – Chorzów Batory section;
- **Railway line No. 139: Katowice – Zwardoń** (km 0.000 – 16.970 km), the Katowice – Tychy section;
- **Railway line No. 271: Wrocław Główny – Poznań Główny** (km 0.000 – 2.048), the Wrocław Główny – Grabiszyn junction signal post section.

Infrastructural limitations also have an impact on the fluency of railway traffic, related to the changing current needs of customers in the specific railway line sections where single-tracks is now insufficient. Capacity deficiencies arising from such infrastructural limitations have been identified on the following lines:

- **Railway line No. 15: Bednary – Łódź Kaliska** (km 8.840 – 57.405), the Łowicz Przedmieście – Zgierz section;
- **Railway line No. 16: Łódź Kaliska – Kutno**;
- **Railway line No. 25: Łódź Kaliska - Dębica** (km 0.005 – 1.765 and km 260.209 – 321.451), the Łódź Kaliska – Łódź Kaliska Towarowa and Ćmielów k/Tarnobrzegu – Dębica Towarowa sections;

- **Railway line No. 27: Nasielsk – Toruń Wschodni** (km 0.000 – 87.792), the Nasielsk – Sierpc section;
- **Railway line No. 33: Kutno – Brodnica** (km 57.631 – 87.792), the Płock Trzepowo – Sierpc section;
- **Railway line No. 137: Katowice – Legnica** (km 70.150 – 79.619 and 177.220 – 283.905), the Kędzierzyn-Koźle Zachód – Twardawa and Kamieniec Ząbkowicki – Legnica section;
- **Railway line No. 276: Wrocław Główny – Międzylesie** (km 36.987 – 71.886), the Strzelin – Kamieniec Ząbkowicki section;
- **Railway line No. 286: Kłodzko Główne – Wałbrzych Główny** (km 0.000 – 14.067), the Kłodzko Główne – Ścinawka Średnia section;
- **Railway line No. 288: Nysa – Brzeg**;
- **Railway line No. 309: Kłodzko Nowe – Kudowa Zdrój**;
- **Railway line No. 311: Jelenia Góra – Jakuszyce** (km 13.316 – 28.438), the Piechowice – Szklarska Poręba Górna section;
- **Railway line No. 353: Poznań Wschód – Skandawa** (km 134.706 – 139.092), the Toruń Główny – Toruń Wschodni section;
- **Railway line No. 355: Ostrów Wielkopolski – Grabowno Wielkie**;
- **Railway line No. 356: Poznań Wschód – Bydgoszcz Główna** (km 30.103 – 51.375), the Sława Wielkopolska – Wągrowiec section.

The capacity is influenced by the very condition of the infrastructure, which often does not enable regular transport with a high commercial speed. A very poor condition of the railway infrastructure was identified in the following sections:

- **Railway line No. 12: Skierniewice – Łuków**;
- **Railway line No. 14: Łódź Kaliska – Tuplice** (km 271.551 – 340.532), the Głogówko – Żagań section;
- **Railway line No. 100: Kraków Mydlniki – Gaj**;
- **Railway line No. 131: Chorzów Batory – Tczew** (km 5.900 – 13.100 and 16.700 – 22.870), the Chorzów Batory – Chorzów Stary and Bytom – Bytom Północny section;
- **Railway line No. 138: Katowice – Oświęcim** (km 97.788 – 105.490), the Imielin – Nowy Bieruń section;
- **Railway line No. 164: Chorzów Batory – Ruda Kochłowice**;
- **Railway line No. 215: Laskowice Pomorskie – Bąk** (km 3.679 – 44.054), the Dąbrowy – Szlachta section;
- **Railway line No. 282: Miłkowice – Jasień** (km 61.501 – 102.407), the Węgliniec – Żary section;
- **Railway line No. 286: Kłodzko Główne – Wałbrzych Główny** (km 21.664 – 51.432), the Nowa Ruda – Wałbrzych Główny section;
- **Railway line No. 771: Świdnica Miasto – Świdnica Przedmieście**.

Railway undertakings voice their concerns as to the railway traffic throughput relating to working time organisation in traffic regulation posts in specific railway line sections. Such issues are found on the following lines:

- **Railway line No. 39: Olecko – Suwałki** (km 0.644 – 37.822), the Olecko – Papiernia section;
- **Railway line No. 41: Ełk – Gołdap** (km 0.000 – 27.486), the Ełk – Olecko section;
- **Railway line No. 208: Działdowo – Chojnice** (km 130.363 – 200.377), the Laskowice Pomorskie – Chojnice section;
- **Railway line No. 211: Chojnice – Kościerzyna**;
- **Railway line No. 223: Czerwonka – Ełk** (km 0.212 – 34.078), the Czerwonka – Mrągowo section;
- **Railway line No. 281: Oleśnica – Chojnice** (km 160.056 – 235.135), the Gniezno – Nakło nad Notecią section;
- **Railway line No. 353: Poznań Wschód – Skandawa** (km 366.371 – 381.265), the Korsze – Skandawa section;
- **Railway line No. 377: Gniezno Winiary – Sława Wielkopolska**.

4.8. The capacity ofservice facilities

On the basis of information communicated by licensed railway undertakings, problems with the capacity of service facilities should be verified on a case-by-case basis. Below are examples of locations which have a substantial impact on the performance of transport services in Poland from the perspective of the domestic railway traffic.

- **Dąbrowa Górnicza Towarowa** – currently the main local shunting station for regulating the traffic of freight trains along the North-South axis and for the purposes of the Katowice Steelworks. Entities operating railway transport services through the station point to the lack of additional tracks enabling unhindered arrivals and dispatches of trains;
- **Gdańsk Port Północny** – a railway station which regulates the traffic of trains to serve the sea port in Gdańsk. Railway undertakings indicate difficulties with entering the station due to an insufficient number of station tracks and the observed high rate of train traffic, especially to the area of the DCT container terminal;
- **Gdańsk Zaspa Towarowa** – a railway station which regulates the traffic of trains near the sea port in Gdańsk. Due to the poor condition of railway infrastructure, there are no stabling tracks for traction units;
- **Gdynia Port** – a railway station regulating the traffic of trains to serve the sea port in Gdynia. Railway undertakings report the insufficient number of additional tracks for the efficient port handling and for train shunting;
- **Kamieniec Ząbkowicki** – a railway station which regulates train traffic in the southern path of the Dolnośląskie Province near the border with the Czech Republic, used for shunting trains loaded with aggregate and for handling the nearby sidings. Railway undertakings indicate the lack of free station tracks enabling traction change and train set division;
- **Katowice** – a railway station regulating train traffic at the intersection of two international transport corridors: RFC5 and RFC8, with handling local and long-distance passenger trains and also selected freight trains. An obstacle limiting the capacity of the station is the crossing of railway line No. 139 and No. 137 on the western departure tracks, causing several minutes' waiting time for the entry signals. Furthermore, freight trains running through the station may block switches, making it impossible for passenger trains to enter the station;
- **Katowice Muchowiec** – previously, the main marshalling yard for the central part of today's Metropolitan Association of Upper Silesia and Dąbrowa Basin, regulating train traffic for the

purposes of the hard coal mines located near the station. Railway undertakings postulate the reconstruction of the station tracks to handle the "Murcki-Staszic" Hard Coal Mine still in operation and for trains dispatched to Zebrzydowice, Kraków, Dąbrowa Górnicza Towarowa and Gliwice;

- **Kędzierzyn-Koźle** – a railway station which regulates train traffic along the RFC8 international transport corridor in the Opolskie Province. Railway undertakings point to capacity deficiencies at the entrance and departure from the station area. It is suggested to extend the sorting tracks to 750 m in each direction to increase the traffic throughput and traction change options for trains running towards the Twardawa station;
- **Łódź Widzew** – a railway station which regulates train traffic in the Łódź Node for trains running towards the Łódź Fabryczna station, railway undertakings point out to the location of turnout No. 3 near the Łódź Niciarniana passenger stop, which makes it impossible for two trains to run simultaneously between the Łódź Widzew and Łódź Fabryczna stations;
- **Rudziniec Gliwicki** – a railway station which regulates train traffic along the RFC8 international transport corridor in the western part of the Śląskie Province. Railway undertakings indicate the lack of free station tracks due to the lack of a free passage towards the Zdzieszowice Coking Plant and the Chałupki station;
- **Rybnik Towarowy** – a local station of the Rybnik Coal Mining District which regulates the traffic of freight trains running between the Czech Republic and northern Poland. Railway undertakings indicate the closure of eight station tracks, which hinders shunting operations
- **Sosnowiec Jęzor** – the largest local shunting station in the Dąbrowa Coal Basin generating most of train traffic operated by DB Cargo and CTL Logistics. Railway undertakings point to the lack of station tracks to streamline shunting at the station;
- **Warszawa Praga** – a local shunting station and a traffic post of railway line No. 9 linking northern Poland with Warsaw. Railway undertakings identify collisions of timetables for trains heading to Legionowo and Warsaw;
- **Warszawa Rembertów** – a junction station regulating train traffic in the eastern part of Warsaw. Railway undertakings point to issues with train arrivals to the station and traffic regulation during transport peaks;
- **Warszawa Zachodnia** – a railway station regulating train traffic in the western part of Warsaw. Railway undertakings indicate problems with train arrivals to the station both from cross-city lines and from the Warszawa Włochy Station and the Warszawa Aleje Jerozolimskie junction signal box;
- **Wrocław Główny** – the largest railway station in the Dolnośląskie Province. Railway undertakings point to the insufficient number of platform edges to accommodate the current needs of passengers and the transport capacities of railway undertakings.
- **Zabrzeg Czarnolesie** – a local shunting station located near the axis of the RFC5 international transport corridor in southern Śląskie Province. The station regulates train traffic heading to Bielsko-Biała, Czechowice-Dziedzice, Dąbrowe Górnicza Towarowa, Jaworzno Szczakowa, Rybnik Towarowy and southern border with the Czech Republic. Railway undertakings suggest the reconstruction or revitalisation of station tracks in the area of reception, sorting and departure sidings.
- **Zgierz** – a railway station regulating train traffic between Łódź and the northern part of the Łódzkie Province. Railway undertakings identify a low number of platform edges and colliding train routes arriving to / departing from the Widzew Station with trains arriving to / departing

from Łódź Kaliska. The station may be of high significance for train traffic after building a tunnel connecting the Łódź Fabryczna Station with Łódź Kaliska and Łódź Żabieniec Stations.

4.9. PKP PLK's investments in 2018

In 2018 PKP PLK continued the implementation of investment projects included in the National Rail Programme until 2023, which was adopted in September 2015, and the last revision was adopted by way of Resolution of the Council of Ministers No. 181/2018 of 6 December 2018. The main objective of the Programme is to strengthen the role of railway transport in the integrated transport system of the country by creating a seamless, modern network of railway lines. This arises directly from the "Strategy for Transport Development by 2020 (with a perspective to 2030)" in the field of railway transport. NRP assumes the maximum use of EU funds for funding projects under the Infrastructure and Environment Operational Programme (IEOP) for the years 2014-2020, the "Connecting Europe" Facility (CEF), the Eastern Poland Operational Programme (EPOP) for the years 2014-2020 and the Regional Operational Programmes (ROPs) for 2014-2020. Under NRP, in addition to EU funds, the disbursement of national public (State budget) funds was also planned, with the contribution of the company's own funds and funds from the issue of bonds. An important expenditure funding source are European Investment Bank (EIB) loans.

The investment's implementation and settlement under NRP is the same as the EU financial perspective for 2014-2020 on the basis of the n+3 principle, which means that the expenditures eligibility period ends on 31 December 2023. The value of expenditures from the NRP core list, adjusted for the refunds connected with projects funded from the 2007-2013 perspective, is over PLN 66 bn.

4.10. The implementation of the National Railway Programme

In 2018 construction works performed throughout the country on the basis of agreements concluded in the previous years were continued. The key activities related to projects included in NRP were also associated with conducting tendering procedures to select contractors for the implementation of projects and for signing new agreements.

At the end of the fifth year of the current EU perspective, out of the total NRP amount of PLN 66.4 bn, pending or completed projects accounted for nearly 62%. In addition, more than PLN 7 bn were pending tendering procedures.

Under the Investment Plan for 2018 more than 200 investment projects were accepted for implementation. The most important group in the Investment Plan for 2018 were projects funded under the CEF and IEOP. The performance of the Investment Plan for 2018 was over PLN 9.0 bn.

Tab. 28.PKP PLK's major investments in 2018

No.	project	programme	expenditures planned for 2018
1.	Works on railway line No. 7 Warszawa Wschodnia Osobowa – Dorohusk in the Warsaw – Otwock – Dęblin – Lublin section, stage I	IEOP	**PLN 770.7 m**
2.	Modernisation of railway line E30, the Zabrze – Katowice – Kraków section, stage IIb	CEF	**PLN 471.1 m**
3.	Works on railway line E 20, the Warsaw – Poznań section, other works, the Sochaczew – Swarzędz section, the LCS Konin area	CEF	**PLN 336.9 m**
4.	Works on railway line E59, the Wrocław – Poznań section, stage IV, section between the border of the Dolnośląskie Province and Czempiń	CEF	**PLN 303.0 m**
5.	Works on railway line E 20, the Warsaw – Poznań section, other works, the Sochaczew – Swarzędz section	CEF	**PLN 269.0 m**

6.	Modernisation of railway line No. 354 Poznań Główny POD-Chodzież-Piła Główna	ROP	**PLN 268.5 m**
7.	Works on line E75, the Sadowne - Czyżew section, with the remaining works on the Warszawa Rembertów - Sadowne section	CEF	**PLN 261.4 m**
8.	Works on railway line E 30, the Kraków Główny Towarowy – Rudzice section, with the extension of agglomeration line tracks	CEF	**PLN 244.1 m**
9.	Modernisation of railway line No. 273, the Głogów – Zielona Góra – Rzepin – Dolna Odra section, with interchange tracks No. 821 and 822	Budget	**PLN 189.7 m**
10.	Improving safety through the development of new turnouts of an improved structural standard, stage II	IEOP	**PLN 188.8 m**

The subject-matter of individual investment projects carried out by PKP PLK includes comprehensive exchange of railway superstructure, railway traffic control devices and (traction and non-traction) electrical power engineering, as well as modernization of level crossings and their removal and replacement with two-level crossings.

