

EMCC case studies

Transport and logistics sector: PKP Group, Poland

Introduction

Company development

Localisation strategy

New technology

Profile of the workforce

Industrial relations

Future challenges

Contact details

Sources



The Polish State Railways (Polskie Koleje Państwowe, PKP) Group is composed of the dominant railway operators in Poland and is the biggest Polish employer. The PKP Group was established in 2001 as a result of the restructuring of the former state-owned railway company in Poland.

Restructuring at PKP is a ongoing process that moves slowly due to large inherited debts, declining numbers of passengers and freight, under-financed infrastructure, and continued discussions on privatisation and regionalisation of the railways. In the same period, the company has worked to adapt to EU legislation, liberalisation of markets and the emergence of competitors.

A large number of employees are expected to retire in the coming years, due to an unbalanced demographic profile. Observers are positive about the commercial opportunities in the Polish railway market, but PKP Group still has serious challenges to overcome in the future.

Introduction

The companies within the Polish State Railways (*Polskie Koleje Państwowe*, PKP) Group operate in the areas of passenger transport, freight transport and rail infrastructure. The group represents the fourth largest railway company in Europe and the biggest Polish employer, with about 124,500 employees.

The PKP Group was established in 2001 as a result of a restructuring process of the state-owned Polish railways. Restructuring was necessary in order to comply with directives of the European Union, and the reorganisation aimed to separate the operating activities of the railways from the management of the railway lines.

Polish State Railways, Joint Stock Company (*Polskie Koleje Państwowe Spółka Akcyjna*) is the dominant company in the PKP Group. PKP S.A. has 100% share control of all companies in the PKP Group – with the exception of the infrastructural Polish Railway Lines (*PKP Polskie Linie Kolejowe*, PKP PLK S.A.) – and is responsible for managing them. These enterprises are, however, separate entities in commercial law.

PKP Group consists of a range of operating companies that provide services in the passenger transport market, the freight transport market and infrastructure (Table 1).

Table 1: PKP Group overview 2006

Logo and name		Responsibility	
PKP	Polish State Railways (Polskie Koleje Państwowe S.A., PKP)	Dominant company. Total number of employees is 3,340.	
Passengers			
HUGC	PKP Intercity S.A.	Responsible for long-distance passenger transport. The general standard of Intercity, Eurocity, Express and Euronight trains serviced by the company is higher than that offered by PKP Przewozy Regionalne Sp. z o.o. In 2006, PKP Intercity carried 10.7 million passengers and had 2,437 employees.	
PKP PRZEWOZY	PKP Regional Services Ltd (PKP Przewozy Regionalne Sp. z o.o., PKP PR)	Responsible for regional passenger transport services. It runs about 3,000 daily regional trains and more than 300 long-distance trains. The company carried 161,374 passengers in 2006 and had 16,701 employees.	
5	PKP Rapid Urban Rail in Tri- City Ltd (<i>PKP Szybka Kolej</i> <i>Miejska w Trójmieście Sp. z o.o.</i> , PKP SKM)	Rapid urban rail passenger transport in the northern area of Tri-City (Gdynia, Sopot and Gdańsk). The company carried 39.3 million passengers in 2006 and had 854 employees.	
WKD	PKP Warsaw Commuter Rail Ltd (PKP Warszawska Kolej Dojazdowa Sp. z o.o., PKP WKD)	A commuter light rail network operates in the capital city of Warsaw. In 2006, this transport system carried 6.6 million passengers and had 227 employees.	
Freight			
PKP CARGO	PKP Cargo S.A.	PKP Cargo is the second largest freight transport company on the European railways after Deutsche Bahn (DB) in Germany. PKP Cargo owns 3,539 locomotives and 50,731 freight wagons. It has 45,090 employees.	
27.17	PKP Broad Gauge Line Ltd (PKP Linia Hutnicza Szerokotorowa Sp. z o.o., PKP LHS)	Freight transport (broad gauge, that is, wider than the standard gauge) on a 400 kilometre (km) stretch of the line from the southeastern Polish-Ukrainian border in Izow-Hrubieszów to Sławków Południowy, near the south central city of Katowice. In 2006, this company carried 7.3 million tonnes and had 1,247 employees.	
Infrastructure			
Telekom	Railway Telecommunications Ltd (Telekomunikacja Kolejowa Sp. z o.o.)	Rail telecommunications. The company is responsible for telecommunications and data transmission for the Polish railways. It also serves a number of other companies outside the PKP Group. In 2006, it had 3,202 employees.	
AP DEGISTRA	PKP Power Engineering Ltd (PKP Energetyka Sp. z o.o.)	Responsible for supplying Polish railroad operators with electric energy; it has 8,379 employees.	
PKP informatyka spółka z o.o.	PKP Information Technology Ltd (PKP Informatyka Sp. z o.o.)	Responsible for supplying Polish railway operators with information technology (IT); it has 817 employees.	
PKP POLSKIE LINIE KOLEJOWE S.A.	PKP Polish Railway Lines (<i>PKP Polskie Linie Kolejowe S.A.</i> , PKP PLK)	Railway lines management. This company is responsible for 18,964 km of state-owned railway lines, conducting the trains across country, scheduling train timetables and the management of railway grounds. It has 43,009 employees.	

