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Declarations for the construction of new conventional railway lines in the years 1990 - 2020

Abstract: The subject of the article are the plans to build conventional railway lines in Poland over the three decades 1990 - 2020. The first part contains a brief overview of the development stages of the Polish railway network after World War II. On the other hand, in the second part, the declarations or intentions to build new conventional lines reported in government documents in the years 1990-2020 were analyzed. In this part, the project of building a new line Podłęże - Szczyrzyc - Tymbark, along with the modernization of the existing Chabówka - Nowy Sącz line, is discussed in more detail. The further part of the article indicates that a radical breakthrough in declaring the need to build new conventional railway lines took place in 2017 and in the following years, when a completely new concept for the construction of the Central Communication Port (CPK) in Baranów near Warsaw was published and preparations for this construction began. The total length of new, conventional sections of railway lines to be built as part of the STH construction project by 2035 is over 900 km. These sections have been specified with the emphasis on the fact that in the following years in-depth analyzes as to the legitimacy of their construction are necessary.

Keywords: Transport policy; Railway infrastructure; Linear investments

Introduction

The passage of more than three decades since the beginning of changes in the political and socio-economic system in Poland prompts a general reflection on the policy of state authorities in relation to development concepts in the field of conventional railway lines. Limiting the subject of considerations only to conventional lines, understood here as standard-gauge lines with a maximum speed of up to 160 km/h, means a conscious exclusion from the analysis of the concept of building high-speed railway lines (HSR), because this is an issue that requires a separate study. The article has two parts, the first of which is a brief description of the development stages of the Polish railway network after World War II and its quantitative status in the years 1950 - 1990. The second part is an analysis of declarations or intentions to build new conventional lines. It should be emphasized that the title word "declarations" seems justified in the context of the presented arguments by the fact that no longer conventional railway lines or their sections were built in Poland in the years 1990-2020, and in this field, the investment achievements after three decades of structural changes in the railway sector are the construction of three short sections that do not require more comprehensive references, namely the Warszawa Służewiec - Warszawa Chopin Airport section with a length of 1.8 km (2012), the Goleniów - Goleniów Airport link with a distance of 4 km (2013) and the section Gdańsk Wrzeszcz - Gdynia Osowa with a length of 18.6 km (2015), which is part of the Pomeranian Metropolitan Railway.

Polish railway network in the years 1945 – 1990

During the years of World War II, the Polish railway network was significantly damaged. At the end of the war, 38% of tracks, 46% of bridges and viaducts, and over 72% of railway traffic control devices were destroyed [1, p. 29]. At the end of 1947, the total length of the Polish railway network was 24,000 km (including narrow-gauge lines), of which approx. 20.1 thous. km of standard gauge lines and about 0.5 thous. km of broad-gauge lines.[7, p. 121.] The average density of all railway lines in 1947 was 7.8 km per 100 km², while the density of operated lines was 6.9 km per 100 km².

In the 1950s, wider electrification of the network and the construction of new railway lines began. New investments of the first post-war period, such as the line Tomaszów Mazowiecki - Radom (89 km) and the line Skierniewice - Pilawa - Łuków (160 km) improving the transit of goods between the USSR and former East Germany, bypassing the Warsaw junction, had a military origin. Similar reasons also resulted in the construction of second tracks on some lines and the reconstruction of sections destroyed as a result of warfare, such as Zagórz - Łupków and Zagórz - Krościenko[12, p.67]. From a dozen or so other investments carried out in the 1950s, the line from Skierniewice through Koluszki to Łódź Fabryczna and the line Warszawa - Łazy - Katowice can be mentioned in particular.

