

EUROPEAN UNION FUNDS IN INFRASTRUCTURE DEVELOPMENT OF POLISH RAIL TRANSPORTATION BETWEEN 2014-2020

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Purpose: The purpose of the paper is to present the importance of the EU Funds in infrastructure development in Poland.

Design/methodology/approach: The analysis is based on a survey, which indicated importance and directions of EU Funds in Polish rail infrastructure. Also the survey measured the status of infrastructure and the most famous items of it.

Findings: (mandatory) Positive impact of European Funds in infrastructural investments and development.

Originality/value The research shows the value of investments, which have a significant contribution of EU Funds.

Keywords: European Union Funds, Infrastructure, Rail transportation.

Category of the paper: Research paper.

1. Introduction

A Transportation system is a repository of many diverse, but at the same time related elements, which refer to technology, economics, law or even organization of whole branch of transportation (Kurowski, 2017). Rail transportations have highly expanded in terms of not only organization of transportation process, which is divided into passengers and freight transportation, but regarding to infrastructure, ecology and coming up intermodal solutions. The newest challenges, which must be completed by Polish economy after the change of political system in at the end of XX century, mainly concern each element of rail branch, but particularly the most visible constituents such as: trains, organization of transport and generally known segments of infrastructure. The moment of Poland's entry to the European

Union (Gricer, 2020) as well as an implementation of usage of many European funds, have had a significant influence on country's transportation system. The goal of this article is to breed interest to the transportation area and curiosity to study the different ways of changes perception, which are still coming across rail. The research has been conducted as a survey. The theoretical introduction of general transportation terms as well as the current situation of Poland concerning infrastructure along with the ways to process the investments using the EU funds, had been presented in the first part of the article. Subsequently, the results of the survey had been shown according to awareness of infrastructure and changes, which are taking place with the aid of EU Funds.

2. Rail transportation and market in Poland

While focusing on the transportation in Poland, it's important to cite the definition, which holistically exposes this complex term. Therefore the transportation *is an activity, which relies on providing non-gratuitous (or unpaid) services, which effect is based upon relocation of people and/or freight from a point of sending to a point of collection and then providing additional service, which is directly related to main service* (Stajniak, Hajdul, Foltyński, Krupa, 2008). This definition confirms affiliation of transportation to the term of logistics, but complementary indicates a strong relationship with relocation, which includes transportation of people and goods. It should be noted, that both terms are related to efficient management of information, so the usage of available information serves to creating competitive advantage, helps to penetrate the market and to maintain high level of customer satisfaction (Gricer, 2019). Considering different types of transportation, which are able to distinguish on country premises, it's possible to indicate that rail transportation is one of the main branches. On the rail market in Poland the leading role performs PKP Intercity S.A. as the primary carrier (especially while talking about intercity connections). In case of a transportation between regions or voivodships, it's possible to stand out POLREGIO (formerly Przewozy Regionalne Sp. z o.o.), which provides transportation in each voivodship and guarantees communications between them. There's also a number of other companies, which signify the local governments incl. Koleje Dolnośląskie S.A., Koleje Małopolskie Sp. z o.o., Koleje Śląskie Sp. z o.o., Koleje Wielkopolskie Sp. z o.o., Koleje Mazowieckie Sp. z o.o. On premises of Kuyavian Pomerian Voivodeship stands out private carrier, which is Arriva RP Sp. z o.o. (Report on the functioning of the rail transport market in 2019, 2020). The changes in the number of passengers were indicated across almost every carrier while comparing years 2018-2019. Significant increase of percentage has been reached by Koleje Dolnośląskie, Szybka Kolej Miejska in Warsaw, Koleje Śląskie and POLREGIO (Report on the functioning of the rail transport market in 2019, 2020). Quite big stratification is a result of

an appearance of interesting and competitive connections provided by regional carriers. It is presented on the figure 1. The freight market is visibly more and more divided on many carriers, because on Polish area of goods transportation there are more than 20 companies. As top carriers had been selected the companies with the biggest shares of the market: PKP Cargo S.A., LOTOS Kolej Sp. z o.o., DB Cargo Polska S.A., PKP Linia Hutniczo Szerokotorowa Sp. z o.o. Those players cover almost 65% of market shares. The freight transposition is much more complex in respect of types of goods, which are in transit. In sense of rail passenger transportation it's only possible to talk mainly about people transportation, what is in opposition to freight transportation. However it's important to remember that there are a lot of types of goods to transport, therefore it's obligatory to provide a special type of trucks. The most important groups of freight transportation are (Report on the functioning of the rail transport market in 2019, 2020):

- Hard coal, brown coal, oil and natural gas (27,61% of shares in whole freight transportation market).
- Metalliferous ores and the rest of mining products (28,01%).
- Coke, briquettes, products of refinement of oil (17,01 %).