Source: Annual report of PKP Group, 2006

PKP separated most of the companies in accordance with the Act of 8 September 2000 'on commercialisation, restructuring and privatisation of the state-owned enterprise Polish State Railways'. All of the newly-established companies started to run their business based on a concession issued by the then Ministry of Transport and Maritime Economy.

Company development

Restructuring of Polish railways

Most sources believe that the restructuring of the Polish railways over the past 10 years has largely been financed by PKP itself and not the government. The Polish Treasury offered support by providing credit guarantees. This has led to debts that burden the economic balance. Moreover, PKP faces tough competition in the cargo area, which has taken over a significant part of the market. A similar decline was notable in the passenger services market.

PKP and its Chief Executive Officer (CEO), Andrzej Wach, argue that Austria spends €234 per head of population on transport funding, while Germany allows €110 and Poland spends just €7. Competition in the Polish railway market started in 2003 and is increasing gradually – particularly in freight transport. Some 77 companies in Poland (up from 70 in 2006) have a licence to act as a railway cargo operator and 27 companies are licensed as railway passenger operators. According to Steer Davies Gleave (2006), experts estimate that the PKP Group accounts for more than 95% of the Polish railway market.

However, in the opinion of the **World Bank**, the commercial structures that replaced the monolithic railway system in Poland have not been fully effective because of lack of capacity with regard to skills, experience and incentives in both rail companies and supervising agencies (Grudzińska, 2006).

Table 2 shows the consolidated financial results of the PKP companies in 2005–2007. The results are negative for the regional operators and for the infrastructure companies up to 2006. Indeed, the table highlights the severe financial problems of PKP. However, the forecast for 2007 is more positive after investments from the EU, PKP and the government. The regional services and PLK used to generate substantial deficits but the forecast for the annual report of 2007 predicts a much improved financial result; the regional services may even achieve a surplus of PLN 3 million (ϵ 877,750, as at 18 April 2008).

Table 2: Consolidated financial results in PKP companies, 2005, 2006 and 2007 (PLN million)

	2005 Net financial result	2006 Net financial result	Forecast 2007 Net financial result
PKP S.A.	109.9	194.4	1.5
PKP Cargo	20.1	50.5	10.9
PKP LHS (Broad gauge)	17.6	64.1	45.0
PKP PR (Regional services)	-647.2	-142.5	3.0
PKP Intercity	3.1	34.8	54.8
PKP SKM (Tri-City)	0.8	1.9	-
PKP WKD (Warsaw)	0	0.3	-
PKP PLK (Railway lines)	-949.9	-212.9	-67.8
PKP Power Engineering	21.2	24.5	39.2
PKP Information Technology	1.2	0.2	-
Rail Telecommunications	-43.2	-17.9	-1
PKP Group result	-662.7	-307.3	

Note: PLN 1 = €0.29; €1 = PLN 3.42, as at 18 April 2008.