In the 1960s and 1970s, several investments were made to further improve and expand the railway network. The electrification of the line was also consistently carried out. The railway network of the Upper Silesian and Rybnik Industrial Districts was significantly expanded during this period. In the former, the Katowice Muchowiec marshaling yard and the following lines were built: Lubliniec - Pyskowice, Łazy - Katowice, Muchowiec - Ruda Śląska Kochłowice, Rudziniec Gliwicki - Toszek Północny, Tychy - Wesoła, Tychy - Lędziny [12, p. 67]. The 1970s brought the two most important line investments in post-war Poland in the field of railway infrastructure. The first of them was built in the years 1974 - 1977 a completely new double-track railway line with a length of 223.8 km, from Grodzisk Mazowiecki to Zawiercie, which was named the Central Railway Line (CMK). Although in the original assumptions, it was to be a line intended for freight transport, mainly coal, it was designed and built in such a way that it could be modernized in the future and adapted to the speed of 200-250 km/h, and therefore appropriately large curve radii were used (4000 m) and a sufficiently large distance between the track axes (4.5 m). Initially, the maximum speed of passenger trains on the CMK was 140 km/h, in 1988 it was increased to 160 km/h. In the years 1979-1980, CMK was electrified. Currently, CMK provides a favorable railway connection between Warsaw and Katowice, and Kraków. The second major railway investment of the 1970s was the 397 km wide-gauge Metallurgical and Sulfur Line (LHS) built in 1978-1979, running from the eastern border of Poland near Hrubieszów to Sławków near Dąbrowa Górnicza. According to some authors, the LHS refers to the interwar concept of the Silesia-Wołyń railway trunk line [12, p. 67], but it should also be added that its construction aroused controversy in the 1970s because it was treated by many circles as a Soviet dictate towards Poland due to the Russian gauge tracks. The original assumption of the construction of the LHS was, on the one hand, to ensure the transport of imported iron ore and other ores to the newly built Huta Katowice steelworks and the transport of Polish coal exported to Ukraine without the burdensome reloading of these raw materials at the border. The second part of the line's name referred to the intention to export Polish sulfur from the Tarnobrzeg Sulfur District to the east. Over the years, it turned out that export transport of sulfur and coal to the east using the LHS did not take place, hence the name of this line was changed to Linia Hutnicza Szerokotorowa.

In the 1980s, no new railway lines were built and the policy of further development of the railway network covered two main areas of activity. The first was the intensive electrification of railway lines, which practically ceased after 1990. Table 1 presents the basic

numerical data on changes in the length of the Polish railway network in the years 1950-1990, including data on the electrification of the line progressing in those decades.

Tab. 1. Standard-gauge and broad-gauge railway lines operated in the years 1950 – 1990

	1950	1960	1970	1980	1990
Lines in operation, in thous. km	22,5	23,2	23,3	24,4	24,0
Including electrified lines, in thous. km	0,2	1,0	3,9	6,9	11,4
Lines operated in km per 100 km ² of area	7,2	7,4	7,5	7,8	7,7

Source: [6, s.252]

Between 1950 and 1980, the length of operated railway lines increased from 22,500 to 24,400 km – increase by 1.9 thousand km and in relative terms by 8.4%. The electrification of the line on a larger scale began in the 1960s. The length of electrified lines increased from 1 thousand km in 1960 to 3.9 thousand km in 1970, which meant that in that decade the average annual pace of electrification was 290 km. In the decade of the 1970s, this rate increased to 300 km per year, and in the decade of 1980s it reached a record high of 450 km per year. In the years 1980 – 1990, 4.5 thousand km of railway lines were electrified and the total length of these lines at the end of 1990 was 11.4 thousand km, which at that time accounted for 47.5% of the total length of the lines in operation. The second direction of development of the Polish railway network in the 1980s was the comprehensive modernization of the main marshaling yards, which consisted of the reconstruction of track systems and the automation of marshaling work. At that time, almost all major marshaling yards in Poland were modernized, the potential of which was no longer fully used after the structural decline in rail freight during the socio-economic transformation after 1989.

Government declarations for the construction of new railway lines in the years 1990 - 2020