This division indicates particular domination of energetic goods and heavy metals in freight transportation in Poland.

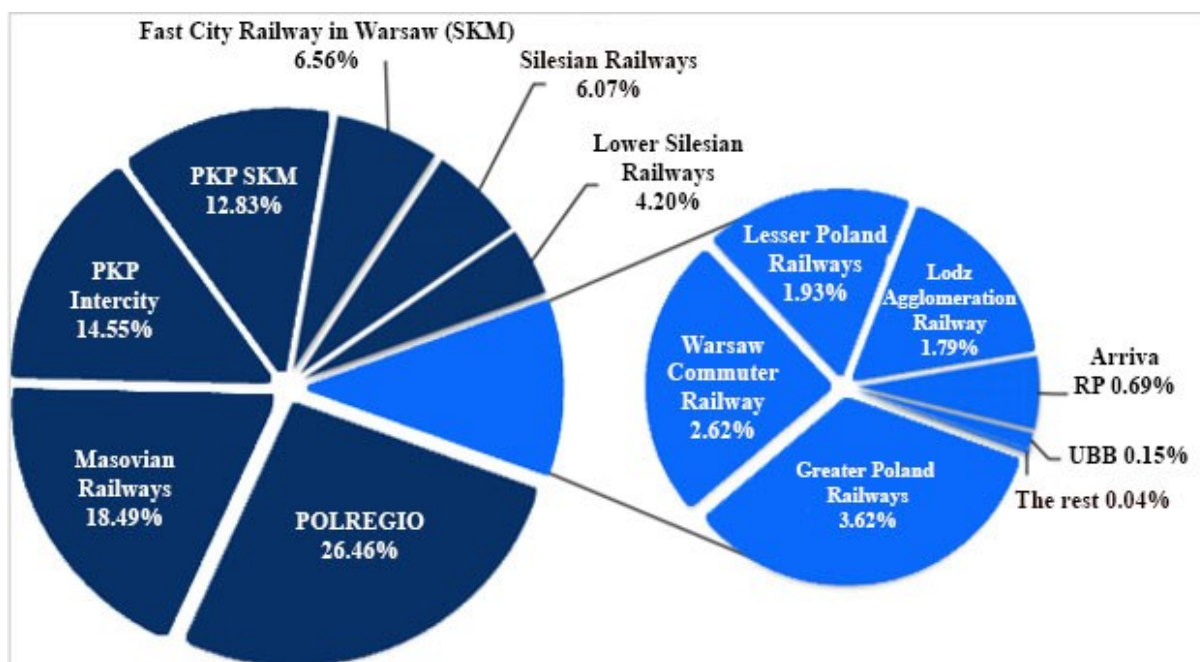


Figure 1. Market shares of passenger carriers acc. to amount of passengers in 2019. Source: Report on the state of the Polish railway transport market in 2019, The Office of Rail Transpiration (UTK), Warsaw, 2020.

3. Rail infrastructure in Poland

At the beginning it is worth drawing your attention to the general outlines of economic and social infrastructure (Wojewódzka-Król, Rolbiecki, 2009). Obviously the infrastructure of rail transportation is included into the economic infrastructure, because it contains different types of devices, which provides stable and effective maintenance of transportation system. The rail infrastructure is divided into 2 additional categories: point and linear. Those terms are quite intuitive and enable easy classification of devices or buildings. The point infrastructure contains: railway stations and all of the devices needed to service and maintain transportation i.e. floats, warehouses, lamps, semaphores, switches, cabins and the rest of rail buildings, which provide transportation services (Stajniak, Hajdul, Foltyński, Krupa, 2008). All of those elements enable functioning of rail transportation and that is freight loading and unloading, modernization, repairs, storage and cleaning of trains and finally maintenance of all of above written elements of point infrastructure. The linear infrastructure includes mainly railway tracks. In our country we can indicate many different types of these tracks: magistral lines, first and second class, lowland and alpine. In 2017 19 209 km of standard gauge (Wojewódzka-Król, Rolbiecki, 2009) tracks had been utilized and 62% of them had been electrified. 2018 was so important for tracks modernization, because it had started works in two important for Poland lines, i.e. E20 (between Warsaw and Poznan) and railroad no. 7 (between Warsaw and Lublin). On the map of 'Figure 2' has been presented a structure of railways, which are adjusted and utilized to passengers and freight transportation throughout the country. Please note, that the director of main rail tracks, point and linear infrastructures, is company Polski Linie Kolejowe S.A. and other subsidiaries of PKP group. A density of railways is not the same in different voivodships due to many different factors incl. historical events (Poland under the possessive, various affiliation of regions to countries before the Second World War), geographical and demographical configuration. According to graphical analysis of the map it may be noticed, that the highest density of utilized railways is in: Silesian voivodship, Opole voivodship and Lower Silesia voivodship. The Poland Statistic Office (formerly Central Statistical Office) monitors length of standard gauge tracks per 100 km². Thanks to that it's possible to confirm graphical analysis. According to Polish Statistics (Local Data Bank of Statistics Poland, 2020) the average for Poland totals 6,2 km per 100 km² and in the big lead are similarly: Silesian voivodship 15,6 km/100 km², Lower Silesia voivodship 8,6 km/100 km² and Opole voivodship 8,4 km/100 km². The lowest density is in Podlaskie voivodship, only 3,7 km/100 km². Additionally it's important to notice, that 9 of 16 voivodships have similar or higher result that country's average.