Source: PKP, 2006 and PKP, 2008

The financial turnaround for PKP PR in particular has been notable and can be attributed to agreements on financial support for inter-regional and international trains in terms of the public service obligation signed with the Ministry of Transport and Construction (*Ministerstwo Transportu i Budownictwa*) – now part of the Ministry of Infrastructure (*Ministerstwo Infrastruktury*) (Figure 1). Furthermore, local government support increased in 2006. In that year, the company negotiated framework contracts for public services which guarantee stable financing of regional carriages in the regions, known in Poland as voivodships. Annual contracts are signed within these framework contracts.

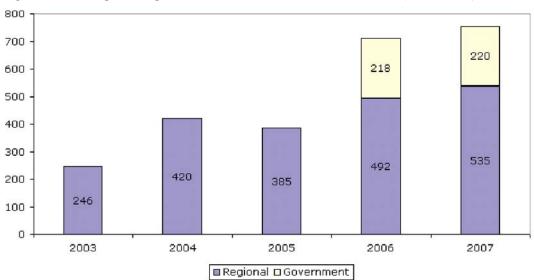


Figure 1: Financing inter-regional and international services, 2003–2007 (PLN million)

Note: PLN 1 = €0.29; €1 = PLN 3.42.

Source: PKP, 2008

Passenger operations

Economic conditions for providing reliable passenger operations in Poland have not been state guaranteed, and the number of passengers has declined every year until recently. Now the situation is changing. The number of passengers had fallen sharply since the beginning of the 1990s due to poor service quality, lack of compensation for public service obligations and a growing number of cars in Poland. However, the number of passengers using public transport increased in 2006 and particularly in 2007 (Figure 2).

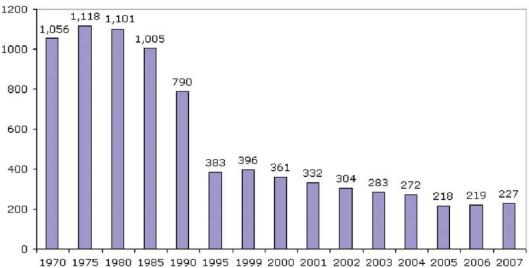


Figure 2: Total number of passengers carried (millions)

Source: European Rail Research Advisory Council (ERRAC), 2005; Railway Market, 2006; and PKP, 2008

The Mazovian Regional Railway was one of the first lines to be taken over by a local government: the local government in the Mazovian Voivodship in central Poland owned 51% and PKP PR owned 49%. It started its operations in January 2005. Since 8 January 2008, the company is 100% owned by the local government. The voivodship is investing in new rolling stock and in park and ride facilities to attract passengers.

Cargo market

PKP Cargo operates in a very competitive climate and in one of the most liberalised markets in Europe. In 2006, railway operators in Poland lifted more than 288 million tonnes of freight; of that total, PKP Cargo carried about 149 million tonnes. Based on tonne-kilometres, PKP Cargo still accounted for 78.2% of the market in 2006 (PKP, 2008). A tonne-kilometre (tkm) is one tonne transported a distance of one kilometre.

In 2004, Poland ranked 11th in the liberalisation progress report prepared by IBM Global Business Services for Deutsche Bahn (DB). In 2007, the railway market in Poland ranked as number eight in Europe on the railway liberalisation index (IBM, 2007).

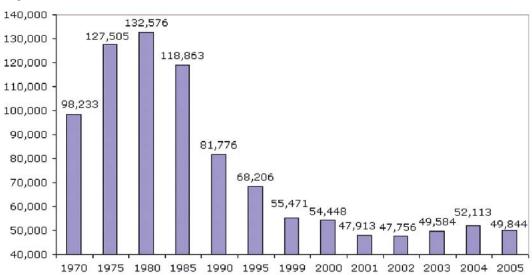


Figure 3: Total million tonne/kilometre carried

Note: A tonne-kilometre (tkm) = 1 tonne transported a distance of 1 kilometre.