After the socio-economic turmoil of the first years of the Polish transformation period, in the mid-1990s a comprehensive document was published setting out the government policy in the entire Polish transport for the years 1995-2005, with some references even to the 2020 perspective [3]. In terms of new conventional railway lines, the cited document indicated the need to build, in the then distant perspective, until 2020, a line Kraków Podłęże - Tymbark - Muszyna with a length of approx. 40 km [3]. It seems that a mental shortcut was used when indicating the new line because it was a non-existent 40-kilometer section Podłęże - Piekiełko (Tymbark) to the intersection with the Chabówka - Nowy Sącz line and further to Muszyna. In the transport policy of 1995, as in the Strategy of 2000 [2]. In addition, the intentions to build an eastern bypass of Silesia in the distant 2020 perspective were indicated: Psary - Cieszyn with a length of approx. 170 km, which was supposed to create an extension of the CMK to the south towards the Czech Republic and a new line Wrocław - Oleśnica - Wieluń - Idzikowice with a length of approx. 200 km (partly on the trail of existing lines) - both lines, however, were related to the declarations of future construction of Polish HSRs. In the next two transport policy documents from 2001 [4] and 2005 [5] the Podłęże – Piekiełko and Wrocław – Idziowice lines were no longer indicated as predestined for construction, except that the second of the documents referred to announced separate long-term programs for the modernization and expansion of railway infrastructure, which will be prepared by the government administration in the future [5].

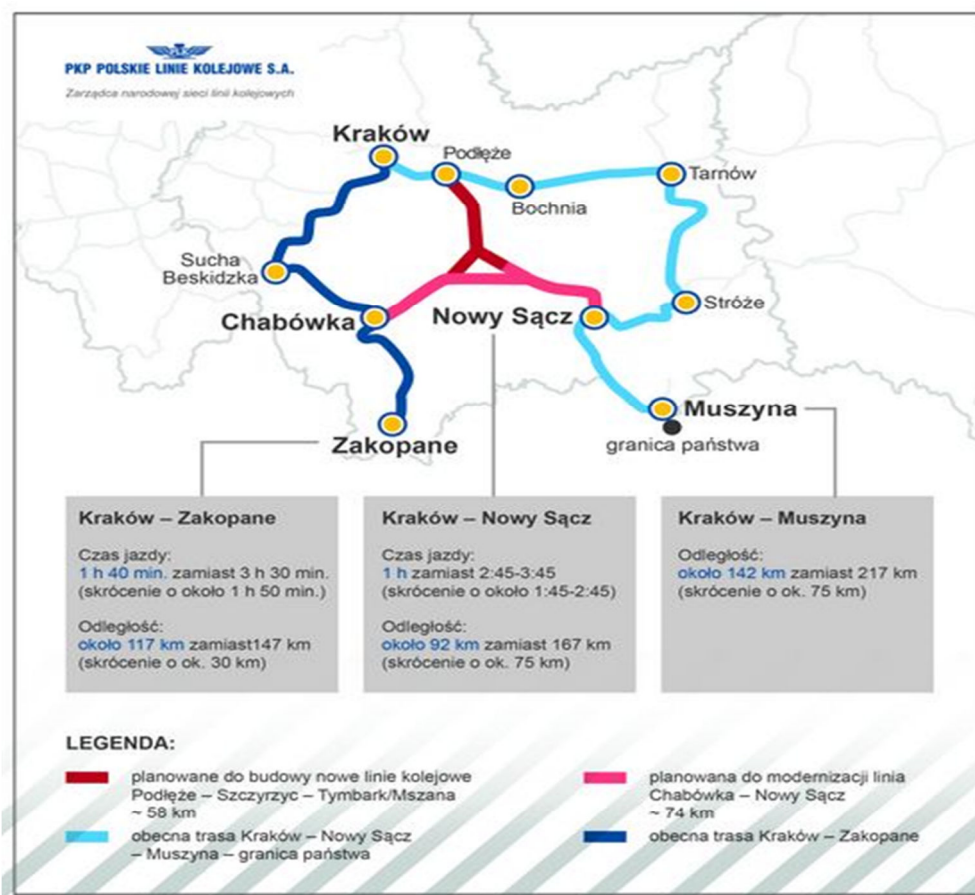
In December 2008, the government adopted two programming documents for the further development of the Polish railway network. The first of them was the "Master Plan for rail transport in Poland until 2030" [13], which comprehensively referred to the issues of the