distinguish three variants of development of transportation system regarding economic development (Wojewódzka-Król, Rolbiecki, 2009):

1. The development of transportation overtakes economic development – that presents the outcome, when supply of infrastructure and transportation development towers domain for such development. In that moments, development of transportation stops until the supply is equal to the demand. It is worth pointing out that the supply will always be higher or equal to the demand of the development. Therefore the development of the transport system will always be ahead of its demand, and thus the development of the entire economy.
2. Variable development of the transport system and economy – means a state when the supply and demand for the development of the economy and the development of the system (including infrastructure) change very often. There is a certain kind of domination of demand over supply, but in such a system there are also moments when supply is above demand (briefly).
3. Delayed development of transport in relation to the development of the economy – means a state when the supply is less or equal to the demand for the development of the system. Most often, the supply for development must, colloquially speaking, "chase" the demand, and thus there is a kind of development necessity caused by the inadequacy to adjust the state of the system (infrastructure) and the location of the entire economy at that time.

Taking into account the current conditions in Poland, but also drawing your attention to the international and even global dimension, it is worth noting that the rail transport infrastructure still fits into the last of the described states. The level of economic development and changes, which are taking place in the economy require thorough reconstruction and expansion of the Polish railway infrastructure, not only in terms of line and point investments, but also in the management perspective.

5. Ways of financing investments in infrastructure in Poland with the use of EU funds. The EU fund and the operational program

It is necessary to take up the topic of funds that support investments in railway infrastructure in Poland. At the beginning it's important to present The Centre for EU Transport Projects (CEUTP) which is the first described entity. It is a unit established in order to efficiently assist in the preparation and implementation of financial investments from European Funds (About CEUPT, 2020) in Poland. Many investments are currently underway in our country, supported by the European Union. An additional goal is the skillful management of the allocated budget to use all funds planned in particular funds for transport (including infrastructure) investments.

From the perspective of the transport system, the European Structural and Investment Funds (ESIF) (EU Funds for modern transportation, 2019) are extremely important. They include 5 main funds of which the following are distinguished (European Structural and Investment Funds, 2020):

- the European Regional Development Fund (ERDF), which supports the development of individual regions in the EU and aims to reduce differences in their development,
- the European Social Fund (ESF), which aims to reduce unemployment and supports the development of human capital in EU countries,
- the Cohesion Fund, which is very important for the development of the transport system. The fund was prepared for selected member countries (with gross national income per capita lower than 90% of the EU average (EU Funds for modern transportation, 2019)). Its goal is to develop transport as well as environmental protection.

Within the given funds, Operational Programs (Newsletter European Funds in Poland No. 49/2018, 2018) are organized, which are intended to implement specific investments in accordance with the assumptions of the funds. For example, many investments in the Polish railway infrastructure are implemented under the national Operational Programme Infrastructure and Environment 2014 - 2020 (OPI&E) (most often in terms of linear (network) infrastructure) (Operational Program POIiŚ, 2017). The main objective of the program is "to support a resource-efficient and environmentally friendly economy that fosters territorial and social cohesion" (Operational Program POIiŚ, 2017). It can be seen that economic development is linked to the development of infrastructure, and thus to the promotion of an ecological approach to the transport. Apart from OPI&E, the Operational Programme "Development of Eastern Poland" (from the ERDF fund) (Eastern Poland Program, 2020) and the Connecting Europe Facility (CEF) (Information on Connecting Europe Facility, 2017) are very important for transport investments. The last of these aims to support the trans-European transport network TEN-T, which are the key transport routes of Europe (not only in terms of particular national). In order for funds to be used by member states, each state must sign partnership agreements with the European Union, which allow member countries to use funds. The contract must include information on how the particular funds will be used within the funds' scope and what is a timeline (European Structural and Investment Funds, 2020). Thanks to the signing of the contract, the above-mentioned Operational Programs are created.