As part of the investment plan for 2018, along the railway line managed by PKP PLK, investment works were carried out covering in particular their modernisation, revitalisation or construction of, i.a., 1,267.9 km of tracks, 380 level crossings and 113 rail and road viaducts.

As a result of the tender procedures performed for projects included in NRP, in 2018 agreements for a net value of PLN 9.56 bn were signed. Most of them, i.e. 67%, concerned construction works. At the same time, more than 80% were agreements for programmes implemented with EU funds under the 2014-2020 perspective (CEF, IEOP 14-20, EPOP, ROP 14-20).

Tab. 29. Major agreements signed in 2018 under NRP

No.	project name	programme	contract name	net value of the agreement with the Economic Operator
1.	The construction of the ERTMS/GSM-R system infrastructure within the ERTMS National Implementation Plan	IEOP 14-20	Part No. 1 - Implementation of the GSM-R system	**PLN 2,268.06 m**
2.	ERTMS-ETCS system development along the lines of the TENT-T core network	CEF 14-20	Level 2 ERTMS-ETCS system development on the E20 Kunowice – Terespol line (excluding the Warsaw node)	**PLN 691.10 m**
3.	Railway line 93 Trzebinia – Oświęcim – Czechowice-Dziedzice	IEOP 14-20	Developing project documentation and performing construction and assembly works	**PLN 495.00 m**
4.	E59 Poznań Główny - Szczecin Dąbie	CEF 14-20	The redevelopment of track layouts with auxiliary infrastructure on railway line E59, the Rokietnica – Wronki section	**PLN 478.97 m**
5.	The construction of the Szczecin Metropolitan Railways with the use of the existing section of railway lines No. 406, 273 and 351	IEOP 14-20	Works design and performance. Task A "Modernisation of railway line No. 406 on the Szczecin Główny – Police section".	**PLN 390.09 m**
6.	Railway line 97, 98, 99 Skawina – Sucha Beskidzka – Chabówka – Zakopane	IEOP 14-20	The modernisation of railway line No. 99 Chabówka - Zakopane	**PLN 330.10 m**
7.	E59 Poznań Główny - Szczecin Dąbie	CEF 14-20	The redevelopment of track layouts with auxiliary infrastructure on railway line E59, the Poznań Główny - Rokietnica	**PLN 292.20 m**

No.	project name	programme	contract name	net value of the agreement with the Economic Operator
8.	Railway line 15, 16 Łódź Kaliska – Zgierz – Kutno	Budget	The performance of design and construction works on railway lines Nos. 15 and 16, the Łódź Kaliska - Zgierz section, from km 56.773 to km 66.664 of railway line No. 15 and from km 12.980 to 14.204 of railway line No. 16	**PLN 219.22 m**
9.	The technical upgrade of passenger service infrastructure, stage III, Rzeszów Główny	IEOP 14-20	The technical upgrade of passenger service infrastructure (including adjustment to TSI PRM requirements), stage III - Rzeszów Główny	**PLN 204.87 m**
10.	E59 Poznań Główny - Szczecin Dąbie	CEF 14-20	The design and development of CCS installations and railway telecommunications network devices along the Słonice – Szczecin Dąbie section (LCS Stargard)	**PLN 201.21 m**

**The value includes maintenance*

4.11. Fees for access to infrastructure

In order to improve the conditions of railway infrastructure management and the use of railway infrastructure, the Council of Ministers, by way of Resolution of 16 January 2018 No. 7/2018, adopted a multiannual programme called "Assistance in financing the costs of railway infrastructure management, including its maintenance and repairs until 2023", which is to provide financial resources for the maintenance and repair of railway lines.

On 21 December 2018 a multiannual agreement was signed with PKP PLK for the implementation of the aforementioned Programme. Pursuant to Article 31 (3) of Directive 2012/34/EU, by 16 June 2015 the Commission must adopt measures setting out the modalities for the calculation of the cost that is directly incurred as a result of operating the train. Taking Directive 2012/34 into account, Commission Implementing Regulation (EU) 2015/909 was passed, binding in its entirety and directly applicable in all Member States as of 1 August 2015.

In line with Directive 2012/34, the infrastructure manager may decide to gradually adjust to these rules for a period of up to four years after the entry of secondary legislation into force, with a reservation stated in Article 9 of Regulation 2015/909 obligating the infrastructure manager to present to the regulatory body not later than until 3 July 2017 its methodology of calculating direct costs and, in applicable cases, a plan for the gradual implementation of the regulations.

Guided by the power granted by way of Article 31 (3) of Directive 2012/34, infrastructure managers made a decision to gradually introduce the principles of calculating direct costs as referred to in Regulation 2015/909, informing the President of UTK thereof. Preparing the draft price list for the 2018/2019 timetable, infrastructure managers, including PKP PLK, declare the complete implementation of rules arising from the EU Directive and Regulation regarding the calculation of costs directly incurred as a result of train operation.

The company PKP PLK developed a new methodology of determining rates for access to infrastructure based on Regulation 2015/909 and amended domestic regulations in force since 12 April 2017 (Regulation of the Minister of Infrastructure and Construction on providing access to railway infrastructure). Within the minimum access to infrastructure, the infrastructure manager collects not only the basic fee but also, starting from the 2018/2019 train timetable, it started collecting the shunting fee. The fee is calculated by the infrastructure manager for a specific planned train passage (with a specified gross weight and traction type) along a given path.

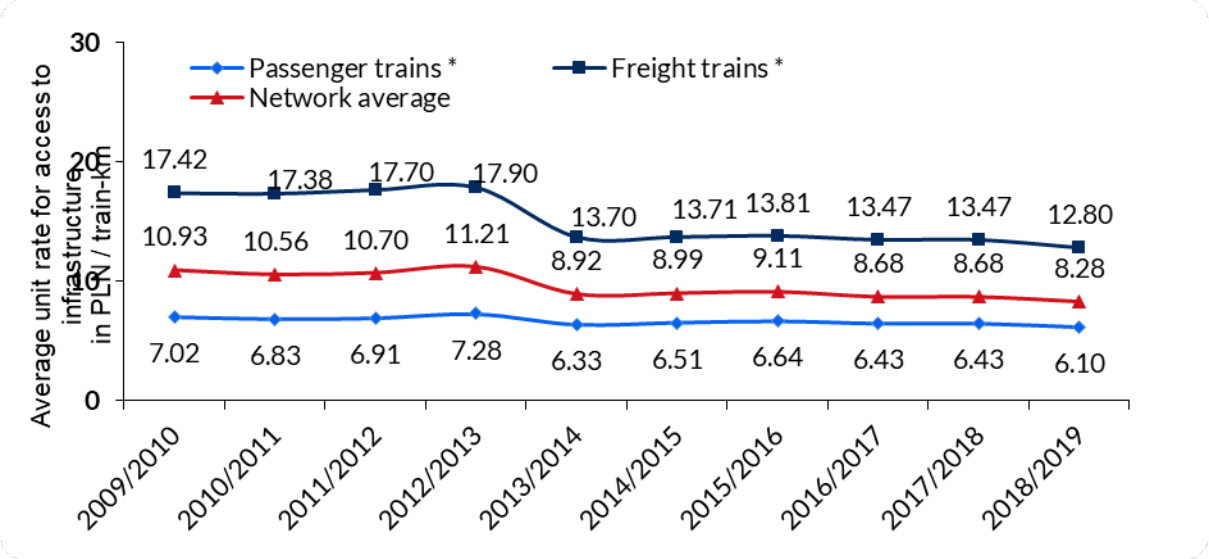
With the 2018/2019 train timetable, PKP PLK introduced an additional component related to the type of transport services provided, the so-called mark-up (in order to receive a refund of all incurred costs). The mark-up will cover the transport of freight trains with a weight of 660 tonnes or more (excluding intermodal trains). The rate was set at PLN 1.28 per train-km.

The infrastructure manager (PKP PLK) was obligated by the President of UTK to return all or part of the mark-up to railway undertakings if the manager reaches revenues from fees for access to infrastructure higher than planned in the draft price list. The infrastructure manager specified in the network statement the rules of monitoring revenues from fees for access to infrastructure, the manner of estimating potential differences between the actual and planned amounts and the manner of settling overpayments with railway undertakings. Every quarter, the infrastructure manager informs the President of UTK on the revenues from access to infrastructure.

PKP PLK rates are the most important for market development, as they cover the whole country and concern both freight and passenger transport. For the purposes of balancing its operations, PKP PLK concluded an agreement with the Ministry of Infrastructure and Development for State budget subsidising of the costs of railway infrastructure management and protection.

Fig. 86. *network average for passenger and freight trains on the basis of data contained in the infrastructure manager's application

Fig. 87. The average cost of train-kilometres for the minimum access to PKP PLK's infrastructure from the 2009/2010 to the 2018/2019 timetable



* network average for passenger and freight trains on the basis of data contained in the infrastructure manager's application

The average network rate for the minimum access to infrastructure managed by PKP PLK dropped from PLN 8.68/train-km in the 2017/2018 timetable to PLN 8.28/train-km in the 2018/2019 timetable. Starting from the 2013/2014 train timetable, the average network rate for minimum access to infrastructure managed by PKP PLK for all trains decreased and stabilised at a lower rate.

4.12. Border crossings

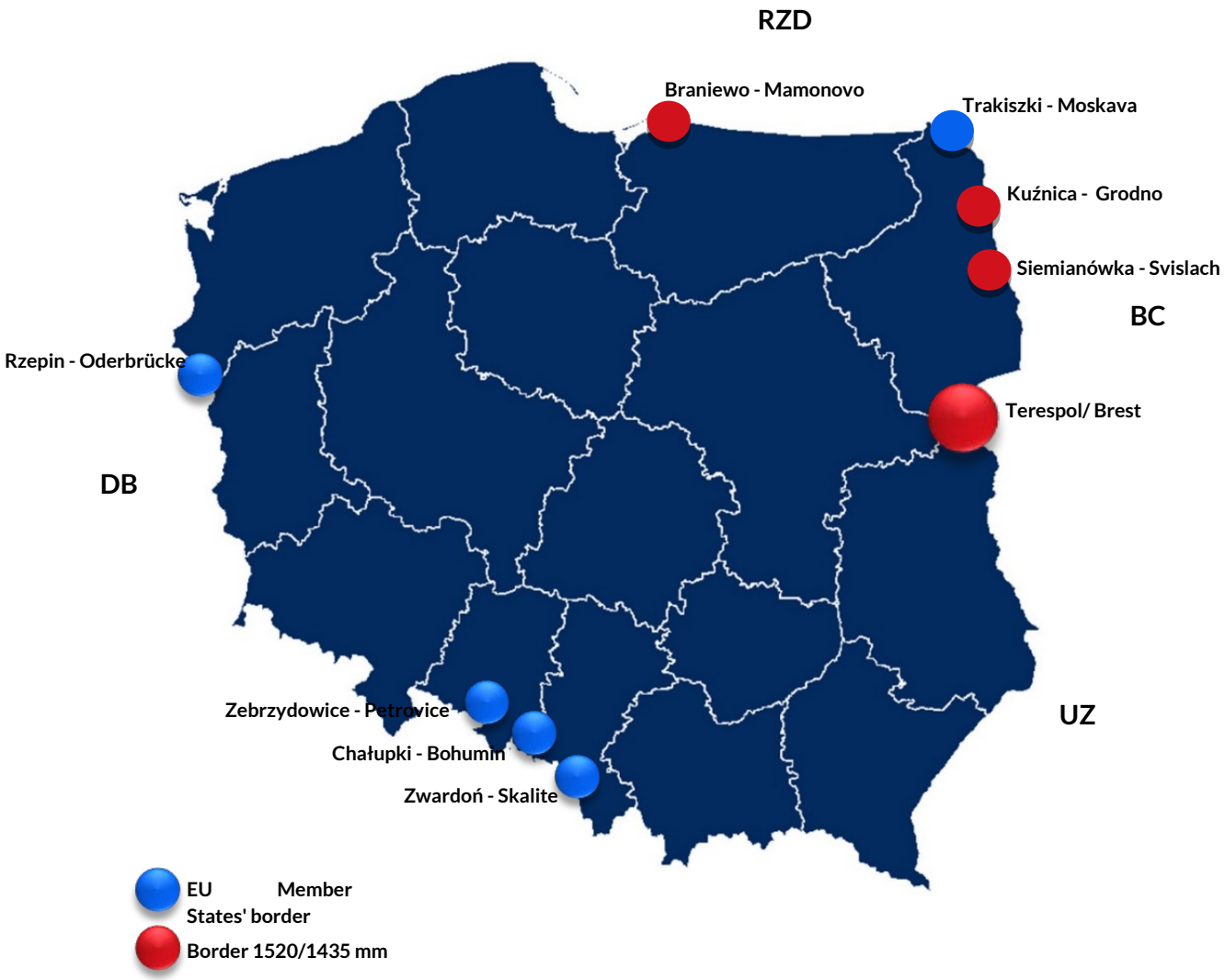
Due to the small share of passenger transport in cross-border traffic, the analysis of border crossings was based on freight traffic.

With regard to the location, the type of freight transport services provided and technical and infrastructural parameters of the respective crossings, two categories can be identified:

- stations located on the eastern border and in northern Poland, bordering Belarus & Russia – 1520/1435 mm;
- crossings with other EU countries arranged in parallel of altitude (Germany) or meridionally (Slovakia, the Czech Republic).