development of the Polish railways in the time horizon until 2030, and its creation resulted, on the one hand, from the government's efforts to obtain EU funds for the modernization of the Polish of the railway sector and the related expectation of the European Commission to submit a comprehensive government document by the Polish side, and on the other hand, it was a necessary supplement to the second document in the form of the "Programme for the construction and launch of high-speed rail transport in Poland" [14], in which, in turn, as supplementary element assumptions of the HSR, the construction of a conventional line Łódź - Opoczno with a length of 74 km was planned (partly along the existing track), aimed at creating a connection between line Y and CMK. The main part of the Master Plan was the plan for the expansion and modernization of the railway infrastructure until 2030. In addition to the new high-speed lines (the so-called Y line project and modernization of the CMK to the speed of 230-250 km/h), the plan for the construction of conventional lines by 2013 included the construction of the already mentioned in the preliminary remarks of the sections Warszawa Służewiec - Warszawa Chopin Airport and Gdańsk Wrzeszcz - Gdynia Osowa and the new section Chorzów Stary - Katowice Pyrzowice International Airport, approx. 20 km long, to connect Katowice with the airport. For the perspective of 2020, in terms of conventional lines, the construction of a new connection between CMK and Kraków on the Kozłów - Kraków Batowice section was planned, although it was not clearly defined in the sense that it could be both a conventional line and a HSR line. On the other hand, for the perspective of 2030, the construction of the Podłęże - Piekiełko line is planned, which (together with modernized sections) will be the final connection between Kraków and Zakopane and Slovakia via Muszyna.

In 2010, the rules came into force according to which investments in the field of railway infrastructure are covered by separate long-term programs approved by the minister responsible for transport in consultation with the minister of finance, and in the scope of projects implemented with the participation of European funds, with the minister responsible for regional development and are subject to approval by the Council of Ministers in the form of an appropriate resolution. The first such program was adopted in 2011 [15]. As regards conventional lines, the program declared the construction of a 12 km long Kraków Główny – Mydlniki – Balice line as a connection between the Kraków Balice International Airport and the main railway station in Kraków. This investment was completed in 2015, however, it can be added that it was not the construction of a new line, as declared in WPIK 2013, but the modernization of the line built-in 1951. Subsequent transport policy documents from 2013 [9] and the current one from 2019 [10] did not contain already direct and specific references to the planned investments in the construction and modernization of railway lines and referred to the relevant long-term program. Starting in 2016, WPIK was replaced by a new long-term program called the National Railway Program (KPK 2023). The resolution establishing this program was adopted by the Council of Ministers in September 2015, and the NCP 2023 itself is attached to the resolution [19]. The KPK 2023 included, initially on the reserve list and after the amendment at the end of 2016 on the basic list, a project to build a new railway line Podłęże - Szczyrzyc - Tymbark/Mszana Dolna and modernize the existing Chabówka - Nowy Sącz railway line with a total value of PLN 3,064 million. In addition, the program indirectly signals the intention to build a railway line in a tunnel from the Łódź Fabryczna station to line No. 15 by allocating funds for a feasibility study for this line.

It can therefore be concluded that after many years of declarations and announcements, in 2016 the project of building a new conventional line Podłęże - Piekiełko (environmental name) finally "break through" to the implementation phase declared for the years 2022 - 2027. Currently, this project is being implemented jointly as the construction of a new line Podłęże - Szczyrzyc - Tymbark with a branch in Szczyrzyc to Mszana Dolna with a total length of 58 km with a maximum speed of passenger trains up to 160 km/h along with

the modernization of the existing line Chabówka - Nowy Sącz with a length of 74 km, also with a maximum speed of 160 km/h on some episodes. This is undoubtedly a very desirable and justified investment, for at least several reasons. Firstly, it will result in a significant improvement in passenger transport, both in regional and national terms, thanks to shortened travel times on the routes served - see Fig. 1. In particular, the travel time between Kraków and Zakopane, and Nowy Sącz will be significantly shortened, which is also of great importance for servicing tourist traffic heading from the rest of the country via Kraków to these cities and towns located around them. Secondly, the investment will significantly reduce the traffic by private cars from Kraków and the surrounding area towards Zakopane and Nowy Sącz with a whole sequence of positive effects, such as reducing congestion on private car routes, in particular on the so-called "Zakopianka", reduction of exhaust gas emissions into the atmosphere and reduction of road accidents. The quality of air and transport accessibility of cities, communes, and the entire region of Małopolska, which is attractive to tourists, will also improve. Thirdly, the construction of a new line combined with the modernization of the existing line will be an important factor in locating various types of industrial and economic activity in the region covered by the investment. Fourthly, in the aspect of international rail connections and transport, thanks to the construction of a new line and modernization of the existing line, potentially better conditions will arise for the activation of the rail border crossing in Muszyna to Slovakia and further to the south of Europe, not only in the field of conventional bulk cargo transport but also concerning international intermodal transport.



