POLITYKA INSIGHT | RESEARCH

How sustainable and intermodal logistics can support Poland's economic development

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POLITYKA INSIGHT

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Executive summary

The transport, shipping and logistics (TSL) industry is one of the cornerstones of the Polish economy. It is directly responsible for 5.7 per cent of GDP, but indirectly it can affect up to half of the economy. Polish companies haul up to one-third of goods in international road transport throughout the EU in terms of tonne-kilometres.

An efficient TSL sector is essential for the development of trade, industry and many services. The events of recent years - the COVID-19 pandemic, the Russian invasion of Ukraine and other geopolitical turmoil - have increased interest in the TSL sector from politicians and regulators. They have shown that an extensive, diversified and flexible industry is essential to support economic development and trade. In crisis situations, it can make it easier to safeguard people's health and lives, for example through efficient supply chains for personal protective equipment and vaccines during a pandemic or humanitarian aid and food during the war in Ukraine.

Linking the TSL sector to national security and geopolitics can lead to increased state interventionism and resentment towards multinationals, which dominate especially in freight forwarding and logistics. In practice, the most effective way to organise this industry is through the cooperation of private and state actors (including infrastructure administrators) and the development of intermodal transport, i.e. combining different modes of transport. In 2021, intermodal transport accounts for just over 10 per cent of rail freight transport in Poland. The development of this sector is not possible without the cooperation of many entities, some of which will always be state-owned.

The state's role is also to regulate the market and protect the interests of workers and smaller players from the largest companies that may abuse their market position (this applies to state-owned carriers and infrastructure operators as well as private logistics giants). However, **the most important task facing the state, especially in a country with such a strong TSL sector as Poland, is strategic planning.** Polish governments have neglected this task - either ignoring the TSL sector completely or focusing on ad hoc measures. Government strategic programmes often boil down to an investment map or selective targets (e.g. for the number of electric vehicles), and do not include a broader view of the TSL industry's direction of development and methods for maintaining its dominance in Europe.

As a result, while the Polish TSL sector is highly developed, it is at the same time burdened with serious structural problems that may lead to its weakening in the long term. The problems include:

► **the dominance of road transport,** both in terms of the structure of national and international goods transport and the importance of the Polish industry in Europe. This transport is the least cost-effective and has the highest environmental costs – it generates 90 per cent of emissions from all transport (25 per cent is from freight alone).

► **prioritisation of road infrastructure** in Polish investment plans, which exacerbates dependence on high-carbon road transport and leads to a feedback loop – warehouses are built alongside roads rather than railways. The rail network is under-invested, has been dismantled over the years and the average speed of freight trains is 20 km/h below the EU average.

► **a competitive advantage built on low labour costs,** which will be lost in the development of the TSL sector can only function on the basis of Poland's economy and the automation of the sector. The relatively low attractiveness of the occupation (despite high wages), the inefficient training system for drivers, the masculinisation of the sector and the outflow of workers from Ukraine and Russia lead to a shortage of workers.

► **fragmentation of the sector,** especially in road transport, making it difficult to modernise (e.g. investment in a modern fleet).

► **low degree of electrification of road transport** and the poor level of preparation of electric vehicle charging infrastructure along major roads.

► **ignoring of environmental challenges** by much of the industry and politicians, despite the fact that these issues are increasingly important to a growing group of clients and consumers.

It is in the interest of the Polish TSL industry, and hence of the Polish economy and society, to modernise as soon as possible to minimise the negative environmental impact of the sector through electrification (*improve*) and modal change (*shift*), i.e. transferring more freight to rail transport. These are also the aims of the EU's Fit for 55 legislative package. The Polish TSL sector and the transport infrastructure (including the energy infrastructure associated with charging points) are not ready for change right now, but this does not mean that Poland should block it. On the contrary, supporting the sector's transformation in line with ambitious climate targets is the only way to maintain the sector's importance in the Polish economy.

Ambitious regulation can provide the necessary impetus for modernisation to a sector that is fragmented, poorly capitalised and often underestimates the importance of climate challenges. A key one is the EU's Alternative Fuels Infrastructure Regulation (AFIR), currently in the final stages of legislative work (trilogue). Poland should strive for the adoption of an ambitious version of this document, close to the European Parliament's proposal. Delaying or slowing down electrification of transport may protect the Polish TSL sector from the costs of necessary changes for a several years, but is a short-term measure and contrary to the Polish

raison d'état in the long term. **Regardless of the actions of the Polish authorities, the environmental requirements imposed on transport by regulators and customers will increase, as this is necessary to slow down the climate catastrophe.** A strategically planned modernisation, largely financed by EU funds, will undoubtedly change the structure of the Polish TSL industry, but may allow it to maintain its scale. The geopolitically motivated trends of onshoring and friendshoring will lead to a relocation of production to EU countries and this will increase transport t from these changes, but this requires an active state policy in terms of environmental needs within the Union – Polish companies and the labour market should benefit from these changes, but this requires an active state policy in terms of environmental challenges.

Poland can use the strength and scale of the TSL industry, in which it is the European leader, to drive these changes and maintain its leading position. But it can also delay these changes, which will ultimately lead to the loss of the market to more advanced companies and significantly weaken the Polish TSL sector and thus Polish logistics sovereignty and economic health.

1 Logistics and infrastructure

Logistics require integration

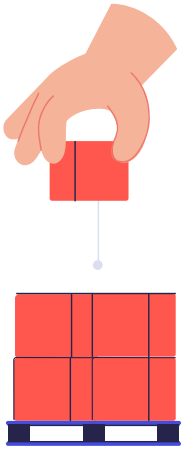
The Transport, Shipping and Logistics (TSL) sector includes all businesses that provide services for organising and transporting goods, including storage. The industry is linked to the rest of the economy - even locally produced goods need to be transported to the nearest recipient. And its greatest value is in creating the conditions for efficient medium- and long-distance transport. Consequently, TSL is at the heart of the globalisation of the economy, as it enables the creation of complex supply chains that often involve actors from different continents.

The sector consists of three main groups of companies:

1

transport operators

(transport of goods)



2

forwarding operators

(organising transport)

3

logistics operators

(planning of deliveries and storage)

Individual companies may provide services in all three areas or specialise in one or two. Manufacturers (who may organise the transport of their products themselves) and trading and e-commerce companies are also active in the TSL sector.

LARGEST COMPANIES FROM THE TSL SECTOR IN TERMS OF REVENUE IN POLAND

COMPANY	REVENUE (PLN BN)	CIT (PLN MN)	PROPERTY STRUCTURE	PRIMARY ACTIVITY
Poczta Polska	6.78	46.3	state	logistics
Amazon Fulfillment Poland	4.44	45.1	private	logistics
PLL LOT	4.02	0.04	state	air transport
PKP Intercity	3.71	0.06	state	rail passenger transport
InPost	3.43	51.7	private	logistics
PKP Cargo	3.43	0	state	rail freight transport
DPD Polska	3.2	66	private	logistics
Havi Logistics	2.79	4.17	private	logistics
Raben Logistics	2.39	62.8	private	logistics
Schenker	2.32	24	private	logistics
DHL Parcel	2.09	23.3	private	logictics

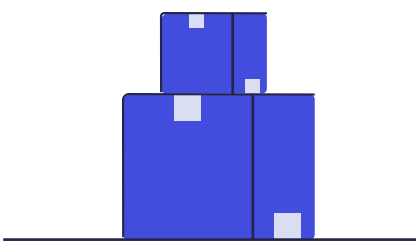
SOURCE: MINISTRY OF FINANCES, DATA FOR 2021, WITHOUT PIPELINE TRANSPORT, SINGLE COMPANIES.

The TSL sector belongs to the services division, but is closely linked to industry and trade - it is the domestic and international movement of goods that creates demand for these services. TSL is therefore highly dependent on the health of the economy as a whole, and indicators of demand for transport services say a lot about the economic situation. This relationship is obviously not one-sided, as inefficient, time- and cost-intensive TSL services can slow down economic growth. Such a situation was encountered in 2021, when global supply chains became inefficient due to low transport capacity, among other factors.

In terms of definition, the TSL sector does not include infrastructure, although it is impossible to operate without it. In Europe, linear infrastructure (roads, railways, inland waterways; with the exception of some airports) is almost entirely publicly managed. The situation is different in countries such as the United States, where rail lines are mostly owned by private freight operators. Point infrastructure (ports, intermodal terminals and warehouses) can be privately or state-owned, while these facilities are rarely managed directly by the state through specialised agencies.

Even narrowly defined logistics services, which do not involve the production or sale of goods, are highly specialised and only possible with the cooperation of numerous actors with different ownership structures. As a general rule, urban and short-haul logistics (including the first mile, i.e. transport from the producer to the warehouse, and the last mile, i.e. delivery to the final customer) involve road transport. Medium-haul logistics is the domain of road and rail transport. Sea and air transport are used primarily for long-distance transport, although the increase in demand for courier shipments and e-commerce requiring very fast logistics is increasing the use of air transport also for short distances (still very underdeveloped in Poland). Long-distance rail transport is still limited by infrastructure deficiencies (although investments, such as in the New Silk Road from China to Europe, are gradually changing this). In Poland, inland waterway transport plays practically no role in logistics due to the lack of infrastructure and unfavourable hydrological conditions.

Intermodal is the most efficient transport. It involves transporting goods using more than one mode or means of transport. In its most efficient variant, it involves transporting goods in containers that are easily transferred between ships, trains and lorries, without the need to unload and reload them. In Poland, the weight of cargo transported intermodally has been growing by double digits in the last decade. In 2021, more than 11 per cent of all goods (in terms of weight) transported by rail go to intermodal terminals. This is a percentage three times higher than in 2012.



INTERMODAL TRANSPORT IN POLAND

YEAR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of containers (mn TEU)	1.05	1.12	1.11	1.15	1.47	1.69	1.93	2.14	2.67	2.92
YoY growth		6.7%	-0.9%	3.6%	27.8%	15%	14.2%	10.9%	24.8%	9.4%
Weight of cargo (mn tonnes)	8.1	8.6	9.6	10.4	13.4	15.1	17.7	19.5	23.8	26.5
YoY growth		7.2%	11.3%	8.1%	29.3%	12.3%	17.4%	10.2%	21.9%	11.6%
Share of the total weight of rail transport	3.5%	3.7%	4.2%	4.6%	6%	6.3%	7.1%	8.3%	10.9%	11.2%

TERMINALS WITH A CAPACITY OF MORE THAN 200,000 TEU PER YEAR

SOURCE: THE OFFICE OF RAIL TRANSPORT (UTK).