Source: ERRAC, 2005

In 2007, PKP Cargo faced competition from 17 significant companies, and about 22% of the mass of tkms was lifted by private operators. Important competitors are CT Logistics Group (formerly ChemTrans Logistic Holding), PTK Holding, PCC Rail Szczakowa S.A., Lotos Kolej, Orlen KolTrans and Rail Polska.

Infrastructure

PKP PLK is responsible for 18,964 km of state-owned rail lines. However, according to *Railway Market* (2006), some of the lines only exist in the accounting books. Calculations by the Japan International Cooperation Agency (**JICA**) in 1995 and 2003 indicate that 16,500 km would be the economically viable length of the network (*Railway Market*, 2006).

In the opinions of *Railway Market* (2006) and the World Bank (Grudzińska, 2006), the network is deteriorating because of underinvestment, and each year more speed limits are introduced because PLK has no money to finance the maintenance of infrastructure. In order to balance its books, PLK has introduced high access fees for freight operators, but the pricing structure is not transparent, according to *Railway Market* (2006).

Core railway lines across Poland are a priority for rail investment. The E20, E30, E65, E75 routes are part of the trans-European network for transport (TEN-T) railway corridors. Priority investments are co-funded by EU budget resources from the **PHARE programme** and the Instrument for Structural Policies for Pre-Accession (**ISPA**).

PKP PLK is still dependent on government funds for infrastructure; it also has a historical debt to repay. However, according to PKP, the plan is to invest €9.4 billion up to 2014: €6.7 billion in line infrastructure, €1.5 billion in the railway stations and €1.2 billion in rolling stock. By 2012, the aim is to have 1,200 km of rail lines around prioritised areas such as Gdańsk, Warsaw, Katowice, the western city of Wrocław and Poznań (see map in Figure 4 below). High speed lines are projected during the period 2020–2030.

Localisation strategy

PKP Cargo is developing eight new logistics centres in: Warsaw, the eastern city of Malaszewicze near the Belarus border, Gdańsk, Szczecin, Poznań, Wrocław, Gliwice and Sławków (Figure 4). The Euroterminal in Sławków is one example.

Cdynia - Gdańsk

Pomorskie
Szczecin

Wiskopolskie

Warszawa

Lubuskie

Gliwice

Słaski

Słaski

Podkarpskie

Janestowyskie

Słaski

Podkarpskie

Janestowyskie

Janestowysk

Figure 4: Euroterminal in Sławków

Source: Fechner, 2005

Sławków is strategically located at the junction of the western end of the PKP LHS broad gauge line and the Polish standard gauge network. Thus, it is a convenient connection point to the Trans-Siberian Railroad and the so-called 'new Silk Road', representing the growing trade and business corridor between the Middle East and Asia. Furthermore, Sławków is not far from the intersection of the A4 and A1 motorways in Poland and the airports of Pyrzowice, near Katowice, and Balice, near the southern city of Kraków. Such a situation is considered conducive to the development of logistics services on the east—west axis.

New Silk Road

The launch of the Sławków – Kazakhstan – southern China freight shuttle service is in the offing. Transport of Chinese goods by rail to Europe and revitalisation of the Silk Road seems increasingly feasible. The terminal in Sławków can service more than 35,000 containers a year. Cargo transport from Japan and South Korea to Europe by sea takes some 28 days, while goods shipped by the Trans-Siberian Railroad to Sławków in Silesia could reach western Europe in just 15 days. Railway transport of containers between Asia and Europe currently comprises only 1% of all shipping traffic, leaving substantial room for development (*The Polish Voice*, 2005). However, the rates set by PKP Cargo and the Russians have not been competitive, in comparison with sea transport.