1. Podłęże - Szczyrzyc - Tymbark and Chabówka - Nowy Sącz lines and the planned travel times of passenger trains against the background of existing railway connections. *Source: [18]*

According to the information available at the beginning of 2022, the project in question has not yet had fully defined and publicly announced sources of financing, although all project work, was budgeted for approx. PLN 180 million, was nearing completion [18]. However, the material scope of the construction of the new line Podłęże – Szczyrzyc/Mszana Dolna – Tymbark is known, presented in Figure 2. As can be determined based on the data in the figure, taking into account contemporary environmental and other requirements, the new line built in the foothills, with a length of 58 km, will have to run 20.2% of its length in tunnels and 13.3% of its length in flyovers, i.e. in total 33.5% in and on this type of engineering structures, not counting bridges and viaducts. As a result, the real amount of expenditure on the construction of the Podłęże – Szczyrzyc/Mszana Dolna – Tymbark line may amount to even PLN 7 to 10 billion.



2. The material scope of construction of the Podłęże – Szczyrzyc/Mszana Dolna – Tymbark line. *Source: [18]*

The content of the article so far shows that the Polish transport policy in the years 1990-2016 was very restrained about the need to build new conventional railway lines, leading to the actual start of the project of building one new longer line. A radical breakthrough in this respect took place in 2017 and in the following years, when a completely new concept for the construction of the Central Communication Port (CPK) in Baranów near Warsaw was published and preparations for this construction began. In November 2017, the Council of Ministers adopted Resolution No. 173/2017 regarding the construction of a new central airport [16], while in May 2018, the Sejm passed an act specifying the management of the CTH construction program [17]. The appendix to Resolution No. 173/2017 includes extensive references to the necessary projects in the field of railway infrastructure related to the operation of the new airport. The total length of the new railway lines to be built as part of

the CPK construction project until 2035 is approx. 1,600 km, including 670 km of high-speed lines. This means that, excluding the HSR lines, over 900 km of new conventional sections of railway lines are planned to be built within the CTH project over about 20 years. In January 2020, a document entitled Strategic Location Study of the Central Communication Port [11] was published, which specified in detail all new railway lines or their sections to be built, as well as sections of railway lines to be modernized in a system of transport routes publicly called spokes. The list of routes of these lines was then published in the relevant regulation of the Council of Ministers [8] - see table 2.

Tab. 2. Accompanying investments related to the reconstruction, extension, or construction of railway lines, railway service infrastructure facilities (in particular railway stations), accompanying infrastructure (in particular access roads and connections) along with the removal of conflicts between the course of existing linear construction facilities and the investment. *Source: [8]*