Due to its complexity, **the TSL industry with its infrastructure almost always requires the cooperation of the private and state sectors.** The role of the state is primarily to provide adequate infrastructure based on a transport strategy that takes into account environmental, economic and social factors. Due to the fragmentation of the sector, it is the state and local administrations that are in a better position to give direction to development (e.g. through incentives for greener modes of transport, enforcing socially responsible employment conditions and strengthening anti-trust laws protecting smaller businesses). Public funds are key in providing access to TSL services (especially postal and courier services) in places where demand is too low to attract private companies. However, the market for TSL services is highly competitive and includes both state-owned entities (in Poland these include mail operator Poczta Polska, PKP Group, seaport operators, and to a lesser extent state air carrier LOT Polish Airlines) and private entities with domestic and foreign capital. The organisation of logistics solely by the state is not only inefficient, but in practice impossible due to the complexity and scale of the sector. At the same time, complete independence from state influence is equally unrealistic, if only because of the scale of infrastructure investment required. Cooperation between the state and private actors, therefore, boosts the efficiency of the sector, which means not only increasing the speed of transport, lowering costs and improving reliability, but also reducing the negative impact on the environment.

Polish logistics sector

Today, Poland is a European potentate in the TSL sector - largely due to its lower costs and favourable geographical location, but also due to the specialisation of its economy and increasingly better infrastructure. The organisation of the sector and its modernisation - taking into account environmental issues - is an opportunity to increase the competitive advantages of the Polish economy. On the other hand, the characteristics of the TSL sector - especially its fragmentation and very low margins - hinder modernisation and threaten to weaken the current position on the continent. As a result, the Polish economy stands to lose a great deal.

In 2019 (that year's figures are more reliable due to the subsequent pandemic-related disruption), the transport and warehousing sector - which can be identified with the narrowly defined TSL sector - generated PLN 140.6 billion in value added, accounting **for almost 7 per cent of the total gross value added of the Polish economy.** This is only a direct impact, but given the importance of transport for almost all parts of the economy, the sector is estimated to contribute indirectly to half of Poland's GDP[1]. In 2020, the transport and warehousing sector employed over 960,000 people with an average gross salary of over PLN 4,700. (although drivers in lorry transport earn more than twice as much).

In Poland, cargo transport in 2021 amounted to more than 2.25 billion tonnes[2], 3.6 per cent more than in 2020 and 3 per cent more than in pre-pandemic 2019, or 491.4 billion tonne-kilometres[3] (an increase of 2.4 per cent compared to 2020. and 1.5 per cent compared to 2019) Road transport invariably plays a dominant role in Polish logistics, with over 1.95 billion tonnes of freight transported by road in 2021, or 86.6 per cent of all freight transported in Poland.

1 Morawski, I., Defratyka, A., Łaszkowski, J., Kalisiak, A., (2022). Transport drogowy w Polsce 2021+. Access: https://tlp.org.pl/wp-content/uploads/2022/05/transportdrogowywpolsce2022plusn.pdf

2 GUS, (2022). Przewozy ładunków i pasażerów w 2021 r. Access: https://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5511/11/10/1/przewozy_ladunkow_i_pasazerow_w_2021_r.pdf

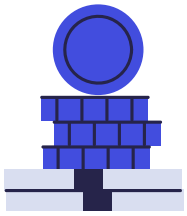
3 A tonne-kilometre is the unit for transporting one tonne of goods over a distance of one kilometre. The larger share in terms of tonne-kilometres than goods weight is due to the fact that Polish companies have a strong position in long-distance transport.

The vast majority of cargo is raw materials, agricultural and industrial products (including the food industry). Consumer goods (non-food products) account for less than 20 per cent of all cargo transported in Poland.

BASIC DATA ON THE POLISH TSL INDUSTRY IN 2021

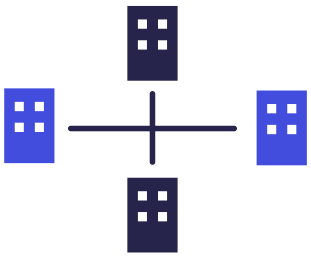
946,800

Employment



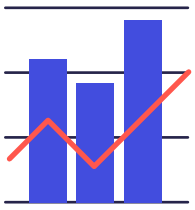
PLN 4,749 gross

Average monthly salary



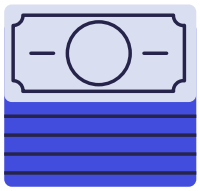
285,593

Number of entities active in the sector



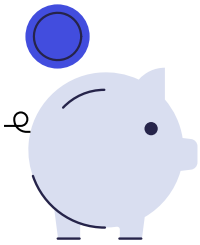
PLN 225.7 bn

Sales revenue



PLN 9.4 bn

Net financial result

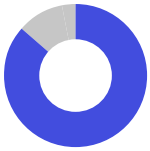
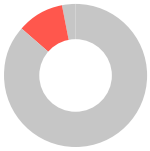
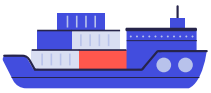


4.2%

Net margin

SOURCE: GUS (FOR THE TRANSPORT AND STORAGE DIVISION); FINANCIAL RESULTS FOR COMPANIES WITH 10 OR MORE EMPLOYEES.

CARGO TRANSPORT IN POLAND (BN TONNES)

	2021	2020	YOY GROWTH	SHARE IN THE TOTAL OF CARGO TRANSPORT	
TOTAL TRANSPORT	2.25	2.2	3.6%		100%
 **Road transport**	1.95	1.92	1.7%		86.6%
 **Rail transport**	0.24	0.22	8.9%		10.6%
 **Other (pipeline maritime, inland, and aircraft transport)**	0.06	0.06	-6.1%		2.8%

SOURCE: GUS.

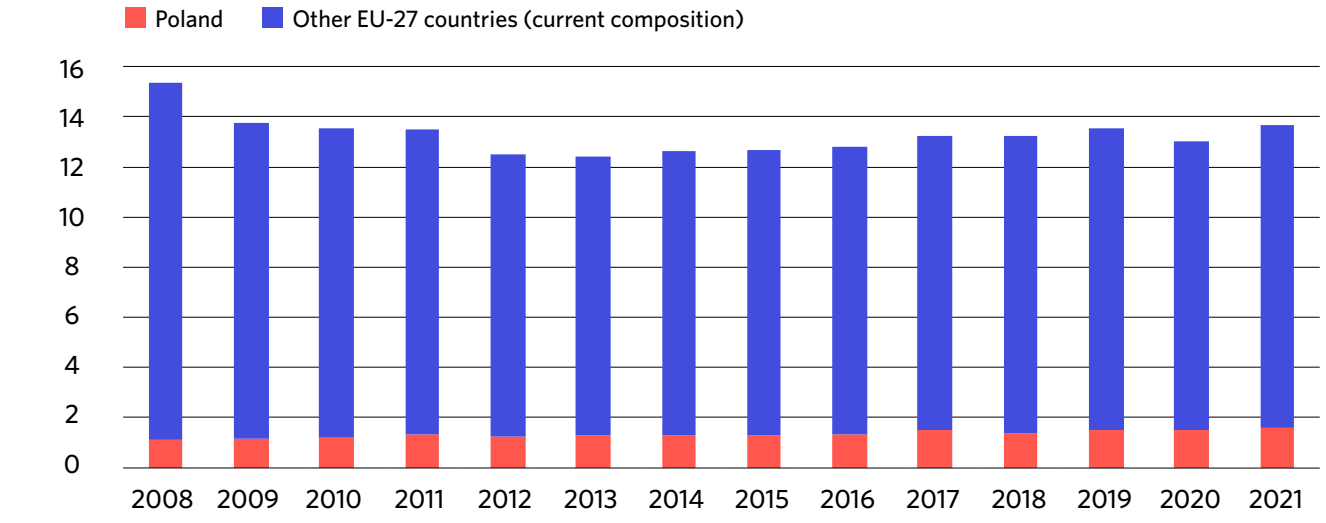
The dynamic development and importance of the TSL industry in the Polish economy are also reflected in the number of warehouses. Poland currently has 25 million sqm of warehouses and demand is outstripping supply - at the beginning of 2022, only 3.8 per cent of existing warehouses were vacant, with another 4.5 million sqm under construction[4]. In 2021, Poland was the sixth-largest warehouse market in the European Union and the second-largest in terms of new construction of this type of real estate. Logistics companies occupy around 20 per cent of Poland's warehouse space, with the rest going to manufacturers, retail companies (they can have their own logistics) and others.

The importance of the Polish TSL sector, especially **road transport,** can be seen by its share in the EU market. In 2021, Polish companies accounted for 11.6 per cent of total road freight transport in terms of freight weight and 19.8 per cent considering tonne-kilometres. **In terms of international transport alone, Polish companies control almost a third of the EU market.** Poland's market share for both of these indicators has been growing steadily since joining the EU. Although in terms of cargo weight, almost 82 per cent of Polish road transport is domestic, in terms of freight work as much as two-thirds of the tonne-kilometres are foreign (of which about 20 per cent are transports between third countries without cargo or unloading in Poland). Road transport is the only mode of transport that is more important for exports from Poland than for imports into the country.

4 Cushman & Wakefield, (2022). Powierzchnia magazynowa w Polsce - rekordowy popyt i poziom aktywnosci deweloperskiej. Access: https://investorrealestateexpert.co/powierzchnia-magazynowa-w-polsce-rekordowy-popyt-i-poziom-aktywnosci-deweloperskiej/

Rail transport is also of great importance for foreign trade (especially in terms of transporting raw materials, cereals and other general cargo) - one-third of all goods transported by Polish rail carriers (in terms of weight) cross the border. In contrast to road transport, rail logistics is concentrated on imports to Poland and domestic transport - Polish rail companies carry almost no freight between third countries and have a smaller share of Polish exports.

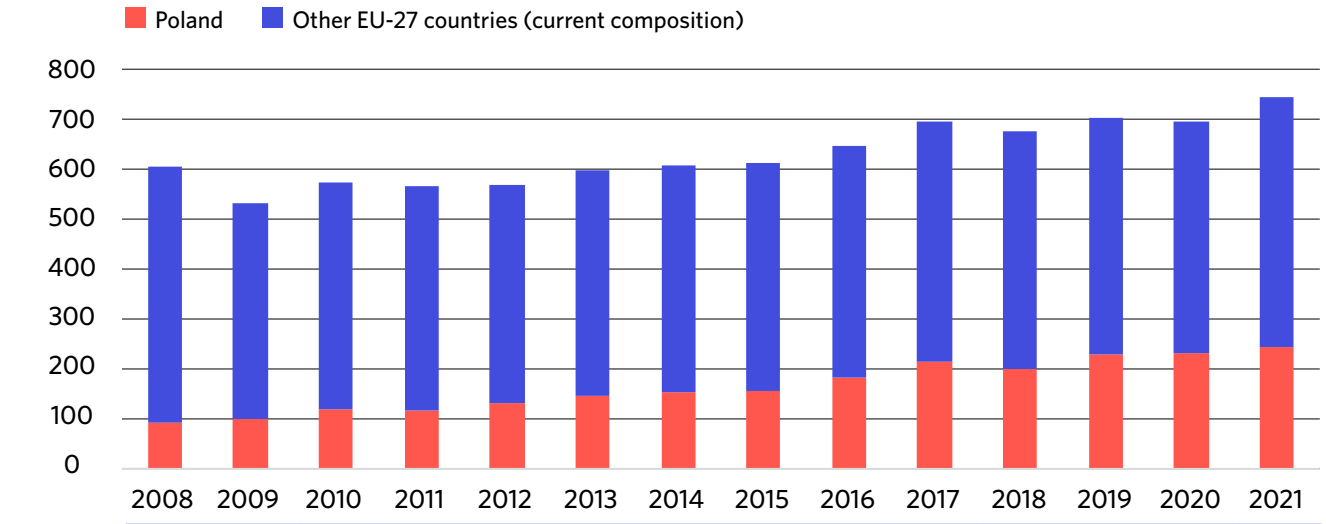
TOTAL ROAD CARGO TRANSPORT AND SHARE OF POLISH COMPANIES (BN TONNES)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Poland's share	7.1%	8.5%	9.0%	9.8%	10.0%	10.5%	10.3%	10.0%	10.3%	11.3%	10.5%	11.1%	11.5%	11.6%

SOURCE: EUROSTAT.