New technology

The rolling stock of PKP – especially in passenger traffic – is inadequate for the present and for the future. Demands such as speed, comfort, security and cost effectiveness are not being met. This may be one explanation for the steep decline in the number of passengers. Most of the vehicle units were introduced before the 1990s. This is not old compared with the rolling stock of other countries' railways, but the rolling stock has not been sufficiently upgraded and modernised during that time. However, the process of upgrading material and buying new stock has begun (Rydzynski, 2006).

One often mentioned new technology is the 'SUW 2000' developed by PKP. The SUW 2000 is a system of automatic gauge change between the eastern broad gauge (1520mm) and the western standard gauge (1435 mm). The system automates the shift from one gauge to another, and has the potential to increase interoperability and cross-border traffic in the Euro-Asian corridors.

Profile of the workforce

Between 2000 and 2007, the number of workers on the PKP Group payroll declined from almost 173,000 to about 124,000 (Figure 5). Nonetheless, it is currently the largest employer in Poland.

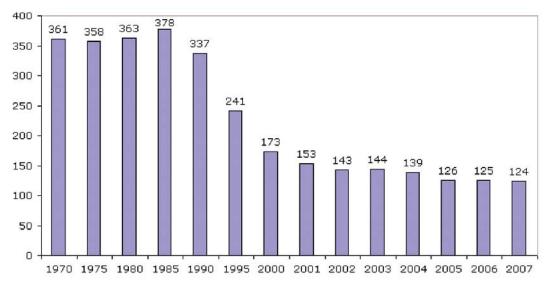


Figure 5: Total number of employees in PKP Group, 2000–2006 (000s)

Source: ERRAC, 2005; Czarzasty, 2005a; PKP, 2006; and PKP, 2008

The early 2000s were a period of restructuring and the decline in number of personnel is a sign of the process.

Railway workers enjoy the same status as all workers in the Polish labour market. Any privileges beyond the scope of rights granted and obligations imposed by regular employment contracts are stipulated by the provisions of the collective agreement.

By the end of 2000, several thousands of PKP employees took advantage of the pre-retirement allowance option extended under the 1994 Act regarding employment and counteracting unemployment. The allowance was available to people who had not yet reached the age of retirement and enabled these employees to leave the labour market earlier and to receive a guaranteed benefit.

The 2000 Act on commercialisation, restructuring and privatisation of PKP also extended certain incentives for voluntary redundancy to the employees of the company, leading to the departure of up to 30,000 workers between 2000 and 2002 (Czarzasty, 2005a).

PKP has calculated the cost of restructuring in the period 1995–2007 at 1.1 billion PLN (€322 million), which was paid by the company.

Employment structure

The rail subsector is male dominated -72.51% of the employees in the PKP Group are men, and PKP describes 82.8% of the jobs as blue-collar jobs.

Table 3 outlines the employment structure in the PKP Group according to education. Almost half of the jobs require training below higher or secondary educational level.

Table 3: Employment structure, by educational level

Education	Higher	Secondary	Other
Technicians	5,002	39,444	0
Economists	1,960	3,243	0
Lawyers	393	0	0
Others	2,932	17,200	55,089
Total	10,287	59,887	55,089

Source: PKP, 2006

In PKP PR, for example, the majority of employees have direct contact with customers; such roles include train supervisors, conductors, cashiers and information officers. Other personnel are responsible for the use and maintenance of rolling stock. Many employees have raised their qualifications by taking part in courses and training at colleges and institutes. Staff who are in contact with passengers on a daily basis have participated in special training towards professional customer service. PKP PR employed 16,701 staff at the end of 2006.

The PKP Group has a solid base of employees who have been with the company for more than 30 years: in 2006, one out of four – or 32,255 – of the employees had been with the company for more than 30 years (Figure 6). This has given PKP a rather skewed age profile, which may pose a serious challenge for the company in the near future.