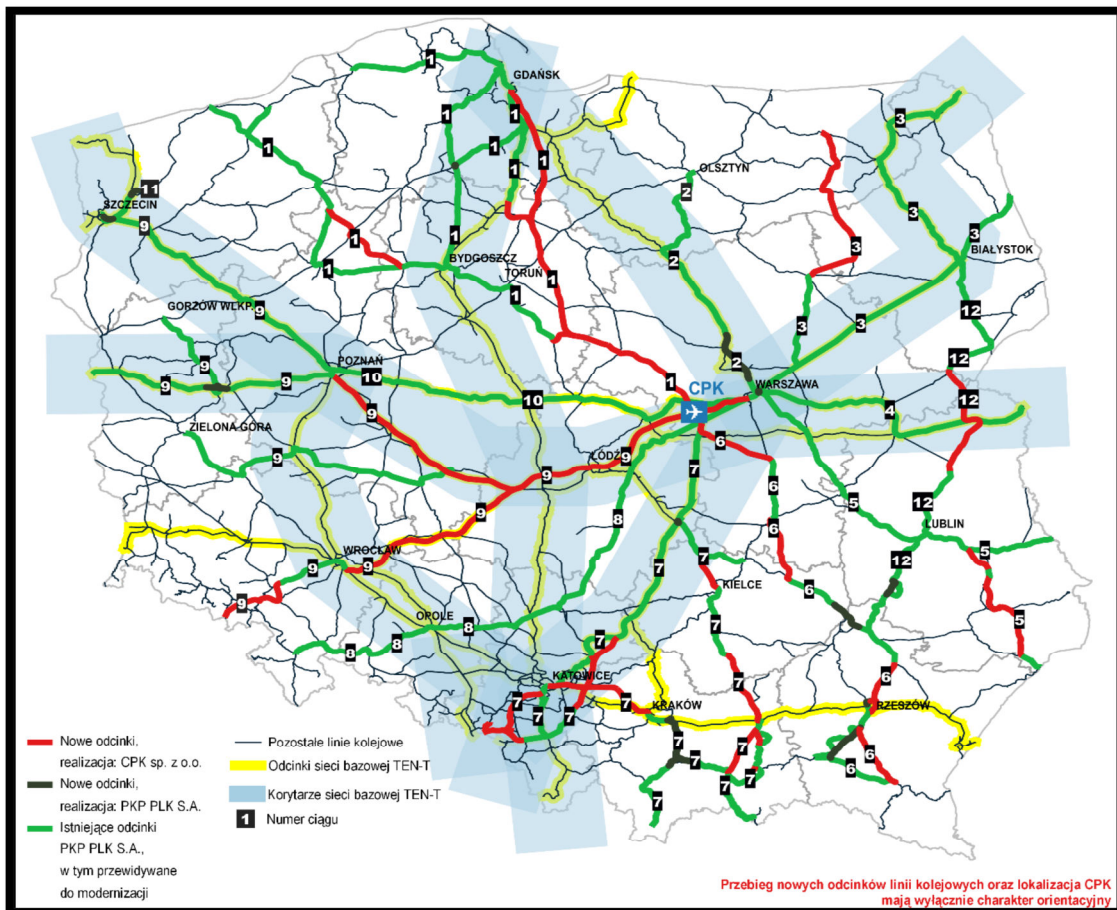
No.	The course of railway lines
1	Centralny Port Komunikacyjny – Płock – Włocławek – Toruń – Bydgoszcz – Nakło nad Notecią – Piła – Okonek – Kołobrzeg/Koszalin Nakło nad Notecią – Złotów – Okonek (Płock) – Grochowski – Grudziądz – Gdańsk – Gdynia – Słupsk Bydgoszcz – Łąg Południowy – Kościerzyna – Gdynia Łąg Południowy – Tczew
2	Warszawa – Ciechanów – Olsztyn
3	Warszawa – Białystok – Elk – Suwałki – Country Border Białystok – Kuźnica Białostocka – Country Border Tuszczy – Ostrołęka – Łomża – Pisz – Giżycko
4	Warszawa – Siedlce – Biała Podlaska – Terespol – Country Border
5	Warszawa – Lublin – Trawniki – Chełm – Country Border Trawniki – Zamość – Tomaszów Lubelski – Bełżec – Country Border
6	Central Communication Port – Radom – Stalowa Wola – Rzeszów – Jasło/Krosno/Brzozów – Sanok
7	Central Communication Port – Idzikowice – Małopolska-Silesian Junction/Katowice – Czechowice-Dziedzice – Jastrzębie-Zdrój – Country Border Katowice – Małopolska-Silesian Junction– Kraków – Szczyrzyc – Nowy Sącz Szczyrzyc – Chabówka – Zakopane Idzikowice – Opoczno – Końskie – Kielce – Tarnów – Nowy Sącz – Muszyna – Country Border Końskie - Skarżysko-Kamienna along with the connections of the Małopolska-Silesian Junction and the newly built infrastructure with the existing railway network
8	Warszawa – Central Communication Port – Częstochowa – Opole – Nysa – Kłodzko
9	Warszawa – Central Communication Port – Sieradz – Kępno – Wrocław – Świdnica – Wałbrzych – Country Border Sieradz – Kalisz – Poznań – Szczecin, Kalisz – Ostrów Wielkopolski – Leszno – Głogów – Zielona Góra Poznań – Zbąszyń – Rzepin – Country Border Zbąszyń – Gorzów Wielkopolski
10	Warszawa – Central Communication Port – Kutno – Konin – Poznań
11	Szczecin – Szczecin-Goleniów Airport
12	Stalowa Wola – Lublin – Milanów – Biała Podlaska – Fronów – Białystok