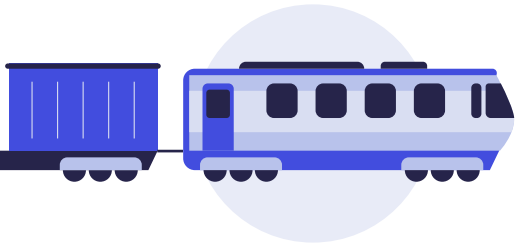
INTERNATIONAL ROAD CARGO TRANSPORT IN THE EU (BN TONNE-KILOMETRES)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Poland's share	15.3%	19.0%	20.9%	20.8%	23.5%	24.6%	25.4%	25.5%	28.5%	31.0%	29.8%	32.7%	33.2%	33.0%

SOURCE: EUROSTAT.

EXPORT AND IMPORT OF GOODS IN 2021 (MN TONNES)



Rail transport	
Exports	30
Imports	45.4
Total	**82.6**

Road transport	
Exports	92.5
Imports	77.4
Total	**237.9**

Maritime transport	
Exports	32.6
Imports	59.9
Total	**92.6**

SOURCE: OWN CALCULATIONS BASED ON GUS.
NOTE: EXPORTS AND IMPORTS DO NOT ADD UP TO THE TOTAL DUE TO TRANSIT SHIPMENTS.

Maritime transport is particularly important for global trade and the TSL sector, as ships carry the vast majority of goods in international trade. Maritime transport accounts for up to 90 per cent of the world's goods volume and 70 per cent in terms of value. The difference is due to the fact that goods with a high value density (light but valuable goods such as medicines or microprocessors) are carried by aircraft, while sea and rail transport specialise in bulk and heavy cargo. Poland's largest maritime transport operator, Polska Żegluga Morska, is a relatively large company but specialises in serving foreign markets and has little influence on logistics in Poland and Europe. As a result, maritime transport accounts for only less than 1.5 per cent of the Polish TSL sector's transport in terms of haulage (tonnes-kilometres) and 0.4 per cent in terms of cargo weight.

However, these figures do not reflect the importance of maritime transport for the Polish economy. The development of Polish seaports is proof that the lack of strong national carriers does not hinder the development of the national economy and the TSL sector. Poland's four main seaports are not among the leaders on the continent[5], but their transhipment volumes are increasing, and **Gdańsk - which accounts for almost half the volume handled by Polish ports - is by far the largest EU Baltic port** in terms of the weight of goods handled (including raw materials and foodstuffs) and the number of containers handled (which is linked more to consumer goods). In terms of importance for Polish international trade, maritime transport is ahead of rail transport.

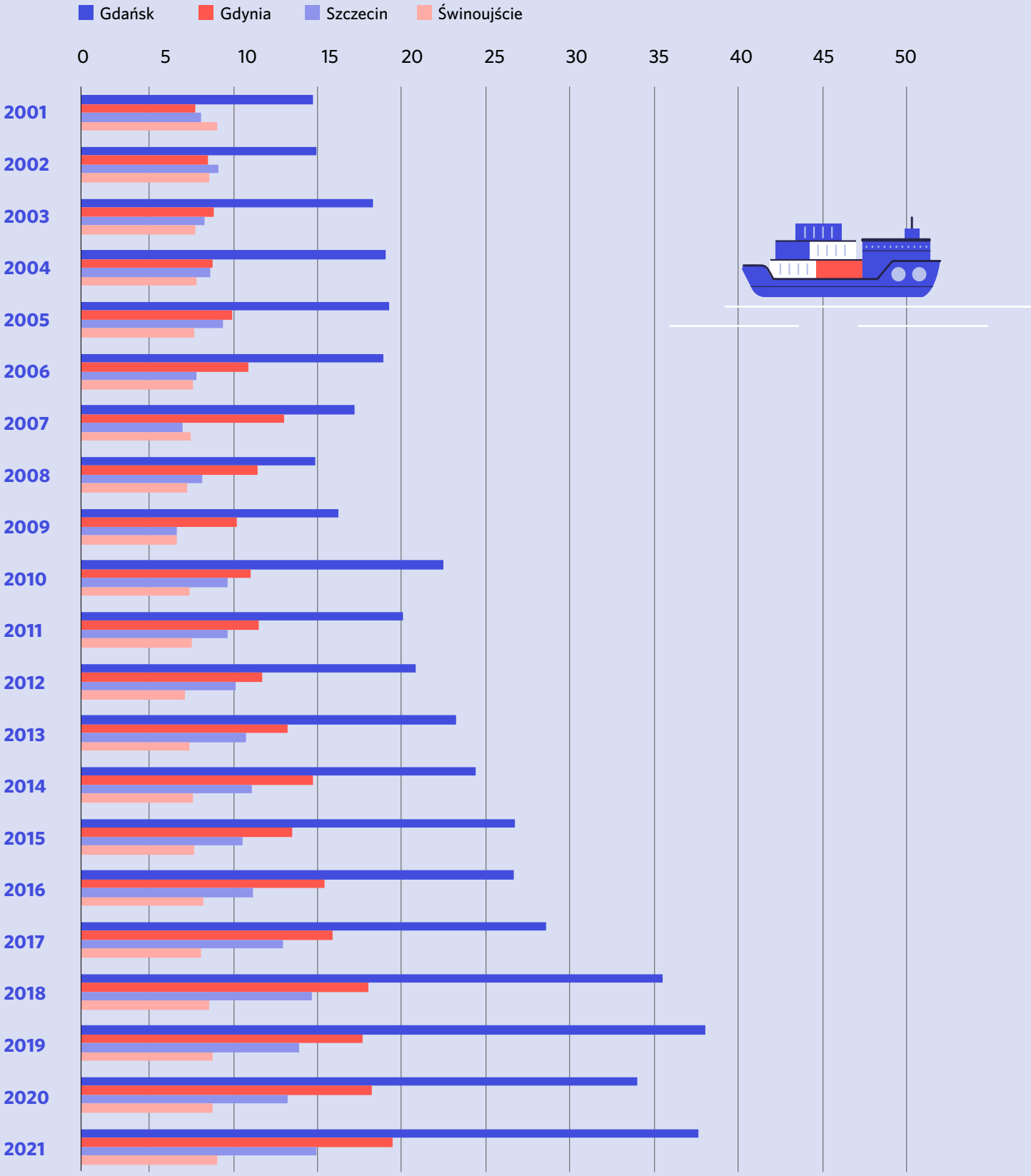
5 If all maritime transshipments in Poland were treated as a single port, it would be the fourth largest in the EU by weight of transshipments and the twelfth largest by the number of containers handled.

CARGO HANDLED IN THE LARGEST SEAPORTS IN THE EU, POLAND AND SELECTED EU BALTIC PORTS IN 2021 (MN)

	SEAPORT	CARGO HANDLED (WEIGHT - TONNES)	CARGO HANDLED (CONTAINERS - TEU)
TOP 5 - UE	Rotterdam	434.8	13.4
	Antwerp	215.9	12
	Hamburg	111.2	8.8
	Valencia		5.6
	Bremerhaven		5
	Amsterdam	88.1	
	Algeciras	83	
BALTIC SEA	Poland total	96.7	2.9
	Gdańsk	45.2	1.85
	Gdynia	22.7	0.98
	Świnoujście	17.2	0.002
	Szczecin	9.9	0.08
BALTIC SEA TOP 5 OUTSIDE OF POLAND (EU PORTS)	Klaipėda	41.4	0.67
	Rostock	22.3	
	Lübeck	17.5	
	Tallinn	22.3	
	Riga	20.8	0.42
	Aarhus		0.72
	Kotka		0.56
	Helsinki		0.43

SOURCE: EUROSTAT.

CARGO HANDLED IN POLISH SEAPORTS (MN TONNES)



	GDAŃSK	GDYNIA	SZCZECIN	ŚWINOUJŚCIE
Growth 2021 vs. 2001	+165%	+172%	+95%	-1%

SOURCE: EUROSTAT.

Air transport plays a minor role in Polish logistics, as there are no cargo hub airports in the country. Goods exported by air are most often unloaded at foreign airports such as (Frankfurt, Leipzig-Halle or Paris) and then transported to Poland by lorries as part of the *road feeder service* (RFS)[6]. It is worth emphasising that air cargo in Poland is not only small in comparison with Western European countries, but Warsaw Chopin Airport also loses out to Budapest.

CARGO AIRPORTS IN EUROPE IN 2021 (THOUSAND TONNES)

SOURCE: EUROSTAT.

6 Under such a service, the road transport is carried out under the same air operator's waybill and counts towards the cargo statistics of the airport to which it eventually arrives.

2 Logistics constraints

The globalisation of supply chains is one of the factors that has led to an unprecedented increase in global trade. According to the United Nations Conference on Trade and Development (UNCTAD), in 2021, global international trade was worth USD 28.5 trillion (the highest ever), of which USD 22.3 trillion was freight transport, for which TSL services are essential. Polish trade is growing just as dynamically, but the current situation of the TSL sector poses threats to the global supply chain.

VALUE OF WORLD AND POLISH TRADE IN GOODS

YEAR	WORLD TRADE (TN USD, current prices)	POLISH FOREIGN TRADE TURNOVER (BN USD, current prices)
2000	6.45	31.7
2001	6.2	36
2002	6.5	41.1
2003	7.59	53.8
2004	9.22	75
2005	10.5	89.4
2006	12.13	110.8
2007	14.02	140.1
2008	16.15	170.5
2009	12.56	136.5
2010	15.3	159.7
2011	18.34	188.7
2012	18.5	185.4
2013	18.94	205
2014	19	220
2015	16.55	199.1
2016	16.04	203.8
2017	17.74	234.4
2018	19.55	263.6
2019	19.01	266.6
2020	17.65	273.8
2021	22.33	337.9

SOURCE: UNCTAD.

Pandemic continues to hinder logistics. The COVID-19 crisis has, on the one hand, boosted demand for logistics services due to the rapid growth of e-commerce, but, at the same time, made it more difficult to meet demand. According to a PwC study[7], in 2021, e-commerce in Poland accounted for 13 per cent of all retail sales and was worth PLN 92 billion, and forecasts predict that the value of e-commerce will double by 2027.