The basic function of first-category crossing is the transshipment of freight (in bulk or in containers) between wagons, and from wagons to the yard and back to wagons. The transshipment is necessary due to the difference in track width (1435/1520 mm). Second-category crossings are serviced by trains providing export & important and transit transport services.

Fig. 88. The map of selected border crossings

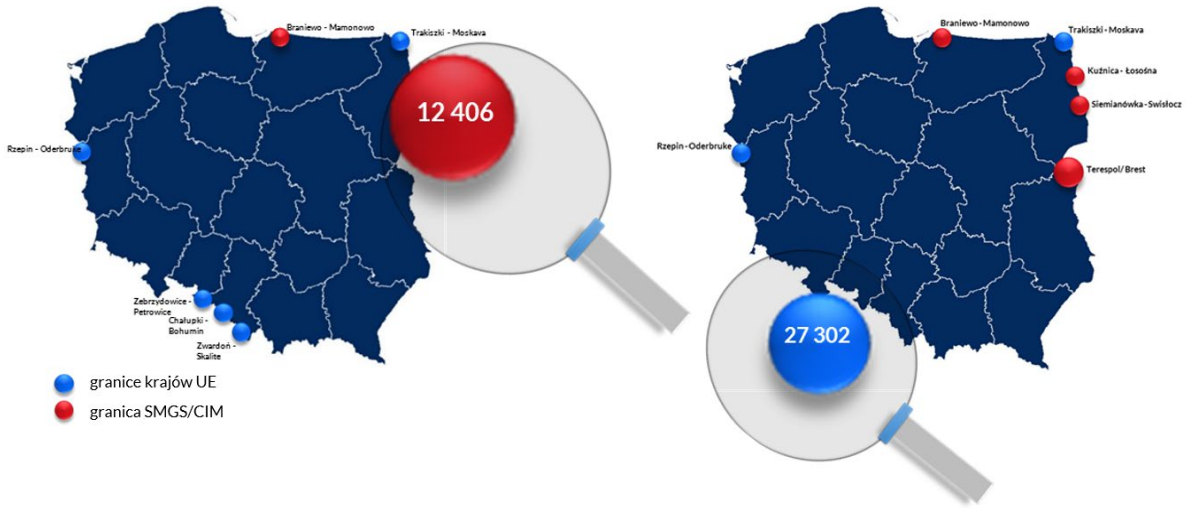


The highest traffic of international trains was recorded at the Polish-Czech Zebrzydowice – Petrovice crossing. 14,414 train paths were completed from these stations. Over 12,000 were completed from the Chałupki – Bohumin station at the border with the Czech Republic and Rzepin – Oderbrücke at the Polish-German border. At the border with Belarus three main crossings (Terespol – Brest, Siemianówka – Svislach and Kuźnica Białostocka - Grodno) generated a traffic covering 12,800 cross-border paths. The Chałupki – Bohumin and Rzepin – Oderbrücke crossings generated a similar level of light engines traffic: 2,603 and 2,795, respectively. The data present paths served only by Polish railway undertakings.

Tab. 30. The number of train paths completed on selected border crossings in 2018

border crossing	country	total paths	light engines	the share of light engines in total transport
Terespol - Brest	Belarus	5,958	62	1%
Siemianówka - Svislach	Belarus	2,474	51	2%
Kuźnica Białostocka - Grodno	Belarus	3,974	37	1%
Trakiszki - Moskava	Lithuania	879	203	23%
Braniewo - Mamonovo	Russia	3,215	202	6%
Zwardoń - Skalite	Slovakia	136	66	49%
Muszyna - Plavec	Slovakia	2,771	634	23%
Zebrzydowice - Petrovice u Karvine	the Czech Republic	14,414	1,428	10%
Chałupki - Bohumin	the Czech Republic	12,888	2,603	20%
Rzepin - Oderbrücke	Germany	12,028	2,795	23%

Fig. 89. The number of accumulated paths launched at border crossings with the Czech Republic and Belarus



Tab. 31. Basic parameters of selected border crossings

border crossing	V tech. [km/h]	max. train length [m]	max. axle load [T]	traction network	line classification
Terespol - Brest Centr. - 1520 mm	40	750	25	non-electrified	D3
Terespol - Brest Centr. - 1435 mm	40	600	22.5	electrified	D3
Siemianówka - Svislach - 1520 mm*	50/70	750	22.9	non-electrified	D3
Siemianówka - Svislach - 1435 mm	40/70	600	22.5	non-electrified	D3
Kuźnica Białostocka - Grodno	40/60	600	21	non-electrified	C3
Trakiszki - Moskava	60	600	21	non-electrified	C3
Braniewo - Mamonovo 1520 mm	50	700	23.5	non-electrified	D3
Braniewo - Mamonovo 1435 mm	70	700	20	non-electrified	C3
Zwardoń - Skalite	70	350	22.5	electrified	D4
Zebrzydowice - Petrovice u Karvine	120	650	22.5	electrified	D3
Chałupk - Bohumin	90/100	650	22.5	electrified	D4
Rzepin - Oderbrücke	160/100	620	22.5	electrified	D3
* - Siemianówka – Svislach the arrival of one train with a length of 820 m is permitted per 24 hrs					

Source: prepared by UTK based on data provided by PKP PLK

Tab. 32.Transport connections operated from Polish border stations

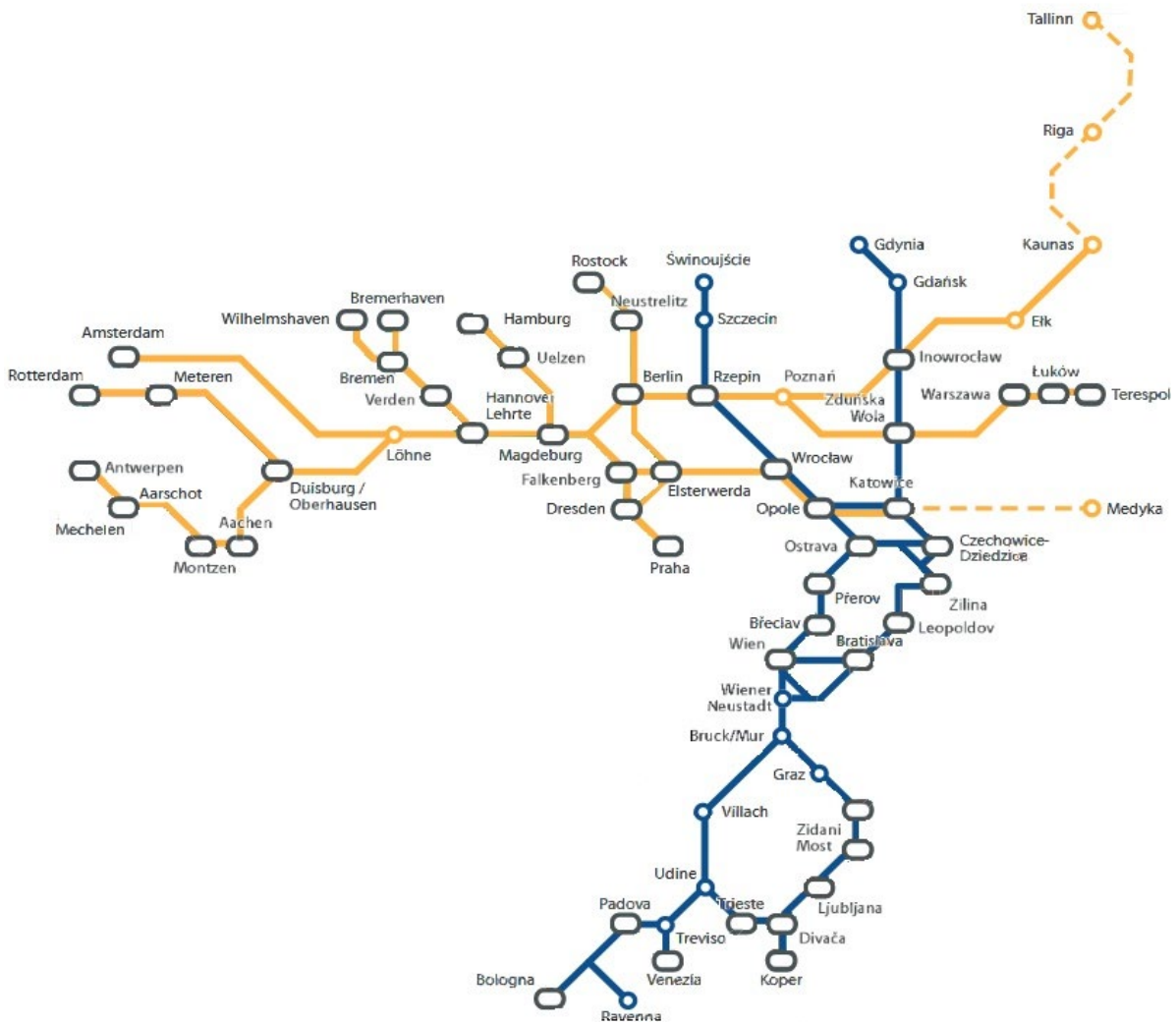
Border station	Destination/origin station
Braniewo	Chruściel Elbląg Koziegłowy Olsztyn Zajączkowo Tczewskie
Chałupki	Dąbrowa Górnicza Gdańsk Port Północny Medyka Towarowa Rybnik Szczecin Port Centralny Zdzieszowice
Kuźnica Białostocka	Białystok Łapy Tarnów Filia Tłuszcz
Małaszewicze	Łódź Olechów Połaniec Rzepin Warszawa Praga Zebrzydowice
Muszyna	Kraków Prokocim Nowy Sącz Rzeszów Staroniwa Tarnów Filia
Rzepin	Gądki Gliwice Port Kutno Małaszewicze Włocławek Brzezie
Siemianówka	Bielsk Podlaski Mielec Strzelce Opolskie Szczecin
Trakiszki	Jęzor Centralny Suwałki
Zebrzydowice	Czechowice Dziedzice Mszczonów Korsze Kraków Nowa Huta Pawłowice Górnicze
Zwardoń	Czechowice Dziedzice

4.13. RFC5 and RFC8 corridors in Poland

Poland is crossed by the route of International freight transport corridors RFC5 and RFC8 encompassing sections, which should be adjusted to efficient freight transport services:

- RFC5 Baltic Sea – Adriatic Sea
  - Ostrava – Chałupki – Opole – Wrocław – Rzepin – Szczecin – Świnoujście
  - Ostrava – Zebrzydowice – Katowice – Inowrocław – Gdańsk – Gdynia
  - Zilina – Zwardoń – Katowice – Zduńska Wola – Inowrocław – Gdańsk – Gdynia
- RFC8 North Sea – Baltic Sea
  - Berlin – Rzepin – Poznań – Inowrocław – Ełk – Kaunas
  - Berlin – Rzepin – Poznań – Zduńska Wola – Warsaw – Terespol
  - Elsterwerda – Wrocław – Opole – Katowice – Kraków – Medyka

Fig. 90. European railway freight transport corridors in Poland



Source: http://www.rne.eu

Corridor RFC 5 – Adriatic Sea – Baltic Sea

The current NRP perspective envisages the works on railway line E65 (the Śląskie and Pomorskie Provinces) and railway line No. 131 Chorzów Batory – Tczew with a fundamental significance for freight traffic between Polish sea ports and southern Europe. The NRP core list also covers modernisation projects of railway line E59 between Wrocław and Szczecin, and C-E 59 in the Wrocław Brochów / Wrocław Grabiszyn – Głogów section.

Most of the projects included in the NRP core list focus on improving the technical parameters of passenger railway transport, while the standby list contains a number of projects referring to freight transport performance. Projects streamlining freight traffic along the RFC 5 corridor include:

- works on railway line C-E 59, the Wrocław – Kamieniec Ząbkowicki section;
- works on railway line C-E 59, the Kamieniec Ząbkowicki – Międzylesie section;
- works on railway line C-E 59, the Kędzierzyn Koźle – Chałupki section;

Within the RFC 5 international corridor, the operating conditions such as train length, maximum axle load and improved throughput must be met by the following railway line sections:

- railway line No. 136 Opole Groszowice – Kędzierzyn Koźle;
- railway line No. 1 Łazy – Wyczerpy junction signal post;
- railway line No. 146 Chorzew Siemkowice – Wyczerpy junction signal post;
- railway line No. 131 Chorzów Batory – Tczew;
- Tczew – Pruszcz Gdański – Gdynia Główna;
- Maksymilianowo – Kościerzyna – Gdynia Główna.

The above-described parameters will not be met on sections joining the Metropolitan Association of Upper Silesia and Dąbrowa Basin with border crossings in Zebrzydowice, Chałupki and Cieszyn (with the Czech Republic) and Zwardoń (with Slovakia). The development of intermodal transport requires clearing transport corridors connecting sea ports in the Tricity with central and southern European countries.

Attempts should be made at separation of intensive passenger and freight traffic by designating railway lines for freight transport and at extending the existing infrastructure in areas with less residential development (e.g. in the Metropolitan Association of Upper Silesia and Dąbrowa Basin) in order to eliminate the problem of collisions. Changes in the area of railway infrastructure should also include the construction of a new railway line No. 5 with mixed traffic bypassing the Warsaw Railway Node and enabling the fast passage of passenger express trains and intermodal freight trains with a constant speed ensuring a competitive travel time from the Metropolitan Association of Upper Silesia and Dąbrowa Basin to the Tricity ports.

It is necessary to level out the opportunities between land and sea terminals, with a simultaneous inclusion of sea ports as the main generator of budget revenues, to introduce tariffs for access to railway infrastructure and promoting the use of international transport corridors, as well as to ensure an improvement of the condition of railway line sections along these corridors.