The list of routes of railway lines included in the table includes the construction of new lines, both high-speed and conventional, and concerns the modernization of existing lines. The analysis of the previously indicated location study shows that after excluding the high-speed lines planned for construction, the construction plan under the CTH project included in particular the following sections of conventional railway lines [11]:

- route no. 1: Grudziądz - Warlubie (line 242), Grochowski - Włocławek (line 50)
- route no. 2: Warszawa Choszczówka - Kątno (line 20),
- route no. 3: Warszawa Wschodnia - Zielonka (line 6), Ostrołęka - Giżycko (line 29),

- route no. 5: Trawniki - Krasnystaw Miasto (line 54), Wólka Orłowska - Zamość - Tomaszów Lubelski - Bełżec (line 56),
- route no. 6: Stary Garbów - Zbydniów (line 80), Łukawiec - Rzeszów Jasionka International Airport (line 632), Boguchwała - Jedlicze (line 106),
- route no. 7 (excluding new sections implemented as part of the Podłęże - Piekietko project): Wąsosz Konecki - Kielce (line 89), Busko-Zdrój - Tarnów (line 73), Tarnów - Nowy Sącz (line 96, sections of the new route), Biała Błotna – Chełmek (line 111), Chybie – Jastrzębie-Zdrój – Godów state border (line 170), Katowice/Gliwice – Jastrzębie-Zdrój – country border,
- route no. 9: Żarów - Świdnica Miasto (line 267), Świdnica Miasto - state border (line 268), Zbąszyń - Szczaniec (line 817), Zbąszyń - Dąbrówka Wielkopolska (line 818),
- route no. 11: Szczecin Dąbie - Szczecin Port Centralny (line 350),
- route no. 12: Milanów - Biała Podlaska - Fronołów (line 631), Kraśnik - Rzeczyca (line 68).

For the implementation of the CTH construction project, the State Treasury, according to the aforementioned Act of May 10, 2018, established a special purpose vehicle under the name Centralny Port Komunikacyjny Sp. z o. o. The task of the company is to prepare and implement a long-term program of the Central Communication Port, including the construction of a new central airport for Poland and the coordination and implementation of accompanying investments, including a new network of railway lines, expressways, motorways, and other transmission infrastructure. With regard to the so-called component, in January 2019 it was agreed with the railway infrastructure manager of PLK S.A. that the CPK company would be responsible for the construction of new railway lines under the project, while PLK S.A. will be responsible for the modernization of the existing railway lines, which it manages [11]. The division into tasks carried out by PLK S.A. and the STH company in relation to the railway Investments accompanying the entire STH construction project is presented in Figure 3.



3. Railway Linear Accompanying Investments against the background of the TEN-T network, divided into tasks carried out by PLK S.A. and the STH company. *Source: [11, s. 33]*

The program of construction of new sections of conventional railway lines under the STH project is undoubtedly very ambitious, but there is no doubt that it is entirely preliminary and illustrative. The vast majority of these sections have not yet been declared for construction in transport policy documents, nor have they been included in spatial development plans at various levels of public administration. It seems that many of the proposals for new constructions result from the historically shaped shortcomings of the Polish railway network in the form of gaps in direct connections, and therefore, as part of studying the geography of railway lines, the concepts of building some shortcuts or new routes are imposed. On the other hand, the proposals to build new sections of railway lines were largely influenced, it seems, by the monocentric concept of the entire CTH project and the apparent intention to subordinate the entire Polish transport system to this project, while the existing transport system in Poland is polycentric. It should therefore be assumed that over the years all the above-mentioned proposals for the construction of sections of conventional lines, optimistically assuming the construction of a new airport, will be subject to a detailed analysis in terms of various types of conditions, not only political but also transport, including demand, social, economic, including financial and environmental. The latter aspect will undoubtedly be very important to many submitted proposals, but in particular with the intention to build line 29 Ostrołęka - Łomża - Kolno - Pisz - Orzysz - Giżycko running through the naturally valuable Masuria.

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