SHARE OF E-COMMERCE IN RETAIL SALES

Year	Asia	North America	Western Europe	Eastern Europe	Latin America	ASEAN	Oceania	Africa
2007	1%	1%	2%	0%	1%		1%	0%
2008	1%	2%	3%	1%	1%		2%	0%
2009	1%	2%	3%	1%	1%		2%	0%
2010	2%	2%	4%	1%	1%		2%	0%
2011	2%	7%	4%	2%	2%		3%	0%
2012	3%	8%	5%	2%	2%		5%	0%
2013	4%	9%	6%	2%	2%		5%	0%
2014	6%	10%	7%	3%	2%		6%	0%
2015	9%	11%	8%	4%	3%	2%	7%	0%
2016	10%	12%	8%	5%	3%	2%	8%	0%
2017	13%	14%	9%	6%	4%	3%	9%	0%
2018	15%	15%	10%	7%	4%	5%	10%	1%
2019	17%	17%	11%	8%	5%	7%	11%	1%
2020	21%	23%	15%	13%	9%	12%	15%	2%
2021	23%	22%	16%	16%	11%	19%	18%	2%
2022	25%	24%	16%	18%	13%	21%	20%	3%
2023	26%	25%	17%	20%	14%	23%	21%	4%
2024	27%	27%	18%	21%	16%	26%	22%	4%
2025	28%	28%	19%	23%	18%	27%	23%	5%
2026	29%	30%	20%	24%	19%	28%	24%	5%

forecast

SOURCE: MORGAN STANLEY.

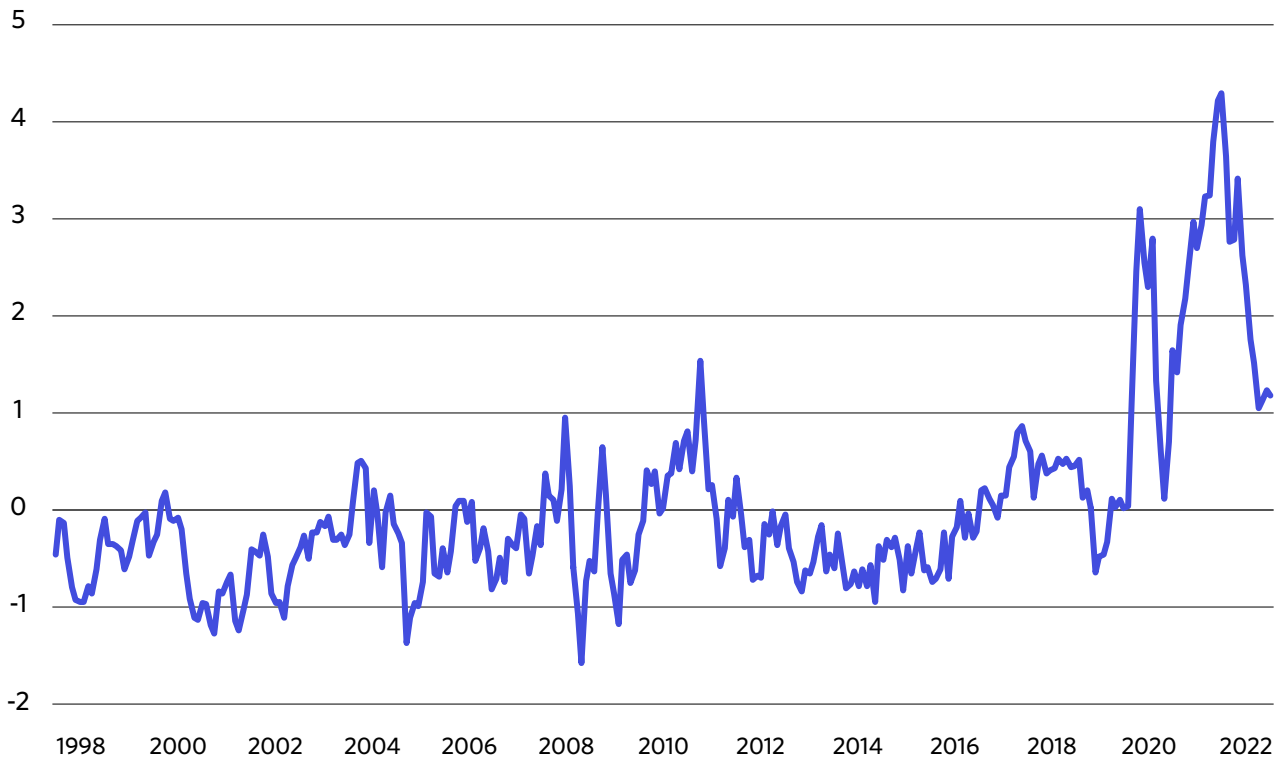
7 Łaptaś, G., Bazyl, M., (2022). Perspektywy rozwoju rynku e-commerce w Polsce 2018-2027. Dostępny: https://www.pwc.pl/pl/pdf-nf/2022/Raport_Strategyand_Perspektywy_rozwoju_rynku_e-commerce_w_Polsce_2018-2027.pdf

During successive waves of the pandemic, border crossing restrictions were a major impediment. These have now been lifted in most of the world, but China's zero COVID policy was a long-standing challenge for the TSL sector. China remained almost completely closed to international travel until early January 2023. Before the rather abrupt lifting of the restrictions, the Chinese authorities had put in place lockdowns with little notice in cities where only a few cases of the disease had been detected. During 2021 and 2022, such lockdowns were introduced at the ports of Shanghai, Ningbo, Tianjin, Dalian and Shenzhen and others. Ports continued to operate, but the reduced capacity immediately increased unloading and cargo times, and it is virtually impossible to relieve congestion while demand remains high. At the same time, Chinese government policy has had relatively little impact on industrial production (not least because of the concentration of factories and worker housing outside city centres), which, apart from the beginning of 2020 and a few weeks in 2022, has been growing steadily. This simultaneously has resulted in high demand for products exported from China and a smaller capacity to ship these products. The lifting of restrictions will ease the easing of this congestion, but the effects of China's almost three-year closure will drag on. The shortage of containers, or rather the lack of their liquidity, is also a problem. Once goods are exported from China to the US and Europe, the lack of capacity at intermodal terminals results in slow unloading, so containers do not circulate back to global exporters. This has been compounded by a smaller number of available container vessels - many shipowners scrapped older vessels at the start of the pandemic because they expected a prolonged slump. **The global economic downturn coupled with deliveries of new containers and orders of new ships are improving the situation, but the pressure on global supply chains remains the highest since 2011.** Analysts at the Federal Reserve Bank of New York estimate that industrial production problems in China are increasing and that the sudden loosening of pandemic restrictions in that country has led to a surge in COVID-19 cases. This means that while global pressure on supply chains has gradually eased over the course of 2022, „Chinese" factors have simultaneously largely negated these positive development[8]. The global average cost of shipping a container by sea increased fivefold during the pandemic and, despite falling in 2022 and stabilising at around USD 2,000[9], is still more than 40 per cent higher than before the pandemic. While the sources of these problems lie outside Poland, they also affect the timing, cost and predictability of deliveries to the country (especially in maritime transport).

8 Akinci, O., Benigno, G., Clark, H., Cross-Bermingham, W., Nourbash, E., (2023). Global Supply Chain Pressure Index: The China Factor. Access: https://libertystreeteconomics.newyorkfed.org/2023/01/global-supply-chain-pressure-index-the--china-factor/

9 Drewry, (2022). World Container Index. Access: https://www.drewry.co.uk/supply-chain-advisors/supply-chain-expertise/world-container-index-assessed-by-drewry

GLOBAL PRESSURE ON SUPPLY CHAINS (GLOBAL SUPPLY CHAIN PRESSURE INDEX, GSCPI)



SOURCE: FEDERAL RESERVE BANK OF NEW YORK.

Labour is in short supply. The shortage of drivers and pilots and warehouse workers is a problem that was already afflicting the sector before the pandemic. The increase in demand for logistics services amid extremely low unemployment is only adding to the problems.

The problems in the various TSL professions have different sources. One of the biggest challenges is the already serious and growing shortage of professional drivers. **According to a 2016 PwC report, there was then a shortage of around 100,000 drivers[10] in Poland (roughly 20 per cent of employment in the industry). More recent data from the World Road Transport Union (IRU) shows that there is currently a shortage of more than 40 per cent of drivers in Europe, and up to 150,000 in Poland, according to estimates from industry organisations.** One in two transport companies is currently struggling to find workers. This is due in part to the decline of vocational education and the elimination of compulsory military service - both of which were popular ways to obtain a lorry driving licence for free. The cost of training is high for young potential drivers and the work itself is unattractive for many, as it involves frequent long stays away from home coupled with stress. This means that even significantly above--average wages are unable to attract new drivers. There is also a shortage of train drivers due to the poor vocational training system - soon the shortage could be as high as 6,000, with the total employment in the Polish rail industry at 16,000.[11]

10 PwC, (2016). Rynek pracy kierowców w Polsce. Access: https://www.pwc.pl/pl/pdf/pwc-raport-rynek-pracy-kierowcow.pdf
11 Ciepielewski, B., (2022). Brakuje maszynistów na kolei. Rząd zamierza zmniejszyć wymagania zdrowotne. Access: https://strefabiznesu.pl/brakuje-maszynistow-na-kolei-rzad-zamierza-zmniejszyc-wymagania-zdrowotne/ar/c3-16807177

All transport driving professions are highly masculinised - in Europe, only 3.2 per cent of the workforce is made up of professional women drivers, with similar levels of female activity in the pilot and train driver professions. This is not only a social challenge, but also an economic one, as **the masculinisation of the sector exacerbates labour shortages.** The insufficient number of new employees obtaining professional driver or train driver qualifications is resulting in an increasing average age in both professions. Lorry and train drivers are mostly men approaching retirement age (the average age in the profession is around 50), which heralds a worsening of the problem in the coming years.

For logistics workers (e.g. people working in warehouses), the challenges are not sector-specific problems, but a result of the economic situation. Pay in these occupations is low and the work itself is physically demanding - often involving long hours in warehouses far from the city centre, the handling of heavy goods and high pressure.

To cope with the labour shortage, TSL companies were hiring people from abroad - in Poland, more than 130,000 foreigners were working in road transport alone in 2021. The majority of these (over 100,000) were Ukrainians, who returned to their homeland to join the armed forces after Russia invaded Ukraine. According to industry estimates, around 40 per cent of Ukrainian drivers working in Poland in the early stages of the conflict chose to return. However, hiring foreigners is legally complicated, and, additionally, Polish companies have to compete for them with companies from other countries in Europe and America. Despite some attempts, hiring people from more distant countries does not solve the problems - at the end of 2021, more than 95 per cent of foreigners working as drivers in Poland were people with Belarusian and Ukrainian passports.

The TSL sector does not expect the labour shortage problem to be solved in the coming years. One way to reduce the demand for labour is through automation - in the short term this is only possible to a limited extent in warehouses and not in transport. In addition, one source of strength for the Polish TSL sector is the relatively low labour costs. With very low margins (less than 5 per cent for the sector as a whole, but among the thousands of small, often one--person transport companies, this is usually much less), the industry is falling into a mid-growth trap - higher salaries are necessary to attract employees, but at the same time threaten small businesses with a loss of liquidity. In turn, automation, which will equalise labour costs across the EU, risks losing this advantage, which will be difficult to replace.