The technical and operating parameters of the planned construction of the full Central Railway Main Line (the construction of the northern section) would enable the performance of intermodal transport with a constant speed of 120 km/h, enabling a considerable reduction in the travel time and to bypass the Warsaw Railway Node and railway line No. 131, which due to its location and use, should not be perceived as a solution streamlining intermodal transport due to the following reasons:

- it is connected with other lines with regular passenger traffic, or is used for lower-category passenger transport (e.g. Chorzów Batory – Tarnowskie Góry and Inowrocław – Bydgoszcz);

- it starts from the Chorzów Batory station located along railway line No. 137 Katowice – Legnica, with a regular traffic of regional, agglomeration and long-distance trains, which largely contributed to limited traffic throughput (the station is also one of the major locations of the planned Metropolitan Railways);
- was designed for bulk transport (large stations, the possibility of frequent stops and of modifying train sets.

This railway line is crucial in the context of providing alternative access paths in the case of possible railway traffic hindrances and to maintain the current bulk transport volume.

Corridor RFC 8 – North Sea – Baltic Sea

On the basis of the structural works conducted along this international corridor, it can be assumed that most freight trains will operate along the following railway lines:

- railway line No. 2 Warszawa Zachodnia – Terespol;
- railway line No. 3 Warszawa Zachodnia – Kunowice;
- railway line No. 6 Zielonka – Kuźnica Białostocka;
- railway line No. 11 Skierniewice – Łódź Kaliska;
- railway line No. 12 Skierniewice – Łuków.

Currently, works are underway to modernise railway line No. 3 in order to increase its throughput. At stage III of the works carried out on railway line No. 2, infrastructure manager PKP PLK received co-funding from the "Connecting Europe" Facility, while on railway line No. 6 a major throughput limitation was removed between the Tłuszcz and Małkinia stations, where the line had previously functioned as a single-track on a short section.

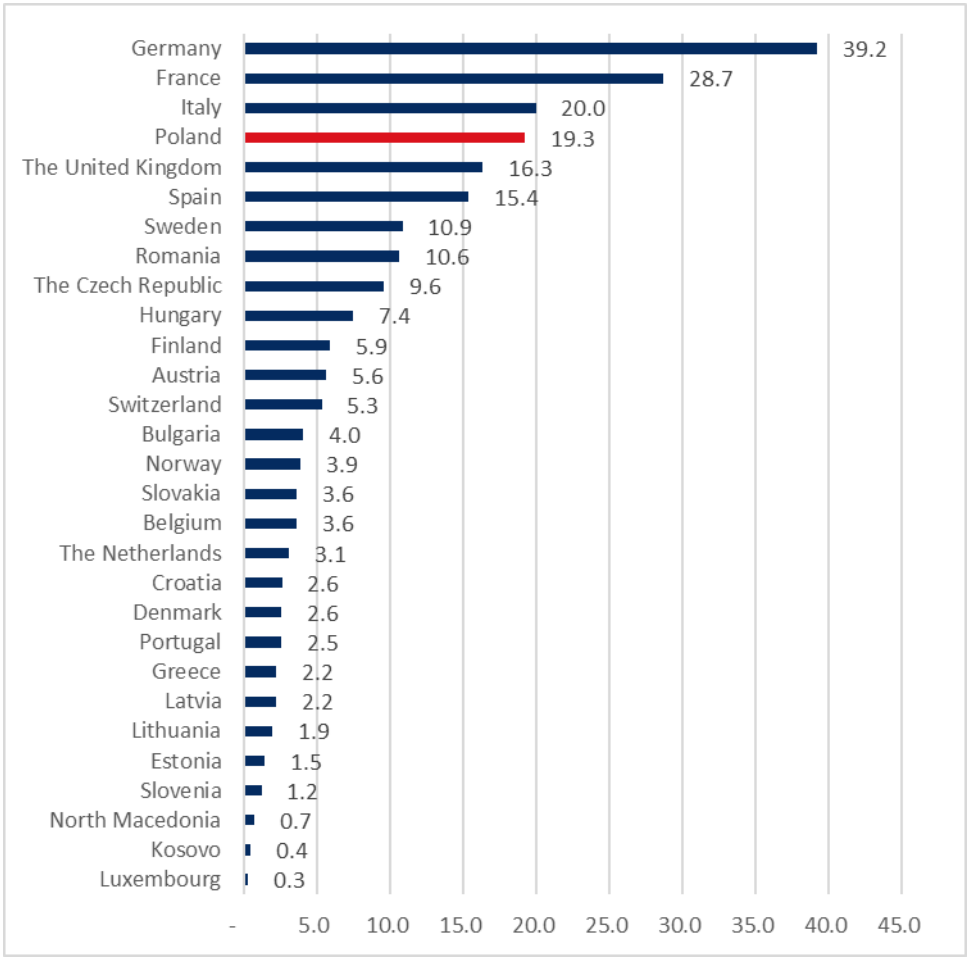
From the perspective of the completed investment tasks and the expected transport development along the New Silk Road, it is of key importance to secure the implementation of additional projects:

- on railway line No. 12 Skierniewice – Łuków, which did not receive funding as part of the modernisation project in the 3rd call for proposals for CEF and is on the KPK standby list (the maximum speed reached on this line is now only 40-60 km/h, and one track is partially closed);
- on the Skierniewice – Łowicz section within railway line No. 11, which is on the KPK standby list (low speeds, permanent and temporary limitations);
- at the border with Belarus; special attention should be paid to the throughput of border crossings and transshipment terminals in the Małaszewicze area. Without these investments there is a risk that transit would circumvent Poland – thus it is important to prepare alternative paths. Works were completed on railway line No. 3 from Czeremcha to the border with Belarus (including the construction of a station for the observation of tank wagons and the modernisation of the transshipment ramp), thanks to which the line is passable and enables the provision of freight transport services along the reserve section.

4.14. The railway infrastructure in Europe

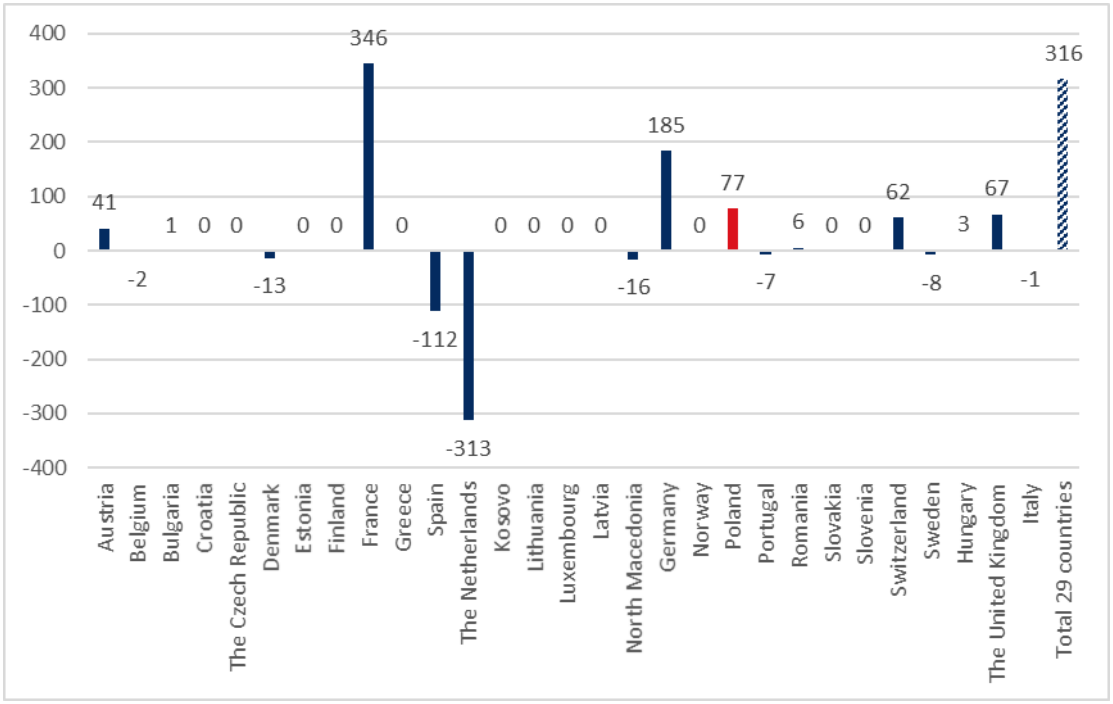
The railway network of 29 countries included in the recent IRG-Rail report in 2017 reached the total length of 230.5 thous. m. Germany has the longest railway network with a length of 39.2 thous. km. France, with its 29.7 thous. km network, occupies the second place in terms of length, and Italy, with its network of 20 thous. km, ranks third. Our country's network is only slightly shorter, with 19.3 thous. km of railway lines (fourth place).

Fig. 91. The length of railway lines in 29 selected European countries in 2017 (in thous. km)



In 2017, as compared to 2016, only four countries recorded a change in the length of railway lines of more than 1 % (France, North Macedonia, the Netherlands and Switzerland).

Fig. 92. Change in the length of railway lines in 2017 as compared to 2016 (in km)



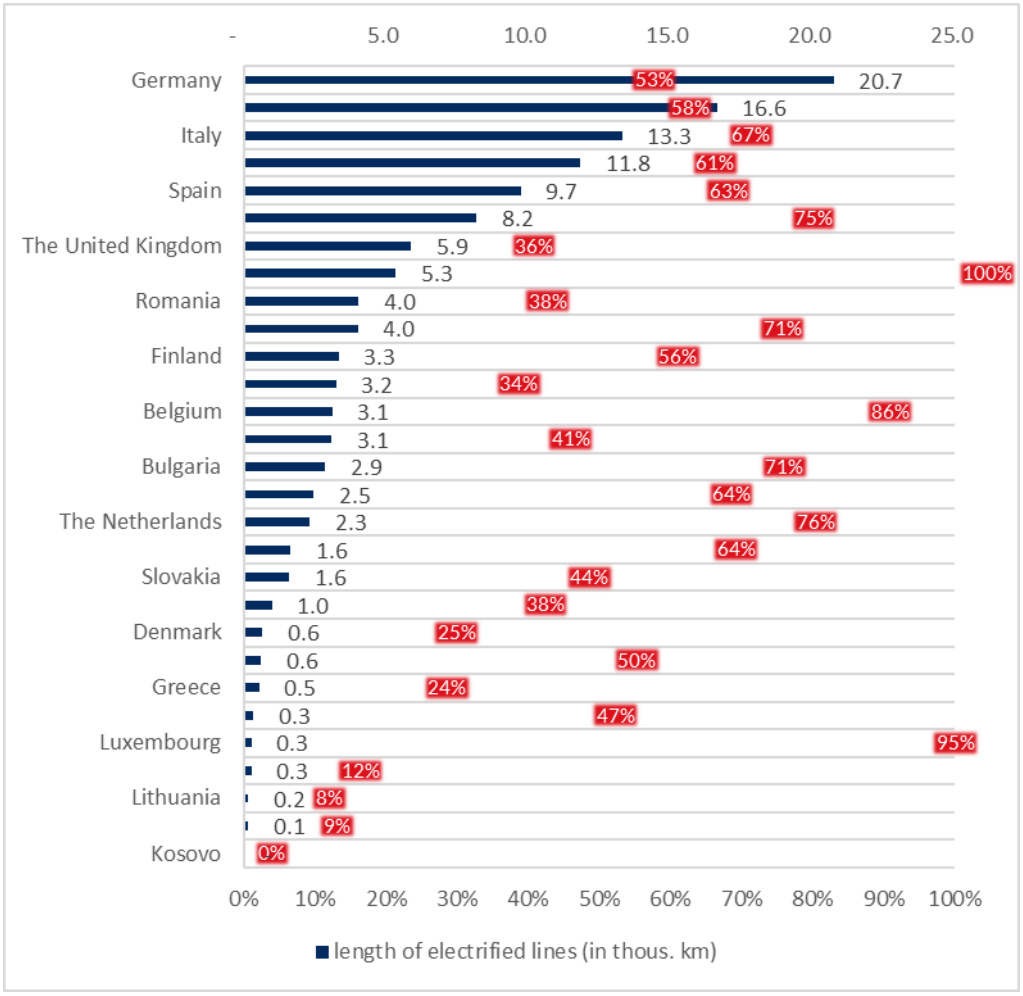
In the case of France, the increase in the length of lines of 346 km (1.2%) resulted from opening new lines connecting Tours and Bordeaux, Le Mans and Rennes (of which 94% are high-speed lines) and Nimes and Montpellier. The total length of lines in the Netherlands dropped by 313 km (9.3%) in comparison to 2016. A decreased line length results from the change in the method of calculating path lengths by the main infrastructure manager.

The rise in the length of the infrastructure in Germany was primarily caused by the opening, in 2017, of a new line connecting Ebensfeld and Erfurt.

In other countries changes in path length were related to their construction, closure or changes in reporting practices. In Poland the length of lines in 2017 increased by a total of 77 km (mainly due to resuming the operation of several sections in various locations in the country).

Between 2016 and 2017 in 11 countries the length of paths did not change. The total length of the path in the analysed countries grew by 316 km as compared to the previous year, accounting for less than 0.2%.

Fig. 93. The length of electrified railway lines in the respective European countries in 2017 (in km) and the share of electrified railway lines in the total length of lines in a given country (in %)



The railway network electrification level varies significantly by country. Switzerland is the only country with a fully electrified network, as opposed to, e.g., Kosovo, which has no electrified lines. The average railway network electrification level in Europe is 55%. Since 2016 many countries recorded an increase in the length of electrified lines. The highest increases were observed in France, the United Kingdom and Germany. Modernisation works carried out in a number of countries consist in the electrification of the existing lines and the construction of new fully electrified paths. In France newly constructed lines are fully electrified. Trains with electric drives are more environmentally friendly and efficient than diesel trains, and their use may increase the capacity of the existing networks.