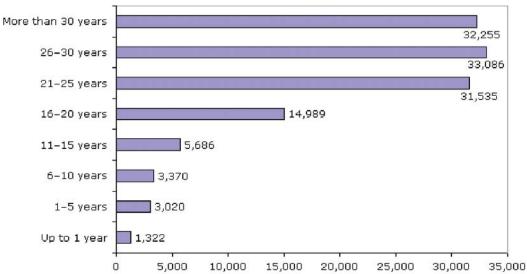


Figure 6: Employment structure, by seniority level, 2006

Source: PKP, 2006

According to PKP (2008), general recruitment in the current economic situation is not difficult; however, finding skilled people for certain positions such as marketing can be problematic. One strategy is to recruit staff with a more general educational background and train them specifically for the job. As an established rail group of companies, PKP can attract new staff by offering career opportunities, training and beneficial social packages in terms of healthcare, insurance and free passes, whereas private operators are able to pay more. According to PKP, the average wages in the group are some 11%–12% lower than in the industry in general.

Training strategy

PKP is wholly responsible for the training of train drivers; no PKP-independent training facilities appear to exist for these workers in Poland.

As noted, the 2006 annual report of PKP Group states in relation to the regional services company that many employees improved their qualifications during numerous training courses at vocational schools and universities. Personnel who deal with passengers on an everyday basis took part in special training in professional customer service.

Industrial relations

In 2004, some 28 trade unions were active in the Polish rail transport subsector. The major unions participate in the sectoral tripartite social dialogue body, the Tripartite Team for the Railways, which was established in 2003. PKP is the dominant employer in the Association of Railway Employers (*Związek Pracodawców Kolejowych*, ZPK), and the association has participated in negotiations carried out within the tripartite body as the sole representative of employer interests. The association has 25 members, including all major companies of the PKP Group.

The trade unions assume the form of company-level unions or of federations. The Independent and Self-Governing Trade Union Solidarity (*Niezależny Samorządny Związek Zawodowy Solidarność*, **NSZZ Solidarność**) is a general workers union; accordingly, it is represented in the rail subsector by its national section – a customary name for a sectoral unit of the union. Several trade unions are associated with the All-Poland Trade Unions Alliance (*Ogólnopolskie Porozumienie Związków Zawodowych*, **OPZZ**). A number of unions are linked to the Trade Unions Forum (*Forum Związków Zawodowych*, **FZZ**). Some independent trade unions are also present in the transport and logistics sector.

Unionisation in the PKP Group has traditionally been above average, reaching its highest level at about 95% of personnel (Czarzasty, 2005a).

Conflicts in PKP around restructuring

The restructuring process since 2000 has been a period of conflict in the PKP Group. Commercialisation, restructuring, regionalisation and privatisation have been issues of conflict. In 2000, the trade unions exercised pressure on government authorities and succeeded in having a number of regulations favourable to the employees incorporated into the act on restructuring.

Since 2003, the main controversy has centred on the regionalisation project aiming to transfer the ownership of passenger transport to local governments with financial support from the central budget. The trade unions have opposed this strategy fearing job layoffs as a possible consequence, and regional governments have distanced themselves from it, arguing that they could not bear the financial obligations imposed on them by the proposed formula.

In the summer of 2003, a general strike on the railroads appeared likely as PKP PR announced its plan to close down a few hundred unprofitable local train lines to reduce the huge debts of the company, and the trade unions opposed the plans. Subsequently, the sectoral tripartite team was established and the social partners managed to reach a compromise under which the trade unions accepted the government plans; as part of this agreement, the number of lines to be closed was substantially reduced.

During the 2005 national budget debate in early 2004, the trade unions expressed their concerns about funding for the sector. Finally, in December 2004, protests against regional companies erupted across the country. The protests continued throughout January 2005. In early February of that year, the social partners reached an agreement that suspended the establishment of regional rail companies. So far, only the Mazovian Regional Railway has been set up (Czarzasty, 2005b).

Future challenges

A positive future is possible for the Polish railway market, which is attractive because of its growth potential, size and location. However, a number of obstacles must be overcome if PKP is to continue as a major player in that future. The solution to most of the challenges is at policy level. The most significant challenges are outlined below.