Infrastructure is inefficient. The TSL sector can only function on the foundation of an extensive infrastructure with adequate capacity. In Europe, public authorities are almost without exception responsible for the planning and construction of line infrastructure. There are large differences in the quality and characteristics of infrastructure between EU countries, particularly in the case of rail transport. The European high-speed road network (motorways and expressways) is relatively coherent (with exceptions mainly in the central and eastern European countries), but there are major problems with the rail infrastructure: infrastructure deficiencies on cross-border routes, incompatibility of power supply systems and (less frequently) track spacing. This makes international rail transport difficult - even when it is carried out, engine changes at the border or the limited capacity of rail routes increase transport times.

In Poland, the biggest infrastructure problem for logistics is the state of the railway network. Since the collapse of communism, virtually no new railway lines have been built (except for connections to airports), resulting in a decrease in the length of lines in operation from 24,100 km in 1990 to 19,300 km in 2021[12]. At the same time, existing lines, despite multibillion-dollar investments co-financed by the European Union, do not meet European standards in terms of speed and capacity. In 2021, according to the Office of Rail Transport (UTK), on more than 38 per cent of the Polish rail network, the maximum permissible speed was less than 80 km/h; in practice, the average speed of trains is much lower - for all freight, it was only 23.4 km/h, and for intermodal, 30.6 km/h. Both of these results are worse than a decade earlier and about 20 km/h lower than the EU average. Some of these problems are the result of necessary modernisation work, but in many cases investments are still in the planning stage. As a result, according to a survey cited by the government's „Intermodal Transport Development Strategy," a third of companies identify problems with the timeliness and speed of rail transport as a significant barrier to intermodal operations. By comparison, only 3.9 per cent of companies consider the availability of suitable road vehicles to be a problem, and 2.6 percent - the efficiency of port handling.

One of the major bottlenecks in Polish rail transport is access to seaports (especially to the Tri-City port complex) and the capacity of railway border crossings. This is one of the reasons why road transport dominates in Polish logistics, which has terrible consequences for the environment and is one of the most important challenges in the modernisation process of the TSL sector.

AVERAGE COMMERCIAL SPEED OF FREIGHT TRAINS IN POLAND (KM/H)

YEAR	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	23.9	23	23.1	24.9	25.1	21.5	25.5	25.9	23.4
Intermodal	32	33.6	31.8	31.3	29.9	28.6	31.2	30.8	30.6

SOURCE: THE OFFICE OF RAIL TRANSPORT (UTK).

12 This figure does not fully reflect the scale of neglect because on many of these lines are of poor quality in commercial terms.

Poland is also lagging behind the EU average in terms of preparation for transport electrification. At the end of 2022, just over 5,000 charging points for electric vehicles were installed in Poland, which is less than 1 per cent of all points in the European Union[13]. One charging point in Poland corresponds to almost 13 electric cars[14], which exceeds the level recommended by the EU of a maximum of 10 vehicles per charging point. Although there is a lack of detailed aggregate data on the capacity of Polish points, two-thirds of them are „free" stations (charged with alternating current). Poland currently has 24 charging points (at six stations) with a capacity of more than 300 kW[15] - the European Parliament has proposed in its version of the AFIR regulation that at least one such charging point should be at every station along roads in the TEN-T network (spaced every 60 km or less) already by the end of 2025.

On top of this, despite the rapid growth compared to a few years ago, electric cars in Poland still represent a very small proportion of all vehicles. In 2021, only 3.6 per cent of newly registered cars were electric. In the same year, the EU average was 17.8 per cent, and in Sweden it reached 46 per cent[16]. Only four EU countries (Cyprus, Slovakia, the Czech Republic and Estonia) have a lower share of electric vehicles than Poland, although, in terms of only fully electric cars (and not hybrids), the statistics are even worse - they account for 1.2 per cent of newly registered cars, which is the second lowest result (only Cyprus has less).

Gaps in transport policy. One source of capacity problems in Poland's transport infrastructure is a long-standing lack of planning at the central level. The Sustainable Transport Strategy was adopted by the government in September 2019. Previously, Poland did not have a document comprehensively defining transport policy, on which the health of the TSL sector largely depends, and investments were mainly carried out on the basis of separate strategies covering individual types of infrastructure (the National Railway Programme or the National Roads Construction Programme). Clear evidence of the lack of strategic thinking on transport is the fact that the aviation strategy comes from 2007, and its new version is being developed only now in the context of the construction of the Central Transport Port. **In addition, Polish transport strategies are essentially elaborate maps of planned infrastructure, which lack reflection and effort to answer questions such as what the Polish transport and TSL sector should look like or how to minimise the negative impact of transport on the environment.** They also insufficiently promote the construction of a network of charging points for electric vehicles and network infrastructure for adequate power.

As a result, Poland lacks infrastructural cohesion. A relatively advanced network of modern roads has already been built, ports are being expanded and have a high capacity, and the railway network - so far - is no longer being dismantled. However, there is no integration between the different modes of transport, which causes problems related to duplication of investments (building modern roads in parallel to existing and often underinvested railway lines) or ensuring sufficient capacity of routes to port and intermodal terminals. Logistics and freight forwarding companies invest in terminals and warehouses where the infrastructure provides them with the best conditions, and this is most often due to the availability of motorways.

13 ACEA, (2022). Electric cars: Half of all chargers in EU concentrated in just two countries. Access: https://www.acea.auto/press-release/electric-cars-half-of-all-chargers-in-eu-concentrated-in-just-two-countries/

14 rynekelektryczny.pl, (2023). Na jeden punkt ładowania przypada 13 pojazdów elektrycznych. Access: https://www.rynekelektryczny.pl/infrastruktura-ladowania-pojazdow-elektrycznych/

15 elektromobilni.pl, (2023). Mapa stacji ładowania. Access: https://elektromobilni.pl/mapa-stacji-ladowania/

16 European Environment Agency, (2022). Newly registered electric cars by country. Access: https://www.eea.europa.eu/data-and-maps/figures/new-electric-vehicles-by-country-1/

The result is a developmental feedback loop that perpetuates the dominance of harmful road transport. Furthermore, existing transport strategies do not sufficiently address environmental issues. While issues related to electromobility or intermodality have found their way onto the political agenda, they are often treated as piecemeal targets (e.g. number of electric vehicles registered) rather than strategically and holistically.

STRENGTHS

- Extensive TSL sector with a major role in the European economy.
- Good road, port and warehousing infra structure.
- Lower labour costs.

WEAKNESSES

- Dominance of road transport, which is the most environmentally harmful.
- Fragmentation of the sector, especially in road transport.
- Delays in rail investment, electromobility and poor network capacity.

OPPORTUNITIES

- Size of the sector allowing it to take a leadership role in the green transformation of logistics.
- Strengthening Poland's position as a gateway to Central and Eastern Europe (including Ukraine).
- Automation of logistics reducing the problems of finding staff and allowing higher wages.

THREATS

- Lack of capital for the necessary investment in fleet modernisation in road transport and, at the same time, ignoring environmental challenges by a large part of the transport sector.
- Lack of a strategic vision for the state that takes into account environmental issues, while at the same time excessive interventionism due to distrust of international capital.
- Changes resulting from the Mobility Package and, in the future, automation leading to a loss of the low labour cost advantage combined with an exodus of customers with increasing environmental requirements.

3 Logistics, security and economic development

Two unprecedented crises – first the COVID-19 pandemic and then the war in Ukraine – have clearly demonstrated the importance of an efficient and resilient supply chain. The challenges are quite different, but both crises showed that not only the economic development or material situation of the population, but their lives, health and the fulfilment of basic needs depend on the logistics of medicines and vaccines, personal protective equipment or the transport of Ukrainian grain. At the same time, these extreme situations are a practical study of the complexity of the logistics system and prove that its resilience to crises is greatest when a large number of enterprises with different specialisations and ownership structures work together. **From the point of view of security, the role of the state should be to protect competition in the TSL market and at the same time support ambitious environmental targets, rather than excessive interventionism and the building of state monopolies or, on the other hand, a radically free-market approach favouring large corporations.**

War in Ukraine and logistics

The Russian invasion of Ukraine led to the immediate closure of the country's airspace, and due to military action in the Black Sea, transport options from Ukrainian ports have fallen almost to zero. The possibilities for the transit of Ukrainian goods through Moldova and Slovakia are very limited, so Poland has become the natural gateway to Ukraine for the transport of people (returnees and refugees) and goods (including deliveries of military equipment).

Particularly important is the export of Ukrainian grain through Poland using the solidarity corridors created for this purpose. Ukraine is one of the world's most important food producers, especially of grain. In 2021, the country was the seventh-largest exporter of all grains combined in the world, but fifth in terms of wheat and third in terms of maize. Ukraine sells grains primarily to countries in the Global South (as does Russia). In 2021, according to the UNCTAD data, Ukrainian grain accounted for 50 per cent of grain imports in Pakistan and more than 30 per cent in Syria, Libya and Tunisia; for wheat, Ukraine provided almost 79 per cent of imports to Somalia, 59 per cent to Pakistan and 40 per cent to Lebanon. Despite the hostilities, from March to the end of October 2022, 20 million tonnes of agricultural products were exported from Ukraine, of which 12.5 million tonnes by land via solidarity corridors thro-

ugh Poland and Romania, and 7.5 million tonnes by sea (partially opened after an agreement with Russia in July 2022). The importance of exports through Poland is clearly demonstrated by data showing a several-hundred-fold increase in grain imports from Ukraine (which are then re-exported to other markets). At the same time, by November 2022, grain exports from Ukraine had already returned to 2021 levels, although for the entire 2022, exports declined by more than 30 per cent.[17]

INCREASE IN IMPORTS FROM UKRAINE (MN TONNES)

PRODUCT	JANUARY – AUGUST 2021	JANUARY – AUGUST 2022	CHANGE
 Wheat	3.1	38.5	+1 142%
 Corn	6.3	1,101.8	+17,389%
 Soy	5.4	59.6	+1,004%
 Rapeseed	86	166.8	+94%

SOURCE: GUS.

Humanitarian issues and the transport of essential goods to and from Ukraine are given prio-

17 The figures provided on an ongoing basis by the Ukrainian Ministry of Agriculture cover only some agricultural products, so they cannot be compared to the 20 million tonnes reported by the European Union.

rity, and following the imposition of sanctions on Russia, it has become impossible to import many products and minerals from that country. However, much more serious for the global TSL industry are the indirect effects resulting from the disruption of transport routes. Following the ban on Russian aircraft in EU airspace, the Kremlin responded with analogous restrictions, significantly lengthening flight routes from Europe to Asia. Asian airlines, including Chinese ones, are not banned, which, following the lifting of the country's zero COVID policy and the opening of borders, will give them a significant competitive advantage over European carriers. The war has also made rail transport more difficult. Although the main routes between Europe and Asia (China) do not run through Ukraine but through Belarus and are still open, shippers have prudently reduced long-haul volumes, while shipments to Russia and Belarus have been significantly reduced due to sanctions. These disruptions are very important for Poland, which is favourably located to become a transshipment point on the New Silk Road, the rail link between Europe and China. However, the impediments to the use of this route diminish hopes for a significant increase in the volume of intermodal transshipments in Polish dry ports.