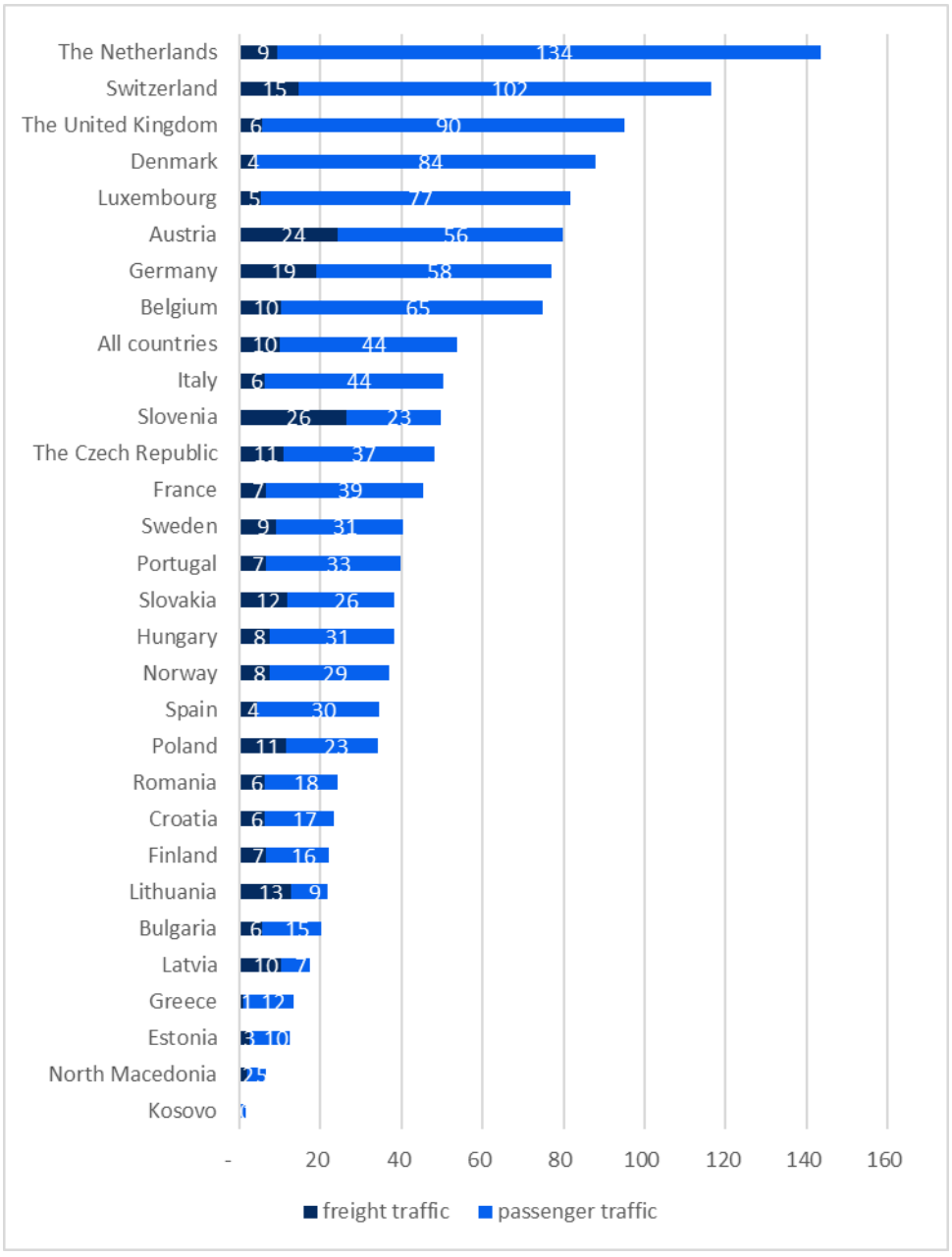
Another development factor of the European railway network is progress in the extension of high-speed lines. Currently, in line with the definition[9] contained in Regulation 2015/1100, high-speed lines exist and are expanded only in seven European countries. These are Spain (2,675 km), France (2,640 km), Germany (1,101 km), Italy (963 km), Belgium (261 km), the United Kingdom (109 km), the Netherlands (87 km) and Switzerland (137 km)[10].

[9]'dedicated high-speed line' means a line specially built to allow traffic to travel at speeds generally equal to or greater than 250 km/h on its main segments; it may include connecting segments where speeds are reduced to take account of local conditions.

[10]The lengths are provided for 2017.

The total length of high-speed lines in these countries in 2017 reached 7,972 km. It is worth pointing out that as compared to 2016 the length grew by 576 km (8%). The change was mainly due to the construction of high-speed lines in France along paths between Tours and Le Mans and Rennes (a 473 km rise), in Germany (an increase of 107 km) between Ebensfeld and Erfurt and in the Netherlands (a growth of 15 km). The annual average growth in the length of high-speed lines from 2013 was 4.7%.

Fig. 94. Railway traffic rate in 29 selected European countries in 2017 the average number of passenger and freight trains per 1 km of network per day)



The average infrastructure usage rate is calculated by dividing operational performance in passenger and freight transport by the length of the network and the number of calendar days. It is an approximate rate, as it does not take into consideration the number of tracks on a line. It should be mentioned that the railway network usage rate may differ between a country's regions. In most countries railway networks are heavily used for passenger traffic and to a lesser extent for freight traffic. Lithuania, Latvia and Slovenia are the only countries where the railway network is more often used for the purposes of freight

transport. The infrastructure usage rate for freight transport is the highest in Slovenia, followed by Austria and Germany, which may reflect the level of cross-border freight traffic in these countries.

In Poland the total railway traffic rate is below average calculated for the 29 surveyed countries. Per 1 kilometre of network there are 11 freight trains (1 above average) and 23 passenger trains per day (the average for all the surveyed countries is 44). The rate demonstrates a low railway network usage rate in Poland as compared to other countries. Per 1 kilometre of network there is a total of 34 trains per day, while the average use of 1 kilometre of lines in the analysed countries by trains is as many as 54 times a day.

5. Rolling stock

5.1. The structure of the rolling stock owned by standard-gauge passenger railway undertakings

In 2018 passenger railway undertakings had at their disposal a lower number of traction units and wagons than in the previous year, which was attributed to the end of the life cycle of the rolling stock operated by them, or to vehicle modernisation. In recent years a rise has been observed in the number of diesel traction units, which is associated with resuming the operation of the local railway infrastructure.

Tab. 33. The structure of traction units available to standard-gauge passenger railway undertakings in 2015-2018

traction units	year			
	2015	2016	2017	2018
locomotives	**484**	**441**	**429**	**423**
electric	332	322	320	314
diesel	152	119	109	109
railcars	**85**	**77**	**81**	**79**
electric	8	2	2	2
diesel	77	75	79	77
multiple units	**1,518**	**1,445**	**1,466**	**1,437**
electric	1,341	1,268	1,279	1,245
diesel	177	177	187	192
other	**0**	**0**	**0**	**2**

Tab. 34. The structure of wagons available to standard-gauge passenger railway undertakings in 2015-2018

wagons	year			
	2015	2016	2017	2018
with seats	**2,344**	**2,237**	**2,215**	**2,047**
first class	559	497	471	450
second class	1,653	1,619	1,605	1,505
first and second class	33	40	40	40
dining wagons or wagons with a dining section[11]	*103*	*86*	*96*	*79*
luggage wagons or wagons with a luggage section[12]	*26*	*18*	*18*	*15*
with sleeping spaces	**248**	**236**	**220**	**195**
sleeping wagons	146	143	140	135
couchettes	102	93	80	60
other	**6**	**5**	**4**	**4**

[11] The group also included second-class wagons with a dining section.

[12] The group also included second-class wagons with a luggage section.

Changes in the number of units available to passenger railway undertakings have a significant impact on the increase of the rolling stock usage rate.[13] For several years a continuous growth of the locomotive usage rate has been observed, related to the gradual upgrade of the rolling stock and decommissioning of old units.

Temporary decommissioning of electric multiple units and changes in the usage structure of the rolling stock (decommissioning of well-worn EMUs) caused the usage rate of this group of rolling stock units to decrease by 3 percentage points as compared to 2017.

Fig. 95. The share of traction units used by standard-gauge railway undertakings in the total number of units in 2018

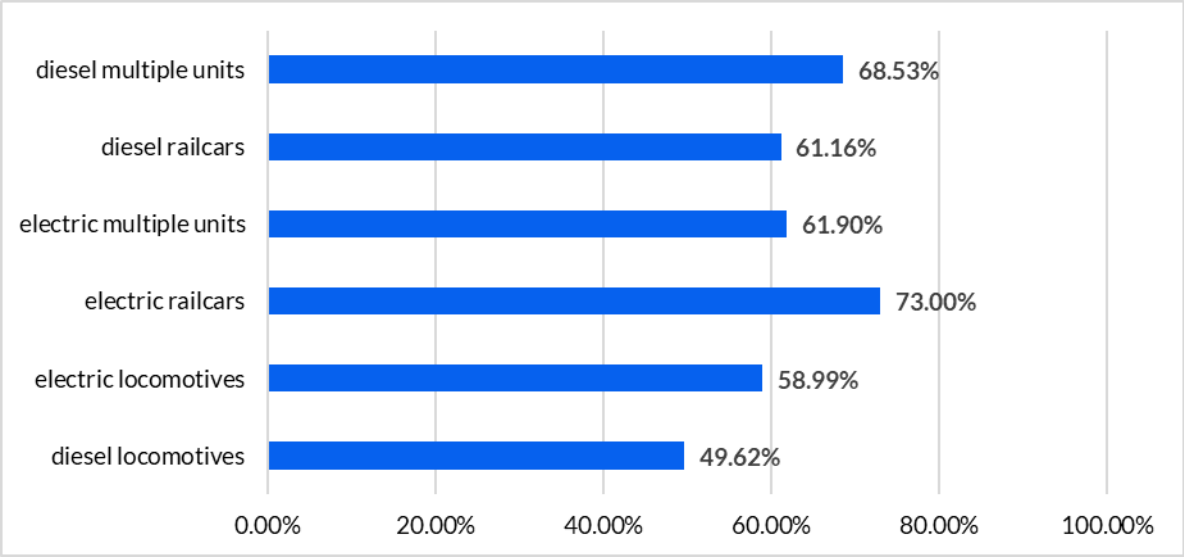
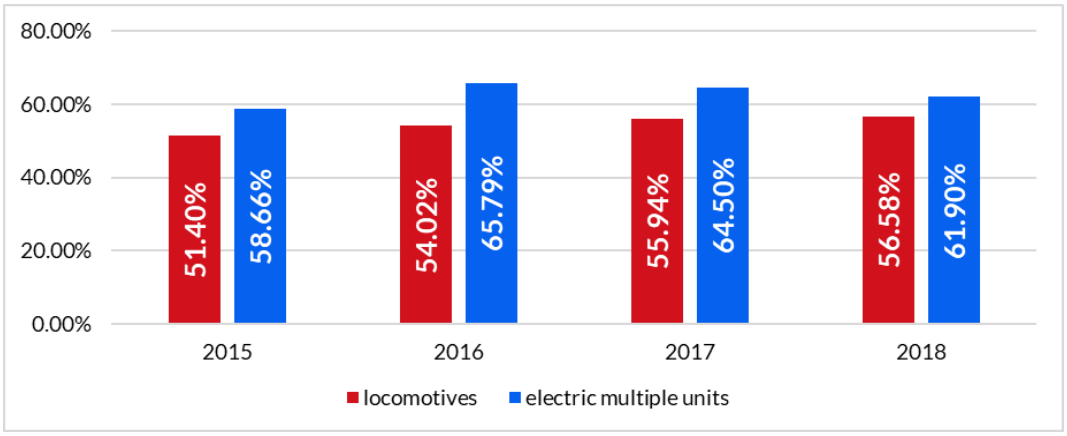


Fig. 96. Comparison of the use of locomotives and electric multiple units by standard-gauge railway undertakings in 2015-2018



[13]Rolling stock usage rate in a given year is calculated according to the following formula:

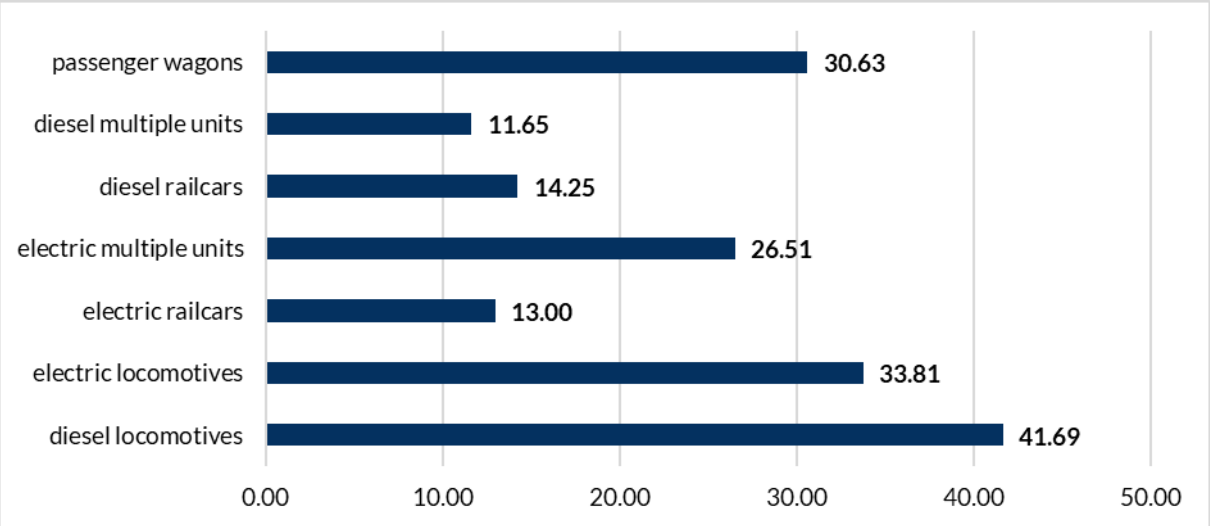
$$\frac{\text{sum of daily number of operated rolling stock}}{\text{number of days in a year}}$$

Operated EMUs/DMUs/wagons include the rolling stock in operation on a given day, regardless of the operation time. It does not include rolling stock placed out of service and not operated on a given day for other reasons (e.g. due to periodic inspections or repairs).