Economy and finances

The PKP Group suffers from growing debts while at the same time requiring investment in both infrastructure and rolling stock. PKP is looking towards the Polish government as well as the EU for help in this process (Wach, 2006). Part of the debt originates from before 2000 and neither the rail company nor regional government are able to pay off this sum. The government is working actively to pass laws which can take the historical debt from before 2000 away from PKP – this might be achieved in 2008 or 2009.

Liberalisation and privatisation

Adjusting to a liberalised market is one of the major challenges for the PKP Group. In the liberalised market, marketing, service, comfort, safety, quality, as well as speedy and reliable service have become key words in PKP strategies. Privatisation has been planned since 2000, but the process is moving slowly and the issue is politically charged. Plans in this regard include the privatisation of PKP Intercity in 2008 and PKP Cargo in 2009 or 2010.

Regionalisation

The takeover of responsibility of passenger transport by regional authorities has been slowed by discussions with the trade unions and unclear financial models. The government is working actively to pass laws which will be the basis for regionalisation. With a forecast balance in the 2007 financial results, the prospects for regionalisation might be better than before.

Competition in the open market

The creation of a single European railway system and the ensuing competition is a major challenge to the Polish railways. Poland has a central position in Europe and is crossed by main rail transport routes, with four transport corridors passing through the country. The challenge for the PKP Group is to cope with increasing domestic and international competition in order to maintain its position in the markets in Poland and in Europe.

Intermodal competition

Competition from road hauliers and low cost airlines are challenges to the railway operators in Poland. Current discussions in relation to allowing larger trucks are regarded as a threat and potential competition to freight operations. Improvement in quality, attractive pricing and efficiency in services are key factors in a competitive environment. According to PKP, the access prices for rail freight are higher than those for road freight, which makes it difficult to maintain fair competition. The average infrastructural rates for railways in Poland are among the most expensive in Europe. This is one of the state transport policy fields.

Modernisation of rolling stock and infrastructure

Modernising the rolling stock and infrastructure according to EU requirements concerning technical specifications for interoperability (TSI) is another challenge requiring PKP investment. The difficulty is to address the problem of funding, which will have to come from the EU, the government state budget, PKP and private investors. As noted earlier, PKP is operating on the basis of definite investment plans amounting to €9.4 billion by 2014: €6.7 billion on the railway lines, €1.5 billion on stations and €1.2 billion on rolling stock. By 2020 or 2030, high speed lines could be operating between major cities in central Poland.

Cooperation with trade unions

As a workplace for 124,500 people, the trade unions must participate in the restructuring process.

Demographic profile

Within a short span of years, a large number of PKP employees will retire since one out of four employees has been with the company for more than 30 years. This will either reduce the size of the company or massive recruitment will be necessary.

Environmental issues

PKP wishes to strengthen its environmental profile and to be known as a rail operator that is friendly to the environment.

Contact details

Company name: Polskie Koleje Państwowe Spółka Akcyjna

Website: http://www.pkp.pl

Address: Centrala, ul. Szczęśliwicka 62, 00-973 Warszawa, Poland

Phone: +48 22 52 49 200, Fax: +48 22 52 49 202

Sources

Czarzasty, J., European Industrial Relations Observatory (EIRO), part of the European Foundation for the Improvement of Living and Working Conditions, *Questionnaire for thematic feature on industrial relations in the rail sector – case of Poland*, Dublin, 2005a, available online at: http://www.eurofound.europa.eu/eiro/2005/04/word/pl0504104t.doc

Czarzasty, J., EIRO, European Foundation for the Improvement of Living and Working Conditions, 'Railway dispute continues', Dublin, 2005b, available online at: http://www.eurofound.europa.eu/eiro/2005/02/feature/pl0502103f.htm

Czarzasty, J., EIRO, European Foundation for the Improvement of Living and Working Conditions, 'Warning strike held on Polish National Railways', Dublin, 2005c, available online at: http://www.eurofound.europa.eu/eiro/2005/01/inbrief/pl0501101n.htm