The TSL industry's response to both the crisis situation in Ukraine itself and the repercussions of the war on other routes is proof of the flexibility that comes from having alternative routes. Although transporting goods to Ukraine by sea to Gdańsk and then by train or lorry is slower and more expensive than directly to Odessa, it is entirely possible, efficient and effective during the crisis. In addition to the disruption directly affecting the TSL sector, the industry is also suffering from the indirect effects of the war: above all, an increase in fuel prices and a possible decrease in demand for goods due to the recession and inflation.

As a result, the growing awareness of the importance of the TSL sector (in economic and security terms) and the scale of the challenges lying ahead increases the pressure for state intervention to protect the sector and the industries that depend on TSL services.

Why the state needs logistics

The potentially catastrophic grain export crisis from Ukraine has shown that logistics are not only needed for economic development, but can be vital for national security. Reactions to this crisis have often been in line with calls for sovereignist populism, a political stance emphasising the need for the state to "regain control" of particular sectors of economic and social life, allegedly lost or at least threatened as a result of globalisation. In the case of logistics, there have been claims that only state ownership or at least control of the entire transport chain provides resilience to extremes and, incidentally, guarantees that the local economy will fully benefit from the development of the industry. Vivid examples of a similar approach could have been seen after the outbreak of the pandemic, when the importance of national air carriers in the repatriation of people from abroad and later in the transport of personal protective equipment and vaccines was emphasised. At the same time, the dominance of companies with foreign (especially Western) capital in the Polish TSL industry and the growing pressure for stricter environmental regulations in the EU, allegedly to weaken the Polish sector, built on cost advantages, are sometimes criticised within the framework of sovereignist policy.

It is true that, apart from the leading rail carriers, LOT Polish Airlines and Poczta Polska, the

vast majority of the largest companies in the TSL sector are foreign-owned. In the ranking prepared by Dziennik Gazeta Prawna[18], among the 20 largest companies in terms of revenue, only five are entirely Polish and one has a majority share of Polish capital. The others, including the four largest companies, are entirely or almost entirely in foreign hands. The narrative portraying this situation as a threat to Polish economic development is, however, a populist oversimplification, as **"regaining sovereign control" of logistics by the state is neither necessary nor even helpful to ensure continuity of supplies in a crisis, let alone in a normally functioning economy.** For example, private bus operators can provide a huge supply of passengers and freight to and from Ukraine without state incentives. Although the road transport, logistics and freight forwarding sector is dominated by private ownership, state-owned companies play an important role in rail transport (PKP Cargo is by far the largest freight carrier in Poland with a share of over 35 per cent in terms of the weight of goods transported) and maritime transport (all ports are managed by state-owned entities). This means that services provided by private companies often require cooperation with state-owned operators, who thereby strengthen their position. Sovereignist arguments that portray foreign investors as exploiting the Polish workforce and deliberately keeping the country trapped in the middle development paradoxically underestimate the Polish economy. As a country with increasing purchasing power and rapidly growing foreign trade and e-commerce, Poland is one of the most attractive markets in Europe for the TSL sector, not only as a transit point, but also as a shipper and receiver of goods.

However, sovereignism in logistics also draws attention to significant challenges for the sector. **In the event of emergencies, the inability to mobilise local logistics capacity (which may be private and in the hands of foreign capital - insofar as the state can influence it) threatens the continuity of supply. However, an answer to these challenges does not lie in nationalisation but rather in diversification.** Only a diversified TSL sector guarantees the ability to react swiftly to crises. Large, international corporations are more resilient and have superior logistical, organisational, and financial abilities. **What is key, however, is that these corporations should contribute to the growth of the national economy and not abuse their dominant position.**

A significant challenge, which was recognised before the crisis, is the mid-growth trap in the Polish TSL industry. Despite the extensive experience and high quality of services provided by the sector, one of its most important competitive advantages remains the relatively low labour costs. In the case of the largest forwarding and logistics companies, their distribution centres, usually located in smaller towns or at least on the outskirts of agglomerations, are often among the largest investors and employers in a given location. On the one hand, this emphasises their importance to the local economy. But, on the other hand, it gives them a very strong bargaining card in negotiations with employees and local governments. Combined with Poland's low level of unionisation and weak labour market institutions, this can lead to a situation of creating many but low-quality jobs - a challenge that affects all large employers, especially in the field of freight forwarding and logistics, not just foreign ones. Given the fragmentation of the road transport sector, the dominance of the large freight forwarders contracting them also raises concerns about abuse of this position, for example through undue pressure on the pace of deliveries. Research[19] unequivocally confirms that multinational cor-

18 Dziennik Gazeta Prawna, (2022). 27. Ranking firm TSL. Access: https://g.infor.pl/p/_files/37497000/1-tsl-ranking--27-06-2022-dobry-37496603.pdf

19 Moehlecke, C., Thrall, C., Wellhausen, R., (2023). Global Value Chains as a Constraint on Sovereignty: Evidence from Investor–State Dispute Settlement, International Studies Quarterly, Volume 67, Issue 1.

porations, which have a strong influence on global supply chains (and thus the potential to upset them), gain a strong bargaining position with the countries in which they operate - thus can effectively lobbying for favourable regulations for themselves.

All economies dependent on foreign investment and dominated by foreign capital face the same risks, **namely the transfer of profits back to their home markets, which leads to the disproportionally low tax contributions in the country of investment (Poland).** However, this can be prevented by active and reasonable policy by the government.

Logistics sovereignism offers false solutions. Nationalisation, interventionism or other forms of too strong involvement of the state in the economy threatens to diminsh the TSL sector, adversely affect its growth, and as a result, it effectively lowers the state's "logistics sovereignty". No state, even one with a very strong economy, would not be able to cope with the day-to-day Logistics (let alone crises) without the involvement of the private sector. **Responsible public policy should focus on strategic planning of infrastructure investment and protecting the workers' rights, but not fight the foreign capital, which is central in the TSL sector.**

A developed TSL sector adds significant value to the Polish economy, providing consumers with access to cheaper, more diverse and faster-delivered goods and producers with greater sales and export opportunities. However, there is little doubt that the Polish industry has developed dynamically but also spontaneously; without a strategy, and for many years without a state vision for the sector. Despite its very positive contribution to Poland's economic growth, such development has created serious problems, and in the face of very pressing environmental challenges, massive planned investments (including those co-financed by the European Union) and geopolitical challenges, a more active, though not excessive, role for the state may be beneficial to the sector.

It is a truism to point out that every economy needs an elaborate TSL system to ensure cheap, fast, diversified and finally environmentally responsible transport of goods. Such a system can only operate effectively on the basis of intermodality, the substitution of carbon-intensive modes of transport by more environmentally friendly ones, the cooperation of entities with different specialisations and ownership structures, and an infrastructure that is planned, built and, most often, managed by the state. Nothing prevents state-owned corporations from gaining a strong position, as long as this is done under market conditions. **From the point of view of state policy, on the other hand, it is far more important to focus on environmental objectives in an integrated transport strategy.** To maintain the leading role of the Polish TSL sector, it needs to change and adapt to the environmental ambitions of the European Union and the climate change challenge.

4 Environmental responsibility of logistics

Agriculture and transport are the most polluting sectors. Agriculture is by far the largest producer of greenhouse gases in the European Union, primarily methane. Over the past 30 years, total emissions from agriculture have increased by 15 per cent, and over the same period emissions from transport have jumped by 112 per cent, more than doubling. In comparison, emissions from energy production have decreased by more than 9 per cent over the same period to 2021.[20] Not surprisingly, transport and the entire TSL sector are one of the biggest challenges on the European Union's path to reducing emissions compared to 1990 by 55 per cent by 2030 and achieving climate neutrality by 2050. This is why regulations directly affecting transport are key elements of the European Green Deal strategy, the *Fit for 55* regulatory package and other legislative and financial measures.

Transport and emissions

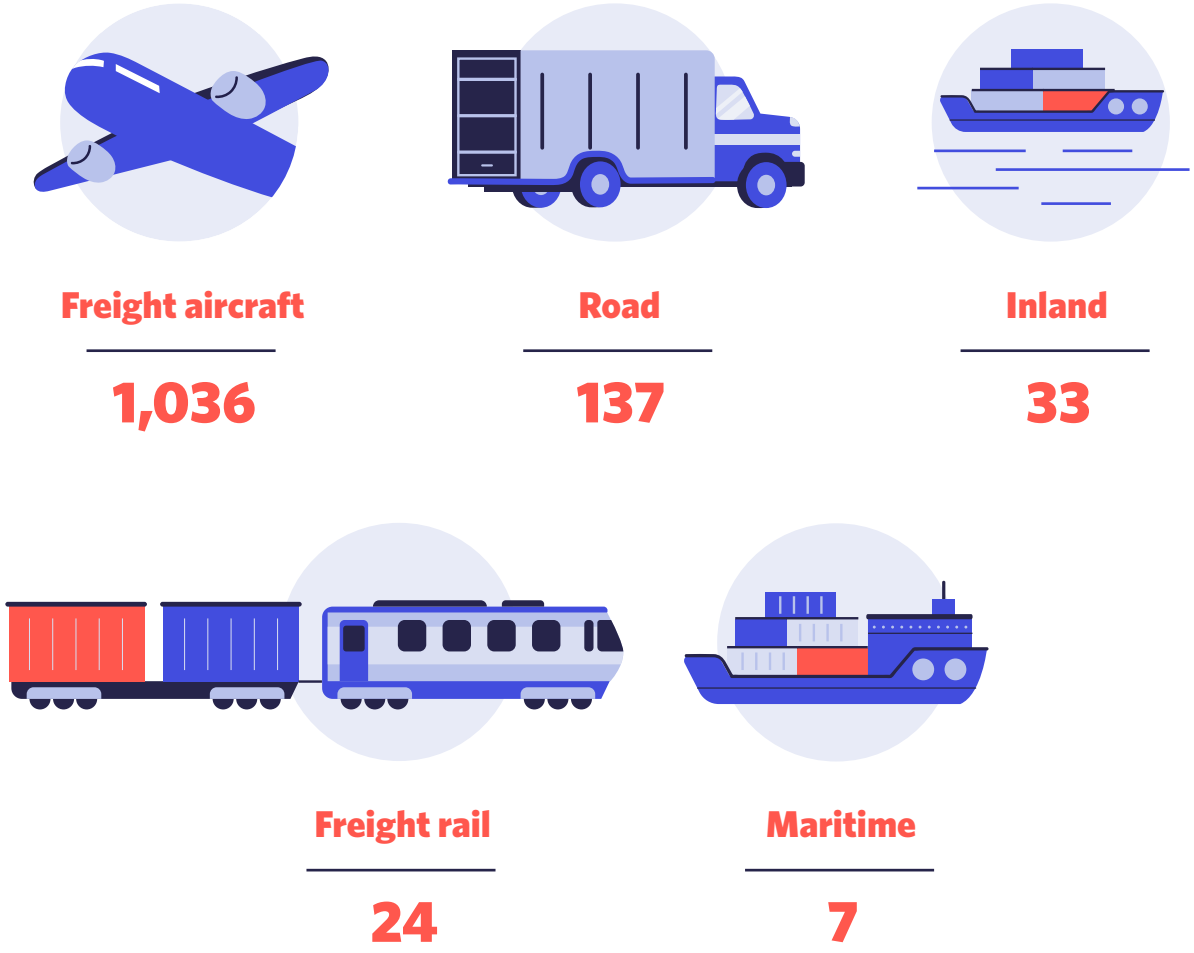
In 2021, transport accounted for 17.7 per cent of EU greenhouse gas emissions, almost twice as much as in 1990. Only industry and energy production emitted more carbon dioxide. In Poland, transport's percentage of CO2 emissions is much smaller (7.5 per cent), but this is mainly due to the much lesser emitting energy production rather than above-average clean transport. At the same time, road transport accounts for more than 90 per cent of all transport emissions. And EU statistics show that around 25 per cent of total transport emissions are generated by lorries[21].