The average age of passenger wagons in 2018 exceeded 30.6 years (and is 1 year higher than in 2017). The series 628 diesel multiple units introduced by the German passenger railway undertaking Arriva RP, despite satisfactory traction parameters, significantly contribute to raising the average age of the operated diesel traction units to 11.6 years (by over 1.5 year more than in 2017).

The highest average age of the rolling stock is recorded for traction units operated by railway undertakings. The average age of electric locomotives is 33.8 years, and of diesel locomotives – as many as 41.7 years.

Fig. 97. The average age of traction units available to standard-gauge passenger railway undertakings in 2018 (in years)



Passengers using transport services more and more often expect of the rolling stock used for transport to meet specific standards such as air-conditioning on board, Internet access, a closed toilet system, spaces for bicycles and people with oversized hand luggage and spaces for individuals with reduced mobility.

A high percentage rate of equipment corresponding to four of five of the presented features was found in electric and diesel railcars used by railway undertakings for local transport. The situation is also improving in the case of electric multiple units, which carry the largest number of passengers. Currently, 56% of traction units are air-conditioned, 40% have permanent Internet access, 56% have closed toilet systems, 73% feature spaces for bicycles and 70% are adjusted to transporting people with reduced mobility.

Numerous modernisations and major investments in the purchase of EMUs throughout the years have led to a higher percentage of well-equipped units of this type. Railway undertakings are planning further investments in the passenger rolling stock, which should further improve the comfort of travel. All new rolling stock units in general should fully comply with the applicable TSI.

The equipment of standard wagon sets is similar to the previous years. Only 36% of wagons with sets are air-conditioned, 11% have Internet access, 45% have closed toilet systems and 12% – spaces for bicycles. Unfortunately, the use of standard wagon sets is highly problematic for individuals with reduced mobility – in 2018 only 4% of all wagons with seats in service enable the transport of people with reduced mobility. This considerable limitation discourages travellers from this group from using railway transport services.

Tab. 35.Auxiliary equipment of passenger rolling stock in 2018

rolling stock type	air conditioning	Internet	toilet	adjusted to people with limited mobility	spaces for bicycles
railcars					
electric	100%	100%	100%	100%	100%
diesel	92%	0%	98%	99%	58%
multiple units					
electric	56%	40%	56%	70%	73%
diesel	77%	6%	88%	69%	64%
wagons					
with seats	36%	11%	45%	4%	12%
dining wagons or wagons with a dining section[14]	6%	3%	6%	0%	0%
luggage wagons or wagons with a luggage section[15]	-	-	-	-	100%
sleeping wagons	18%	7%	61%	10%	0%
Couchettes	38%	20%	38%	17%	0%

[14]The group also included second-class wagons with a dining section.
[15]The group also included second-class wagons with a luggage section.

5.2. Meeting the interoperability requirements in terms of the passenger rolling stock

In 2018 124 rolling stock units were placed in service for passenger traffic. This number does not differ significantly from 2017, when 115 units were placed in service. As in recent years, also in 2018 traction units constituted a majority of passenger traffic placed in service. The total number of traction units placed in services was 73, of which a considerable majority, 69, were electric units. Also, in 2018, 55 passenger wagons were placed in service.

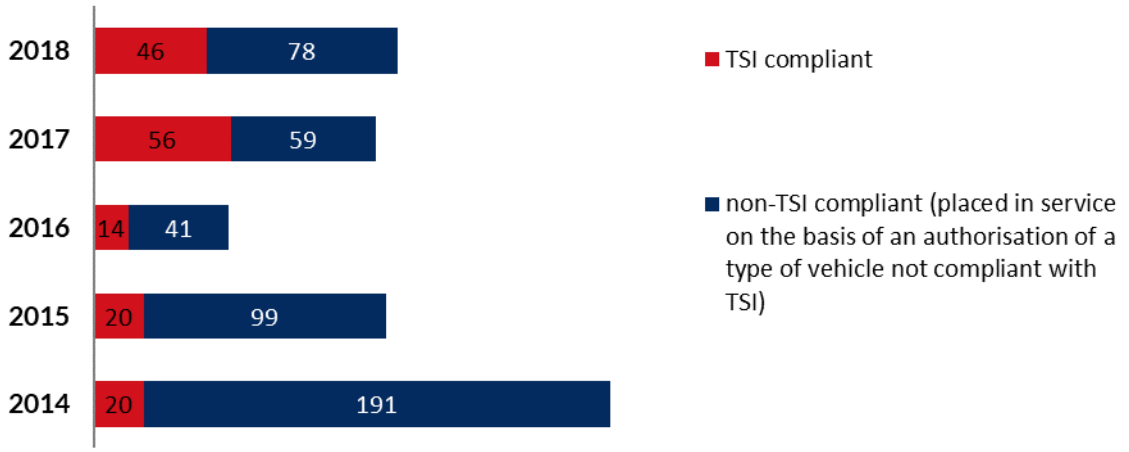
Tab. 36. Authorisations of placing in service issued for passenger rolling stock in 2018

rolling stock units	TSI compliant	TSI non-compliant
electrical multiple units	43	26
diesel multiple units	4	0
passenger wagons	0	55

In the context of constructing a seamless railway environment, it is essential for modern rolling stock units to meet technical and operational requirements specified in the technical specifications for interoperability. A failure to meet TSI requirements or their non-performance is possible only in specific cases. One of the most frequent is the modernisation of existing rolling stock units. They were often manufactured over a dozen to several dozen years ago, so achieving compliance with TSI in their case is impossible or associated with substantial costs. It is thus permissible for modernised rolling stock units to not meet all the TSI requirements, which in such case are referred to as TSI non-compliant. In principle, this is not possible for newly built units, which should meet all the requirements of the relevant specifications.

The division of rolling stock units into TSI compliant and non-compliant is reflected in authorisations of placing in service issued by the President of UTK. The statistics of the issued certificates show trends on the market relating to the purchase and modernisation of rolling stock.

Fig. 98. The number of passenger rolling stock units placed in service in the years 2014-2018 with regard to TSI compliance/non-compliance

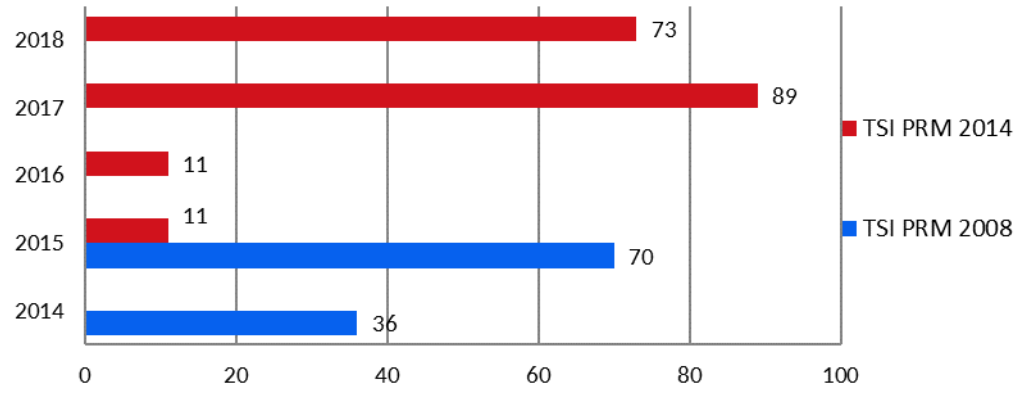


The above data show that in the total number of units placed in service ,TSI non-compliant rolling stock units continue to dominate. This points to a market trend towards modernising the existing rolling stock units instead of purchasing new ones. In 2018 this trend further intensified, which is visible in the growing number of authorisations of placing in service of TSI non-compliant rolling stock units. It is worth mentioning that the considerable increase in the number of TSI compliant rolling stock units observed for the first time in 2017 was not a result of increased vehicle purchases, but of changes in legal circumstances. In 2017 the transition period expired for the production and authorisations of placing in service of rolling stock units constructed on the basis of older designs which did not take TSI requirements into consideration. Such rolling stock units were formally classified as TSI non-compliant, but these were not modernised but brand new units.

New rolling stock units currently placed in service are fully compliant with all applicable TSIs. However, a trend observed in 2018 involved the emergence of units approved as TSI compliant with operational restrictions in the authorisation. These resulted mainly from the lack of GSM-R radiotelephones in those units, which is acceptable in TSI under the condition that these rolling stock units will not be operated on lines where this communications system is required. The trend should be considered alarming, taking into consideration the process of launching GSM-R communications on most railway lines in Poland in 2024. This is to be prevented by the "Supplement to the National implementation plan of the 'control-command and signalling'" adopted in 2018, which provides for issuing authorisations strictly to units with GSM-R radiotelephones.

In the case of passenger rolling stock, it is important for rolling stock units to meet the TSI requirements in respect of persons with limited mobility. Among 124 railway rolling stock units intended for passenger transport which were placed in service in 2018, 73 multiple units met the requirements of the latest TSI PRM of 2014. New units (45) must be fully compliant with this TSI, while in upgraded units it is necessary to introduce alterations resulting in their meeting of the requirements in the upgraded part (Appendix F to the PRM TSI). In the case of upgraded passenger wagons, becoming compliant with TSI PRM in the upgraded respect is impossible due to design reasons associated, among other things, with the width of wagon entrance doorways. This is true for all 55 passengers wagons which received authorisations in 2018.

Fig. 99. The number of rolling stock units placed in service compliant with the PRM TSI in 2014-2018



The key element of ensuring the interoperability of rolling stock is the implementation of the ERTMS/ETCS system. ETCS is part of the ERTMS (European Rail Traffic Management System) being implemented in the European Union, which is expected to ensure interoperability, i.e. the ability of trains to move freely along the rail lines of various countries (infrastructure managers) without the need to stop at borders and switch locomotives or train drivers. As a rule, every new rail vehicle allowed to

operate for the first time must be equipped with the ETCS. Exceptions to this rule are described in detail in Control-Command Signalling TSI.

Tab. 37. The rolling stock of passenger railway undertakings equipped with ETCS – as at 31 December 2018

rolling stock units	which purchased with ETCS	with ETCS added	with level 2 ETCS
locomotives	0	36	36
multiple units	156	1	157

As declared by railway undertakings, as at the end of 2018 they had at their disposal 157 multiple units and 36 locomotives equipped with ETCS, with all locomotives used in passenger traffic were supplied with this system, and most multiple units were purchased with ETCS.

The implementation of ETCS/ERTMS brings significant economic benefits for railway undertakings, particularly those which operate rolling stock units reaching speeds above 130 km/h. The fitted ETCS devices allow transport at over 160 km/h and make it possible to avoid using the two-person train driver crew above 130 km/h. In the first case, this translates into a higher attractiveness of rail transport services and in the second one, it paves the way for savings for companies, and allows more effective planning of train drivers' work. Irrespective of the above, the ETCS system has a great impact on the development of the railway system and improvement in safety. However, the solution is associated with high costs of equipping a vehicle with appropriate devices. The still-limited area of operation of a vehicle with the ERTMS/ETCS system enabled is another serious inconvenience. This is influenced by the rate at which the system is adopted by the infrastructure managers. Despite these inconveniences, railway undertakings plan further investments in new rolling stock units equipped with ETCS and retrofitting the already operational rolling stock with these devices. As declared by railway companies, by 2024 they will have purchased or retrofitted with ETCS 448 more rolling stock units.

The implementation of the ERTMS is inextricably linked to the implementation of a GSM-R radio communications system. Full interoperability of the railway system will be possible only when the security system and the radio communications are integrated in the whole Europe. The GSM-R communications is not only voice transmission but also data transmission for level 2 ETCS. The implementation of a standardised radio communications system constitutes an important step on the road to the interoperability of railway lines.

The migration strategy of the Polish infrastructure in terms of the GSM-R subsystem was specified in the "Supplement to the National implementation plan of the 'control-command and signalling'" adopted in October 2018. The supplement clearly states that the GSM-R system will reach its full functionality between January and December 2024. Currently, passenger railway undertakings have only 147 rolling stock units equipped with GSM-R radiotelephone apparatuses, which means that works associated with equipping the rolling stock with GSMS-R radiotelephones should be intensified. The lack of digital communications on board of rolling stock units after 2024 will mean that they would not be operated on main railway lines in Poland.

5.3. The structure of the rolling stock of freight railway undertakings

An improving situation in freight transport also influenced the number of rolling stock units available to licensed railway undertakings. As compared to the previous year, the number of electric and diesel locomotives increased by 89. However, there are still locomotives in service reaching the end of their life cycle.

Maintaining a high level of bulk transport had a positive impact on the number of open freight wagons (of 3559) available to railway undertakings.

Due to the decreasing interest in freight transport with covered wagons of ordinary and special type, the number of such wagons available to freight operators in 2018 dropped by 1822 in comparison to 2017. The trend is likely to be continue, causing a further decrease in the number of covered wagons in the years to follow.

A rising interest in intermodal transport and investments in this respect have a positive impact on the development of the rolling stock of freight railway undertakings. Within the last three years, the number of wagons adjusted to container transport increased by over 1300.