European Rail Research Advisory Council (ERRAC), 'Fact sheet Poland', in *Rail research in the EU*, Brussels, 2005, available online at: http://www.errac.org/docs/MSresearchbrochure2.pdf

Fechner, I., Current state of the development of Logistics Centres in Poland, Integrating Logistics Centre Networks in the Baltic Sea Region (InLoC), Centre for Maritime Studies, University of Turku, Finland, 2005, available online at: http://www.inloc.info/material/1_current_state_of_the_development_of_logistics_centres_in_poland.pdf

Grudzińska, A., World Bank, 'Polish railways sector – comments from the World Bank', *Polish Railway Market*, March 2006, p. 28, available online at: http://www.railwaymarket.eu/pdf/POLISH_RAILWAY_MARKET.pdf

IBM Global Business Services, *Summary of the study Railway liberalisation index 2007*, Deutsche Bahn (DB), Brussels, 2007, available online at:

http://www.db.de/site/shared/en/file__attachements/position__papers/study__rail__liberalisation__index__2007__summary.pdf

Kamola, M., Klimkiewicz, J. and Malinowski, Ł., 'New logistics investments in Poland', *Railway Market*, CEE Review, No. 3, 2007, available online at:

http://www.railwaymarket.eu/rm2007/pdf/Polishrailoperatorsinvestinlogisticterminals.pdf

Kazatsay, Z. (interview with), 'The Polish railway sector needs to cater for future demand of transport', *Polish Railway Market*, March 2006, p. 9, available online at: http://www.railwaymarket.eu/pdf/POLISH_RAILWAY_MARKET.pdf

PKP, A portrait of the PKP Group, Warsaw, 2003.

PKP, Annual report of PKP Group, Warsaw, 2006, available online at: http://pkp.pl/files/raport%20roczny%20pkp_2006.pdf

PKP, author interviews with personnel, including an internal company presentation, 2008.

Prokopowicz, A. K. 'Dimmed light at the end of the tunnel: Fixing railroads in Poland – comments from the sideline', *Polish Railway Market*, 2006, p. 79, available online at:

http://www.railwaymarket.eu/pdf/POLISH RAILWAY MARKET.pdf

Railway Market, *Polish Railway Market*, Special edition, March 2006, available online at: http://www.railwaymarket.eu/pdf/POLISH_RAILWAY_MARKET.pdf

Rydzynski, P., 'Railway technology in Poland', *Polish Railway Market*, March 2006, p. 54, available online at: http://www.railwaymarket.eu/pdf/POLISH RAILWAY MARKET.pdf

Sekita, H., 'Mazovia Regional Railway – a new operator of passenger transport', *Polish Railway Market*, March 2006, p. 20, available online at: http://www.railwaymarket.eu/pdf/POLISH_RAILWAY_MARKET.pdf

Steer Davies Gleave, SERVRAIL study – Assessment of present and likely future conditions of providing rail-related services, Final report, prepared for DG TREN, European Commission, Brussels, December 2006, available online at: http://ec.europa.eu/transport/rail/studies/doc/servrail_final_report.pdf

The Polish Voice, 'European Crossing', 27 April 2005, available online at: http://www.warsawvoice.pl/view/8271

TMCnet, part of Technology Marketing Corporation, 'Unions raise demands, Government dodges responsibility', 2007.

Wach, A., 'Railway transport in Poland and development opportunities of PKP Group', *Polish Railway Market*, March 2006, p. 16, available online at: http://www.railwaymarket.eu/pdf/POLISH_RAILWAY_MARKET.pdf

Websites

http://www.pkp-cargo.pl/site/index.php?id=2&L=2

http://railroadfocus.com/poland

http://en.wikipedia.org/wiki/PKP Group

Stig Yding Sørensen, Josina Moltesen and Jens Henrik Haahr, Danish Technological Institute (Teknologisk Institut)