Ageing fleets used by small carriers are one of the factors responsible for the negative environmental impact of road transport – in 2021, 20 per cent of the weight of goods in road transport was carried by lorries that were at least 15 years old.

Transport is also by far the most important source of noise pollution. According to the latest data from the European Environment Agency (EEA), in 2017, more than 6.5 million people in Poland were exposed to road noise above the standard during the day, and more than 4.4 million people at night. In comparison, rail transport generated noise exceeding the standard during the day for 420,000 people, aviation for 60,000 and industry for just 20,000.[22]

20 Environmental Protection Agency , (20022). Latest emissions data. Access: https://www.epa.ie/our-services/monitoring--assessment/
21 Ragon, P-L., Rodríguez, F., (2021). CO2 emissions from trucks in the EU: An analysis of the heavy-duty CO2 standards baseline data. Access: https://theicct.org/wp-content/uploads/2021/12/eu-hdv-co2-standards-baseline-data-sept21.pdf
22 European Environment Agency, (2021). Poland noise fact sheet 2021. Access: https://www.eea.europa.eu/themes/human/noise/noise-fact-sheets/noise-country-fact-sheets-2021/poland

AVERAGE EMISSIONS IN FREIGHT TRANSPORT BY MODE (2018)
(emissions: gCO_2 equivalent per tonne-kilometre)



SOURCE: EEA.
NOTE: DATA INCLUDE WELL-TO-WHEEL EMISSIONS, I.E. TAKING INTO ACCOUNT, AMONG OTHER THINGS. ENERGY PRODUCTION AND DISTRIBUTION.

Poland and EU transport policy to some extent encourage, but do not force, a shift away from high-carbon road transport. According to a report by the European Environment Agency, the regulations and policies in place in 2021 were insufficient to meet climate neutrality targets. In order to meet this challenge, transport should reduce emissions by 90 per cent by 2050, whereas under current plans this will only be 22 per cent. **Current trends threaten that transport alone will consume the European Union's entire remaining carbon budget and thus undermine efforts to reduce emissions in other sectors.**[23]

23 Buysse, C., Miller, J., (2021). Transport could burn up the EU's entire carbon budget. Access: https://theicct.org/transport-could-burn-up-the-eus-entire-carbon-budget/

TSL sector and Fit for 55

Given that current strategies are far from sufficient to implement the EU's climate policy in the area of transport, the Union is currently working on significantly tightening the regulations. Legislation on emission standards and the promotion of electrification of transport in the European Union has so far mainly concerned passenger transport (which is a larger source of emissions). It is only in 2019 that the community adopted emission standards for new lorries for the first time. Regulation 2019/1242 requires manufacturers to reduce emissions by 15 per cent by 2025 and by 30 per cent by 2030, although it only applies to lorries and not, for example, coaches.

The shift away from the widespread use of road transport, especially with combustion engines, is one of the objectives of the EU's Fit for 55 policy, which is expected to result in a 55 per cent reduction in emissions by 2030 and then achieve climate neutrality by 2050. The Fit for 55 package includes more than a dozen regulatory proposals. Among them, the TSL sector will be directly affected by:

- **Extension of the European Emissions Trading Scheme (EU ETS) to maritime transport and the creation of a separate emissions trading scheme for road transport (ETS II).** Currently, only air transport is obliged to purchase emission permits (and this only for flights within the EU, on top of which carriers receive some permits for free). Road and rail transport only participate in the EU ETS indirectly, as the scheme covers only energy production emission but not the direct emissions by road and rail vehicles. The introduction of ETS II for road transport, while exempting rail, is intended to encourage the choice of cleaner rail transport.

- **New emission standards for passenger and commercial vehicles and a ban on the sale of new combustion-powered vehicles beyond 2035.** This is the first of the regulations for which there is already a political agreement between the European Parliament and the Council of the European Union, although the law has not yet been adopted. The agreements have proceeded relatively quickly, not least because a number of major European car manufacturers have voluntarily declared in advance that they will withdraw combustion cars from European sales by 2035 or even earlier.

- **Alternative Fuels Infrastructure Regulation (AFIR), which aims to provide a sufficient network for charging and refuelling all vehicles with alternative fuels (mainly electricity or hydrogen).** According to the draft approved by the Council of the EU (softened from the Commission's proposal), installing chargers for passenger cars every 60 km or less along major roads and with a capacity proportionate to the fleet of registered electric cars and the density of roads on the European TEN-T network is to be made compulsory by 2025. Chargers for lorries are to be phased in between 2025 and 2030. The European Parliament, on the other hand, has proposed a version that is much more ambitious and brings the EU closer to the Fit for 55 targets needed to minimise the effects of the climate catastrophe. The Legislature proposes to extend the obligation to install chargers for light lorries on more roads and to introduce more specific requirements for the installed capacity of chargers per car depending on the degree of electrification of transport in a given country. The Parliament proposes that there should be at least one point at each station along major roads (on the TEN-T network) with a capacity of more than 300 kW by 2025 and more than 350 kW by 2030. It also wants hydrogen charging stations to be installed

along roads on the TEN-T network every 100 km (rather than 150 km, as proposed by the Commission) by 2027 (instead of 2030). The Council of the EU and the Parliament will agree on a common version during a trialogue in April 2023..

Separate proposals address green fuels in maritime transport and aviation. As part of Fit for 55, the European Commission has also proposed many other solutions that indirectly affect the TSL sector (e.g. by promoting renewable energy and taxing energy production).

It is worth adding, however, that the EU Mobility Package, in force since 2020, has introduced changes that not only negatively affect the competitiveness of Polish road transport, but above all reduce its efficiency within the EU. Officially, the Package was supposed to prevent social dumping, but in practice, the changes introducing, for example, limits on driving time outside the country of registration and restrictions on cabotage operations (within a third country) are motivated by protectionism.

New transport, not lack of transport

It is in the interest of the Polish TSL sector and the Polish economy to take the lead in the pro-environmental transformation of the sector, rather than delaying it. While such action could in the short term avoid the costs of change, Poland would eventually lose its dominant position in the sector to countries that have invested in the transformation. In addition, it would make it more difficult to achieve the goals of reducing emissions and halting the rise in temperatures.

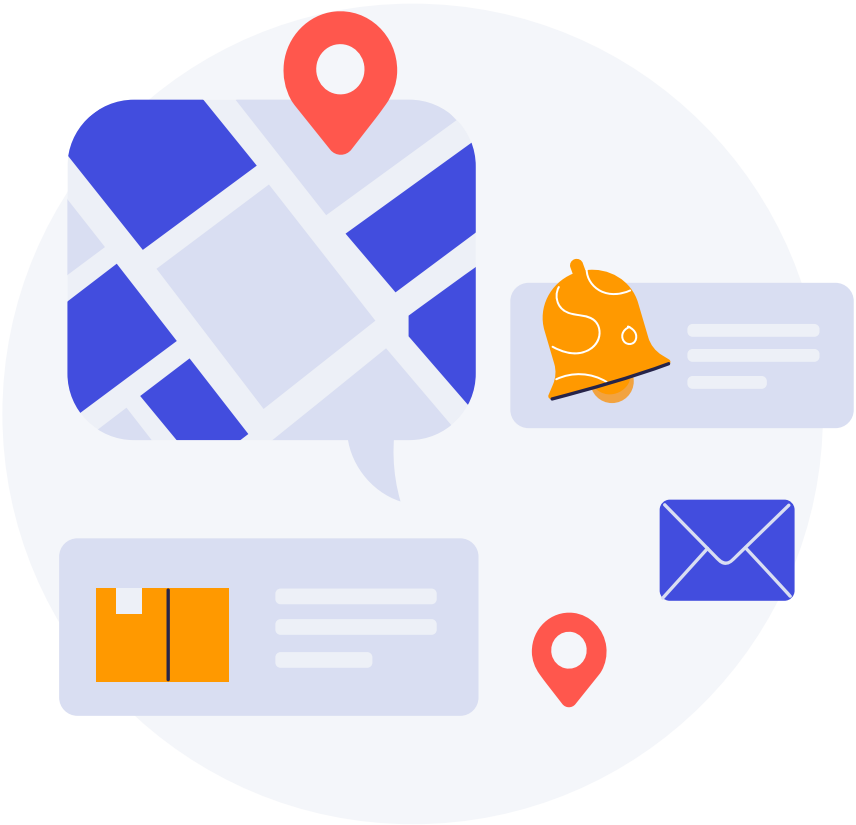
TSL sector emissions issues are a particular challenge for the Polish economy due to the dominance of road transport - both in terms of the structure of domestic transport and Poland's role in the EU economy. Changing transport modalities is always one of the main ways of reducing emissions in transport, but in Poland it is of particular importance. The investments planned as part of the broadly defined Central Airport project are intended to increase rail accessibility for Poland's smaller cities, but this is only part of the answer. Indeed, the problem over the past 30 years has been to define transport development by kilometres of road or (much less frequently) rail track built. But, beyond this, what is needed is a responsible environmental policy that actively forces a change in modality. Success will not be achieved simply by increasing the length of the active rail network, but by reversing the trend associated with the increasing share of road transport in the transport mix. At the same time, road transport needs investment in a network of charging stations for electric and hydrogen vehicles and in teletechnical infrastructure to enable automation and better transport management.

A responsible climate policy for transport should not consist of measures to force a reduction in the TSL sector, although it is necessary to change the characteristics of transport. However, current trends indicate that transport will be an even greater contributor to climate catastrophe in a few years or so. Radical decisions may then be necessary. Although time is short, active planning of a transport strategy that prioritises environmental and social sustainability can make this transition smoother and, hence, easier for a fragmented industry.

Localisation of supply chains

Reducing the demand for transport, especially road transport, is one of the most important challenges in modernising the TSL sector. Experts emphasise that this is the basis for the entire process of changes towards the climate neutrality of the sector. However, the evolution of the sector should not be based on a forced reduction of consumption, but rather on rationalising it and making environmental costs more realistic.