Tab. 38. The structure of traction units at the disposal of freight passenger railway undertakings in 2015-2018

traction units	year			
	2015	2016	2017	2018
locomotives	**3,596**	**3,632**	**3,451**	**3,540**
electric	1,475	1,502	1,419	1,470
diesel	2,121	2,130	2,032	2,070
other	**201**	**198**	**220**	**170**

Tab. 39.The structure of wagons at the disposal of freight passenger railway undertakings in 2015-2018

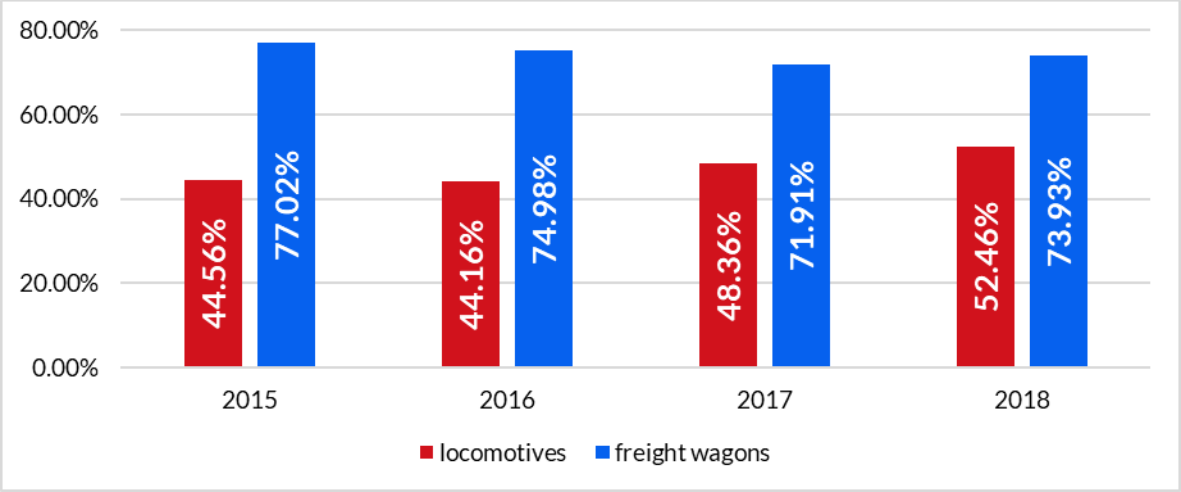
wagons		year			
		2015	2016	2017	2018
open freight wagons		**59,558**	**61,919**	**59,432**	**62,991**
of ordinary type	E	45,446	46,752	45,173	48,108
of special type	F	14,112	15,167	14,259	14,883
covered wagons		**4100**	**3976**	**3897**	**2075**
of ordinary type	G	2,082	1,992	1,940	171
of special type	H	2,018	1,984	1,957	1,904
flat wagons		**11,603**	**11,541**	**12,551**	**13,216**
of ordinary type on axles	K	590	578	570	555
of special type on axles	L	14	20	58	100
of ordinary type on bogies	R	5,186	5,029	5,125	5,524
of special type on bogies	S	5,813	5,914	6,798	7,037
of which adjusted to container transport[16]		*3,271*	*3,396*	*4,335*	*4,608*
other		**15,645**	**14,902**	**15,249**	**14,624**
with opening roof	T	1,256	1,273	1,289	1,596
special wagons	U	6,308	6,374	6,472	5,534
tank wagons	Z	7,708	6,890	7,143	7,147
service and staff wagons		373	365	345	347

Along with the increase in the number of rolling stock units operated by railway undertakings in the two major categories, the average age of locomotives of freight railway undertakings at the end of 2018 was 37.6 years (0.7 year less than in 2017), and the average age of freight wagons in 2018 was around 32.9 (a growth of 2.6 years in comparison to 2017). Railway undertaking declared that they had 92,906 wagons. This also included wagons which could not be operated on tracks for various reasons, as well as wagons unregistered in Poland. In Poland slightly over 88,000 wagons are registered (see 5.6).

In 2018 the locomotive usage rate grew again, reaching 52.5% (as compared to 48.4% in 2017). The freight wagon usage rate also increased to 73.93% (as compared to 71.91% in 2017). The development of freight railway transport translates into a higher rolling stock usage rate. This is also confirmed by the number of rolling stock units permanently or temporarily placed out of service. As declared by railway undertakings as at 31 December 2018, 1238 locomotives were permanently or temporarily out of service (35% of the total number – a decrease by 1.8% as compared to 2017).

[16]The values assigned to this group should not be included in the total number of flat wagons; wagons adjusted to container transport may represent various types of flat wagons.

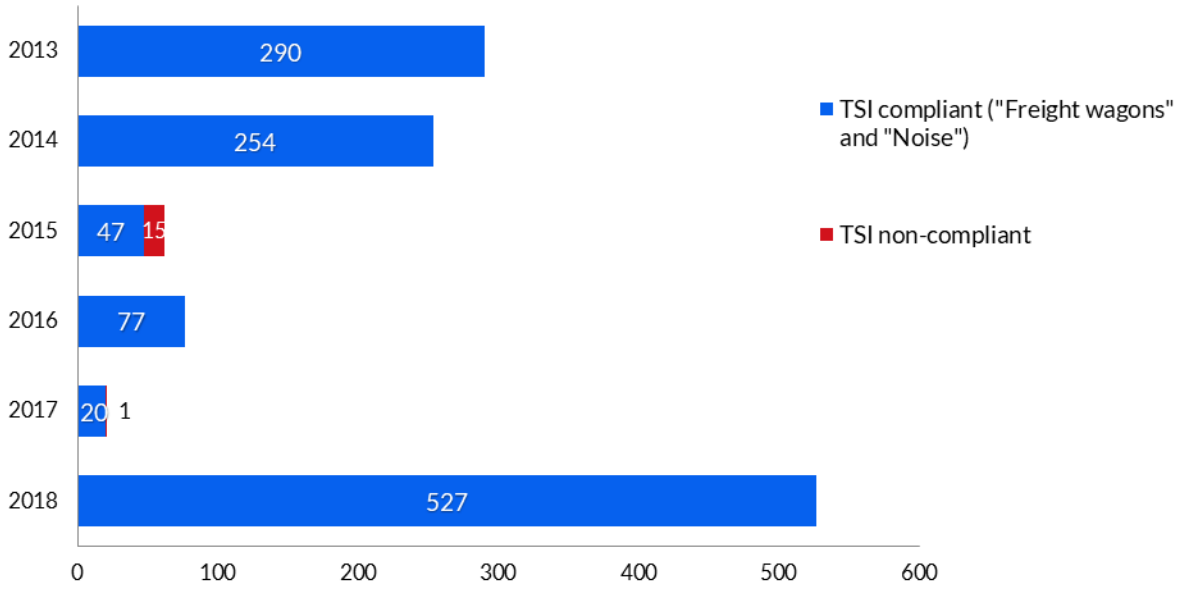
Fig. 100. Comparison of the use of locomotives and freight wagons by freight railway undertakings in 2015-2018



5.4. Meeting the interoperability requirements in terms of the freight rolling stock

Freight wagons have been the main element of rolling stock operated in Poland for years. Freight wagons make up approx. 85% of all rolling stock units registered in the National Vehicle Register (NVR). Due to the regulations currently in force stipulating that freight wagons which meet the requirements of the TSI Freight Wagons can move within the entire EU's network, including TSI non-compliant infrastructure. In contrast to the passenger rolling stock segment, freight wagons are rarely upgraded, which would necessitate new authorisations of placing in service. Thus, in the freight wagon segment, authorisations for TSI non-compliant rolling stock units are rare.

Fig. 101. The number of freight wagons authorised for service in the years 2013-2018



The average age of the freight wagons entered in the NVR is considerable; in 2018 it was 30.5 years. However, as many as 527 wagons were authorised for service in the recent years, which constitutes a

significant growth in comparison to 2017, when only 20 wagons received the said authorisations. Most of wagons authorised for service in 2018 were tank wagons and open freight wagons.

The considerable age of freight wagons is an important risk for the competitiveness of rail freight transport in view of the revision of the Noise TSI still under way in 2018, which will result in all freight wagons being subject to the requirements of this TSI. This aspect is discussed more extensively in Chapter 5.5.

In 2018 the number of locomotives placed in service grew considerably. Only 44 new and upgraded locomotives were placed in service in 2017, while in 2018 there were as many as 165 (rolling stock units intended for passenger and freight traffic and universal rolling stock units), of which 91 were fully compliant will the requirements of all the applicable TSIs.

The number of locomotives placed in service in 2018 did not have a major influence on the rolling stock structure of Polish freight railway undertakings. By the end of 2018 they had only 22 locomotives with ETCS, which demonstrates that the ERTMS/ETCS system implementation rate in rolling stock units used for freight transport is still very low. It would seem that since 91 locomotives fully compliant with TSI were placed in service in 2018, the number of rolling stock units with ETCS should be much higher. It is worth noting that the difference between the number of rolling stock units placed in service in 2018 and those owned by Polish railway undertakings results from two main factors. First of all, a considerable proportion of locomotives placed in service in Poland in 2018 are units which have already received authorisation in other EU Member State. These rolling stock units are usually owned by foreign entities and are not present in the inventory of Polish railway undertakings. In addition, railway undertakings are not always the owners of locomotives which they operate – they can use the growing range of hire services offered. This market is very dynamic in nature, and hires can be contracted for short terms, after which the rolling stock units are taken over by another railway undertaking or returned to the lessor. The growth rate of the hire market thus makes it difficult to include these locomotives in the statistics.

In the context of the migration to the GSM-R radio communications system planned for 2024, it is worth mentioning that at the end of 2018 freight railway undertakings had 227 locomotives equipped with GSM-R radiotelephones. In spite of this, more than 94% traction units are not adjusted to being operated on lines on which digital radio communications will be used exclusively. Railway undertakings should take intensified measures in the directly following years.

5.5. Noise TSI – requirements to be met by rolling stock

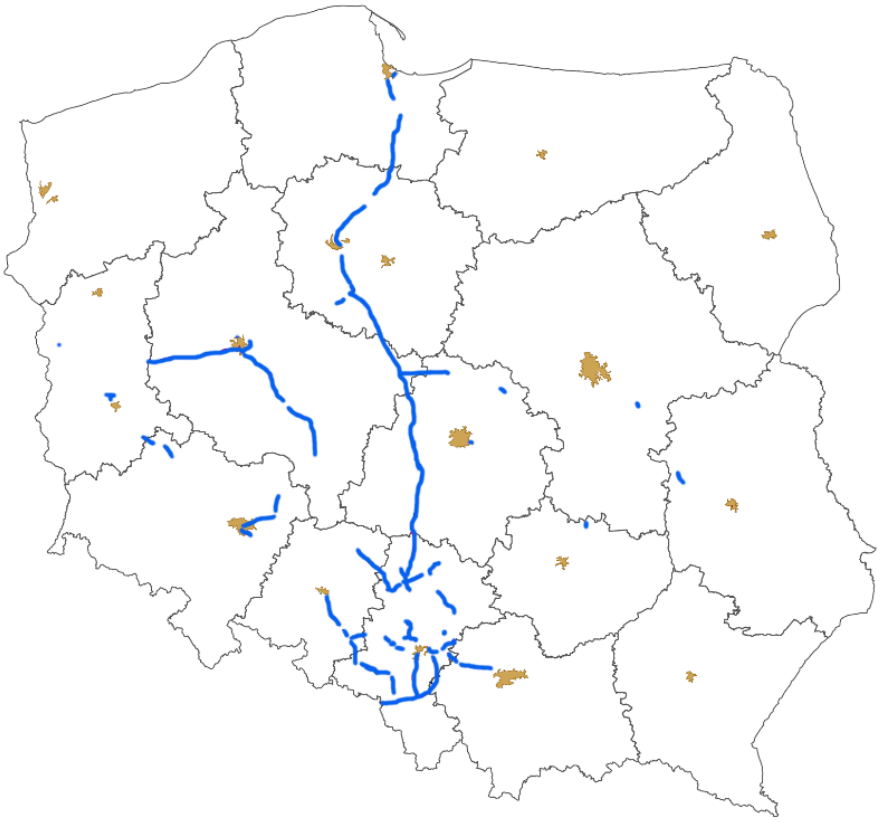
In 2018 the European Commission finalised the work on the "Noise" TSI revision. Works in this area were carried out since 2016 by EUAR, with a goal to limit the noise generated by freight wagons through introducing a specification to be followed by the existing rolling stock units. This was possible in the light of Article 4 (3) (h) of Directive 2016/797/EU, which states that Technical Specifications for Interoperability indicate the laws applicable to the existing subsystems and rolling stock units.

In 2018 work was under way on draft regulation[17] on the application of the Technical Specifications for Interoperability for the "Rolling stock – noise" subsystem to existing freight wagons. The aim of the drafted regulation was to reduce the level of noise generated by passing trains in the most densely populated areas and with the busiest train traffic. Accordingly, a concept of so-called quiet sections emerged. These are the sections of railway lines on which only freight wagons meeting the TSI pass-by noise requirements can move.

[17]Commission Implementing Regulation (EU) 2019/774 of 16 May 2019 amending Regulation (EU) No 1304/2014 as regards application of the technical specification for interoperability relating to the subsystem 'rolling stock — noise' to the existing freight wagons (OJ L 139 of 27 May 2019, p. 89).

The draft regulation produced in 2018 provides that quiet sections will be designated on line sections with a minimum length of 20 km with more than 12 freight trains passing during night-time (between 10 p.m. and 6 a.m.). The list of quieter paths is to be established by each state separately, by the end of 2019, and relevant information will be published on EUAR's website. The list will be updated at least every five years.

Fig. 102. Railway lines with more than 12 trains passing during night-time (PKP PLK data)



In Poland it can be assumed that quiet paths will be established along main freight routes, including the coal main line along the Wrocław-Katowice route, or in a series of railway lines in Silesia, and the cross-border connections with the Czech Republic. Assigning train routes to exclude paths designated to be quiet paths will thus be extremely difficult or even impossible. Railway undertakings will thus need to adapt their freight wagons to the new conditions.

From the technical point of view, the adaptation of the existing freight wagons involves the replacement of cast iron brake blocks with composite ones. During braking, composite brake blocks polish the running surface of the wheels, reducing its roughness, which translates into a reduction in noise generated during movement. For some types of freight wagons, however, the application of this solution requires replacing the wheels or reconstructing the braking system, which drastically increases the cost of the whole operation – by up to seven times per wagon. In terms of the whole market, the costs associated with adapting the whole freight wagon fleet in Poland could reach up to PLN 2 bn.

As a result of Poland's efforts at the EU level, a special case was introduced to draft Regulation 2019/774, making it possible to lessen the economic consequences for Polish railway undertakings. The special case enables the operation of some types of wagons in Poland (including quiet sections designated on lines) by the end of 2036:

- rimmed wheels
- with brake blocks placed on only one side of the wheel (1Bg or 1Bgu configuration);

- intended for movement at 100 km/h, equipped with "ss" brake (so-called S2 brake according to TSI and UIC leaflets);
- intended for movement at the maximum speed of 120 km/h.

The implementation of traffic restrictions on quiet sections for wagons which do not meet the requirements of the new Noise TSI was set to be completed by 8 December 2024 (the entry into force of the 2024/2025 timetable). From that day onwards, only freight wagons compliant with Noise TSI (usually equipped in composite brake blocks), or with the special case status, will be able to move on lines designated as quiet sections. It is worth recalling that wagons with the special case status can be operated only in the country in which the status applies.

Despite the adoption of regulations limiting the noise of railway freight transport at the European level, Germany and Switzerland are planning to limit the movement of wagons without composite brake blocks already in late 2020 by introducing specific operational restrictions on the basis of national regulations passed in 2017. Currently talks are held at the EU level between these countries and representatives of the European Commission to establish the exact impact of these regulations on the market and their legal consequences for laws passed after Regulations 2019/774 enters into force. Poland's representatives also take part in the talks.

Under these circumstances, it is essential to prepare the railway sector for the coming changes as soon as possible. Further delays of the necessary upgrades and of purchasing new rolling stock may lead to the marginalisation of the railway transport. In this context, rolling stock keepers and railway undertakings should look at the available options of funding the required modifications with EU funds, such as the "Connecting Europe" Facility (CEF). The deadline for submitting proposals under the "Rail Freight Noise" priority was set at 24 April 2019, providing a possibility of obtaining funds, i.a., for changing the brake blocks of freight wagons to composite. A total of EUR 35 m was allocated for this purpose. Let us hope that Polish railway undertakings and infrastructure managers will use the 2019 pool of funds to a greater extent than in the recently concluded 2018 calls, when only 1.5% of total funds were awarded to projects from Poland. None of these was a railway project.

Another potential source of funding the brake blocks exchange projects is the state aid project prepared by the Ministry of Investments and Development. Work is under way on a draft regulation on this matter. The funding will be provided as part of the Infrastructure and Environment Operational Programme for the years 2014-2020, i.e. within the current EU financial perspective. The currently envisaged funding level is 50% of eligible expenditures. However, the co-funding depends on obtaining a sufficient amount of funds, and on negotiations with the European Commission regarding state aid.

5.6. The market of owners and keepers according to the data from the National Vehicle Register (NVR)

Railway undertakings are not always the rolling stock owners or keepers. Pursuant to the Rail Transport Act, a keeper is an entity which is the owner of the railway vehicle or has the right to use it as a means of transport, entered into the NVR. It should be emphasised that the keeper is the entity entered into the NVR which is responsible for the railway vehicle and decides on how it is used and what entities can use it. The keeper is responsible, among other things, for maintaining the keeper's register[18]. This situation makes it possible for railway entities to conduct transport operations despite the lack of their own rolling stock.

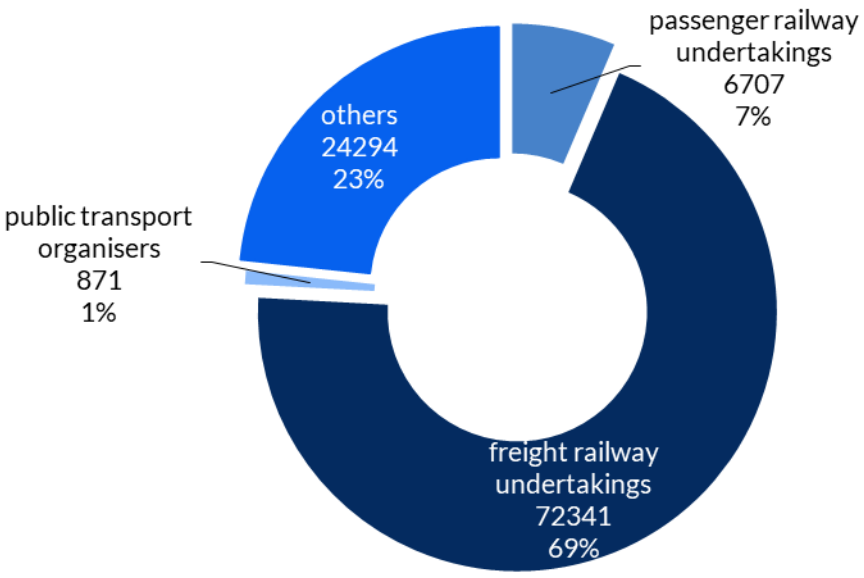
[18]In line with the Regulation of the Minister of Transport, Construction and Maritime Economy of 3 January 2013 on the manner of maintaining a register of and marking railway vehicles

In the case of rolling stock being maintained in a good technical condition, any competent entity in charge of maintenance (ECM) may be regarded as responsible. In the case of freight wagons, the ECM must hold a certificate issued by the President of UTK. At the same time, rolling stock is assigned in the NVR register to the entity in charge of its maintenance.

Analysing data from the NVR is one of the possible ways of examining the market of owners and keepers of rolling stock units operated in Poland. The register specifies basic data on the operated rolling stock units, such as information about the owners, keepers and entities in charge of maintenance (ECM).

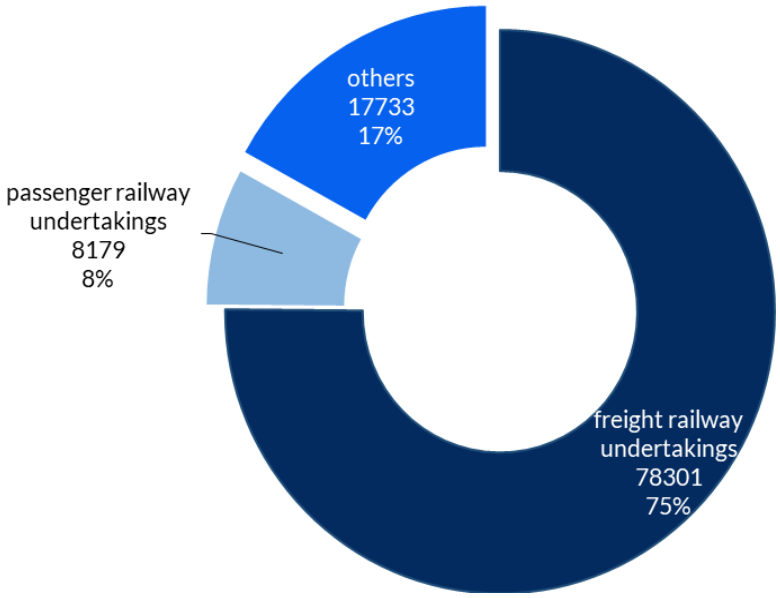
There are a few groups of owners of rolling stock units recorded in the NVR, including both freight and passenger railway undertakings, and companies offering rolling stock hire or lease, rolling stock operators and producers and small enterprises owning rolling stock. A new solution beginning to be applied in Poland is rolling stock pooling, as part of which large companies purchase large quantities of rolling stock and make them available to railway undertakings on a commercial basis.

Fig. 103. The structure of rolling stock owners according to data from NVR – number of units and percentage share



Rolling stock owners are often entities which are not associated with the rail sector, and the rolling stock keepers are usually railway undertakings or entities which provide rolling stock hire services.

Fig. 104. The structure of rolling stock keepers – number of units and percentage share



Passenger railway undertakings have at their disposal more rolling stock units than the ownership structure would suggest. This is because Przewozy Regionalne and individual railway undertakings in provinces are the keepers of rolling stock units owned by Marshal's Offices. A similar situation applies to freight railway undertakings, which also are the keepers of a certain portion of wagons which are not owned by them, such as wagons owned by industrial plants and hired traction units.

The group of keepers belonging to the "other" category also includes infrastructure managers whose rolling stock units have been entered into the NVR. These are usually special units, including draisines and other track machines. In addition, keepers not belonging to the group of railway undertakings are often entities hiring rolling stock and industrial plants owning their own wagons.

Tab. 40.The number of rolling stock keepers based on the NVR including numbers of units

rail market entities	number of entities	number of keeper's units
freight railway undertakings	90	73,025
passenger railway undertakings	19	8,179
other	230	23,009

Tab. 41.Number of units of a given rolling stock type

vehicle type	number
passenger wagon	3,334
special unit	3,866
freight wagon	88,035
traction unit	8978
in total	**104,213**

NVR makes it possible to specify the number of all rolling stock units registered in Poland, including their respective types. The number of freight wagons has remained the highest for years, amounting to 88,035 units. In total there are 104,213 registered rolling stock units. It is worth emphasising that in the case of multiple units each section must have a separate number and be treated as a separate rolling stock unit, which may lead to an overestimation of the number of traction units.

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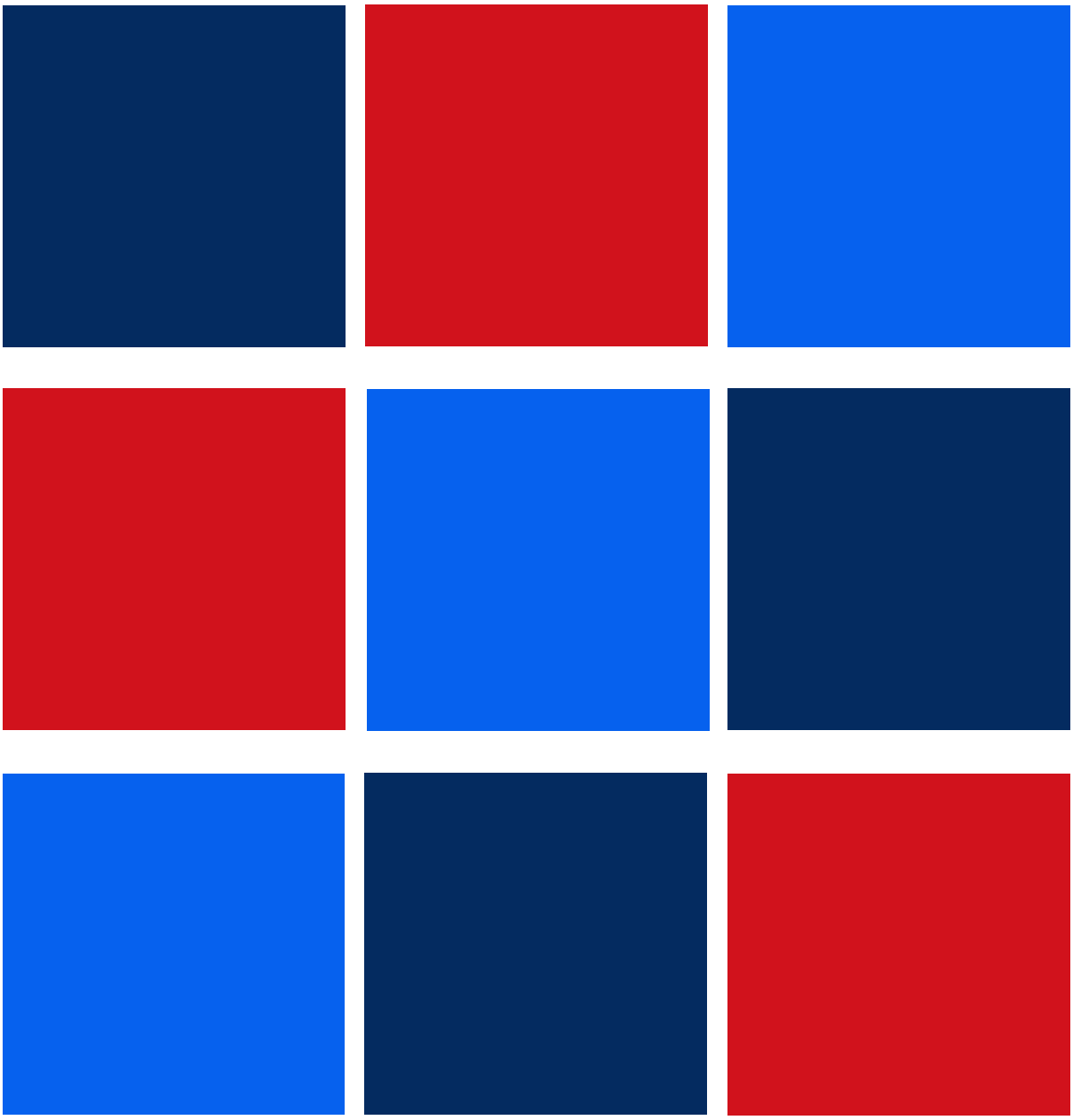

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