The localisation of supply chains is driven by geopolitical trends: *onshoring* (pulling production back to consuming countries, even if this involves higher costs) or friendshoring (moving production to "friendly" countries). Poland may particularly benefit from the second trend, as a country that is still relatively cheap and geopolitically closer to the EU and the US than traditional producer countries such as China, Vietnam or even India. In addition, there is a growing environmental awareness among consumers who prefer to buy locally produced goods. No matter how much supply chains shorten, TSL services will remain crucial in terms of both short-haul and long-haul transport, as *onshoring* opportunities will be limited by the cost or unavailability of certain goods in local production.



5 Logistics of the future

Faced with the challenges of staff shortages, inefficient infrastructure and the urgency of emissions reductions and the regulations that will force these reductions, logistics must undergo a profound transformation. The overall framework is set by the slogan: *avoid, shift, and improve.* The avoid trend is related to the reduction in the demand for transport and focuses on the previously described localisation of production and consumption, although in a broad sense, it also includes a reduction in the demand for private travel and the digitalisation of services and certain products. Characteristic solutions are, for example, urban planning measures that concentrate on cities or the introduction of restricted or paid entry zones.

Shift: **railways, not lorries**

In the medium term, the hopes placed on the electrification of road transport are to some extent unrealistic, but also ineffective in terms of solving the sector's problems. Experience to date shows that new combustion reduction technologies and the use of biofuels reduce individual vehicle emissions (by more than 10 per cent since 2000), but are unable to compensate for the ever-increasing demand for road transport and the increase in the share of road transport in the transport mix[24]. Moreover, the electrification of lorry transport is progressing much more slowly than in passenger or urban transport. Representatives of the global industry surveyed by DHL estimated that decarbonisation and alternative energy sources are among the most significant trends in the industry, but will only be felt in a big way within a timeframe of 5-10 years[25].

Autonomisation of road transport is still a distant prospect. It will not happen in the coming years for both technological and regulatory reasons. Autonomisation could solve a large part of the problems in the transport labour market, but it would not have the desired effect in terms of reducing emissions, as the result would be an increase in congestion (autonomous vehicles, at least in the designers' assumptions, would be used much more efficiently and spend much less time in car parks). More likely are changes to improve management, such as by swapping drivers during stops so that trucks do not have to stand parked while the driver rests. However, these changes, too, are likely to bring only a small improvement in terms of staff availability and zero in terms of emissions reduction. From the point of view of the Polish industry, autonomisation may reduce the problem of labour shortages, but at the same time, it will take away from transport operators their most important competitive advantage, namely low labour costs.

24 European Environment Agency, (2022). Reducing greenhouse gas emissions from heavy-duty vehicles in Europe. Access: https://www.eea.europa.eu/publications/co2-emissions-of-new-heavy
25 DHL, (2023). The logistics trend radar. Access: https://www.dhl.com/global-en/home/insights-and-innovation/insights/logistics-trend-radar.html

Upgrading lorry engines by introducing stricter emission standards, requirements for the use of biofuels and, in the longer term, alternative power sources (electric and hydrogen) remains an important element on the road to climate neutrality. Above all, these measures slow down the growth in emissions, and the most important way to reduce emissions remains the modal shift in transport. Above all, increasing the use of rail transport, especially intermodal transport, which will allow efficient use of road transport where rail cannot replace it, i.e. in the first and last mile.

Improve: **urban electrification**

The improve category covers many technological and organisational changes, the cumulative effect of which will contribute to a more sustainable TSL sector. Many of them, such as those concerning energy production methods, do not apply only to this industry. However, it is worth noting a few trends that can bring about a significant improvement relatively quickly and, at the same time, influence the market environment of the Polish TSL sector.

Urban delivery vehicles are currently one of the proportionally largest sources of road transport emissions. In addition to air and noise pollution, they contribute to congestion in traffic. At the same time, this is the area where it will be technologically and organisationally easiest to move away from conventionally powered vehicles and more widely from delivery vehicles of any kind. Already, an increasing number of logistics companies are introducing cargo bicycles, electric scooters or small electrically powered vans, which realistically improve the environmental and operational efficiency of urban deliveries. In 2020, around 2 per cent of all light commercial vehicles registered in the European Union will be electric. This is a rate four times higher than for large lorries; buses fare even better - more than 6 per cent of new ones were electrically powered[26].

Electrified air transport, including the use of unmanned aerial vehicles (drones), is also becoming increasingly attractive. The technology is no longer a challenge and the factors holding back their uptake are regulation on the one hand and operational scalability on the other. While in many respects Poland's transport policy is underdeveloped, in terms of the commercial use of drones it is one of the best developed in Europe[27], which creates opportunities for the relatively rapid implementation of these solutions.

For the same reasons that electrification will happen faster in cities – that is, mainly the short distances and the relative ease of setting up a charging network – electric vehicles will increasingly be used in manoeuvring yards, warehouses, intermodal terminals and similar facilities. In the same places, there is also an opportunity to introduce automation – especially in warehouses, most of the simple tasks (related to handling or sorting goods) can already be taken over by robots.

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26 European Environment Agency, (2021). Decarbonising road transport — the role ofvehicles, fuels and transport demand. Access: https://www.eea.europa.eu/publications/transport-and-environment-report-2021

27 The PANSA UTM system developed by the Polish Air Navigation Agency reached the level of technological maturity set by the EU as a target for 2021 already in 2019.
PANSA, (2020). PANSA UTM reached in 2019 the level of maturity required by the EU by 2021. Access: https://www.pansa.pl/en/pansa-utm-reached-in-2019-the-level--of-maturity-required-by-the-eu-by-2021/

Electrification in long-distance transport is possible, but its adoption will be gradual. It will also require a major regulatory and investment effort and realistic targets. Electrification of long-haul road lorry transport will not happen quickly, as even the most ambitious AFIR regulations will not be able to accelerate the replacement of carrier fleets. However, such regulations are necessary to provide the impetus for change - given the high investment, high inertia and ignoring of problems by parts of the industry, without tough regulations emissions will not decrease.

Leading the transformation will undoubtedly be global logistics companies with the required capital, know-how and a corporate culture geared towards seeking marginal profits. This is one of the reasons why the government should not unduly restrict the activities of such companies and try to replace them with national operators, who often lack the know-how and staff capable of leading the transformation quickly. But at the same time, it is also a boost for the government to look after the interests of operators who simply cannot afford automation and electrification - well-planned subsidies and protection of competition in the market are crucial for the sector to continue to develop in an environmentally and socially sustainable way.

Far-reaching regulations under the Fit for 55 package, including a version of the AFIR regulation that takes into account the European Parliament's proposal, would bring the EU closer to achieving its climate goals. At first glance, they may appear costly and detrimental to the Polish industry. Clearly, their introduction will entail investment. Due to the fragmentation and lower capitalisation of the sector and the still weaker infrastructure, these expenditures will be a greater burden in Poland than in Western European countries, although a large part of them can be financed from EU funds. It is important to realise that these regulations are motivated by the climate catastrophe, which is an increasingly important topic for consumers and businesses. Even leaving aside the issues of environmental responsibility and the risk of climate catastrophe, in the narrow view of the TSL sector, the market will pay increasing attention to environmental issues. These changes can be slowed by blocking ambitious regulations, but this will only give Polish companies a few extra years (and at the same time make it more difficult to meet the EU's emission reduction targets). Ultimately, they will face the new environmental requirements anyway. If preparations for these changes do not start in advance and the government does not adopt an active policy to motivate and at the same time facilitate these changes (e.g. by building infrastructure), the Polish TSL sector will not be able to catch up in a few years. At the same time, it will lose its cost advantage and customers, and this will ultimately weaken the Polish economy and its ability to respond to crises. That is why, although costs in Poland will be significant, they are necessary to remain competitive - an investment in the long-term strength of the Polish TSL sector.

Summary

TSL services will remain a key sector of the economy, although their role will change. Deglobalisation forced by geopolitical factors and the growing environmental awareness of consumers will shorten supply chains, with green modes of transport playing an increasingly important role: electric vehicles and bicycles in cities and trains on long-distance routes. Road transport, which dominates the industry today, needs to become less important - it is responsible for too many harmful emissions, and suffers from labour and infrastructure capacity shortages.

However, such changes will not happen on their own. The Polish TSL sector needs an environmentally and socially responsible strategy, which successive governments have failed to develop over the years. The development of the e-commerce market, which requires efficient TSL services, the increasing number of employees in the sector and, finally, the crises related to the COVID-19 pandemic and the war in Ukraine have drawn the attention of politicians to the entire sector. The construction of the Central Airport or the adoption of the Sustainable Transport Strategy are steps in the right **direction, but action is still focused on infrastructure investments and supporting state-owned operators, rather than creating a comprehensive strategy covering the entire market.** This is needed to follow the *avoid, shift, improve* model and to take advantage of the cooperation between private and public operators within the framework of the increasingly far-reaching intermodalisation of transport.

The sector is in a "transformational moment" due to market and regulatory changes. After a temporary increase in low margins, triggered by the gigantic demand for e-commerce during the pandemic, rising fuel prices and labour costs are threatening smaller companies in particular. And already the fragmentation and low capitalisation of companies, especially in road transport, has been a major challenge in terms of the necessary modernisation of vehicles and investment in environmentally responsible technologies. At the same time, the EU's Fit for 55 programme will change the regulatory environment and force a shift away from the most polluting modes of transport. To ensure that these two trends do not disrupt the Polish TSL sector, an active government policy is needed to protect workers in the sector and small businesses by adopting ambitious environmental targets.

The aim of this report is not to propose a specific policy for the TSL sector, but to build a basis for developing such a policy. The conclusions from the review of the current situation and challenges for the industry are as follows:

- The TSL sector is of key importance to Poland both in terms of contributing to economic development, generating jobs and supporting domestic and foreign trade, as well as guaranteeing the continuity of supply of essential goods during geopolitical crises.

- The strength of the TSL sector lies in its diversification and the existence of alternative routes, using cooperation between private and state-owned companies and public infrastructure operators in intermodal transport. Encouraging and protecting this diversity is a more effective way of ensuring economic growth and national security (economic and logistical) than artificially strengthening state-owned companies.

- The industry stands at the threshold of a necessary, relatively rapid and very deep technological transformation related to environmental issues. It is in the interest of the Polish economy to support the transformation, set ambitious targets and maintain its leadership position. Attempts to slow down the transformation or soften climate targets will exacerbate the climate catastrophe and are ultimately doomed to failure anyway. They can only make it more difficult for Polish actors to participate in the change and lead to the loss of their position as EU leaders.

- The most important, and so far often neglected, role of the state in the TSL sector is to set strategies. These plans must take into account ambitious climate targets and include elements of *avoid* (e.g. urban changes reducing transport needs), *shift* (e.g. supporting the rail network at the expense of the road network) and *improve* (e.g. supporting electromobility, the use of drones and changing the energy mix). The state should also protect the sector, especially small businesses and workers, from the dominant position of multinationals.

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