6. Survey methodology

From April 5, 2020 to April 17, 2020, a questionnaire survey had been conducted with 100 respondents. The aim of the study was to check the opinions of respondents on the level of infrastructure in Poland and the changes, which take place with the participation of EU funds.

57 women and 43 men participated in the study. Most of the respondents lived in towns of over 500,000 people (64%). The second largest group were people from towns of up to 50,000 people (23%). The remaining 13% are respondents from localities: from 50 to 100 thousand people (1%), from 100 thous. up to 250 thousand inhabitants (6%) and from 250 thous. up to 500,000 people (6%). Most of the people who completed the questionnaire were between the ages of 18 and 24 (84%) 12% were people between 26 and 40 years of age and 4% between 41 and 55 years of age. The survey took the form of a web questionnaire on Google. It was publicly available and anyone willing could fill in such a form. It contained three types of questions: single-choice questions (yes/no/maybe), requiring the answers according to the Likert scale (0 – I strongly disagree, 5 – I strongly agree) and multiple choice questions, require selecting 3 answers (Likert's Scale, 2020).

7. Results and analysis of the survey

The first question that respondents had to answer related to their opinion on changes in the railway infrastructure over time. As can be seen in Figure 3, the majority of respondents had an opinion that the state of the infrastructure from 2019-2020 is different when compared to the previous years. Both the median (4.00) and the average (3.99) indicate a fairly balanced level of response. To confirm the graphical analysis, it is worth recalling the lower quartile, which is 3. This results indicates that at least 75% of the respondents chose the 3rd answer or higher according to the Likert scale. The data described indicates quite visible changes that took place in the infrastructure.

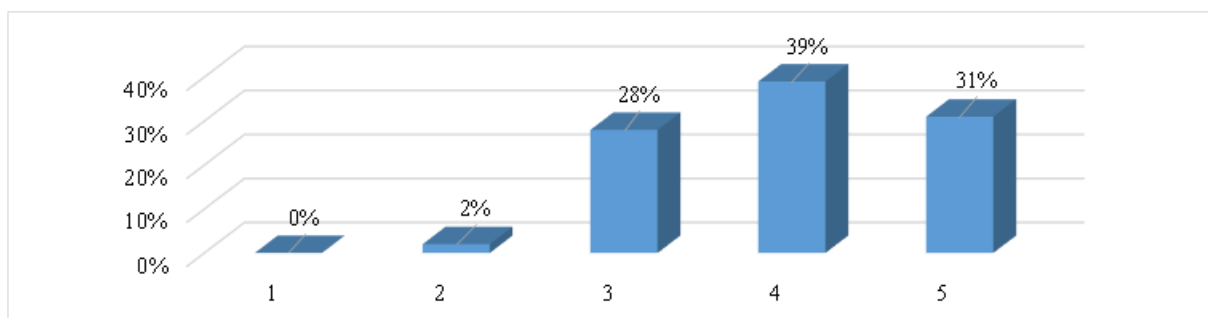


Figure 3. Column chart showing the percentage breakdown of responses to the question "Do you think the railway infrastructure from 2014-2020 is different from the one we had before?" Source: own research.

In order to take a proper look at the changes that have occurred in the railway infrastructure, the respondents were asked to select three most noticeable changes in the infrastructure in 2014-2020. The elements that can be selected in this question were developed on the basis of the guidelines of the Office of Rail Transport (Elements forming the railway infrastructure according to the Office of Rail Transport, 2020). Therefore, the most frequently chosen options include: new/modernized passenger information system, new/modernized platforms,

modernized stops/railway stations, as shown in the Figure 4. It is also essential to draw the attention to a certain relationship between the most frequently selected elements and point infrastructure. It is undoubtedly related to the fact that these infrastructure elements are also necessary to carry out the passenger transport service. Therefore, travelers always have to use the station, platform, and the passenger information system so that they can travel freely within the offered service. The number of investments implemented in these areas in 2014-2020 should also be mentioned here. According to the reports regarding implementation of the Railway Station Investments Program (pol. Program Inwestycji Dworcowych) (Railway station investment program and its implementation, 2020), the National Railway Program (Krajowy Program Kolejowy 2019), as well as reported data from the Center for EU Transport Projects (CEUTP) and the Operational Program Infrastructure and Environment (POIiŚ) for the years 2014-2020, there are many projects that are implemented in the field of a dynamic passenger information system, as well as the modernization and construction of new stations/platforms (EU support for further transport investments in Poland, 2019).

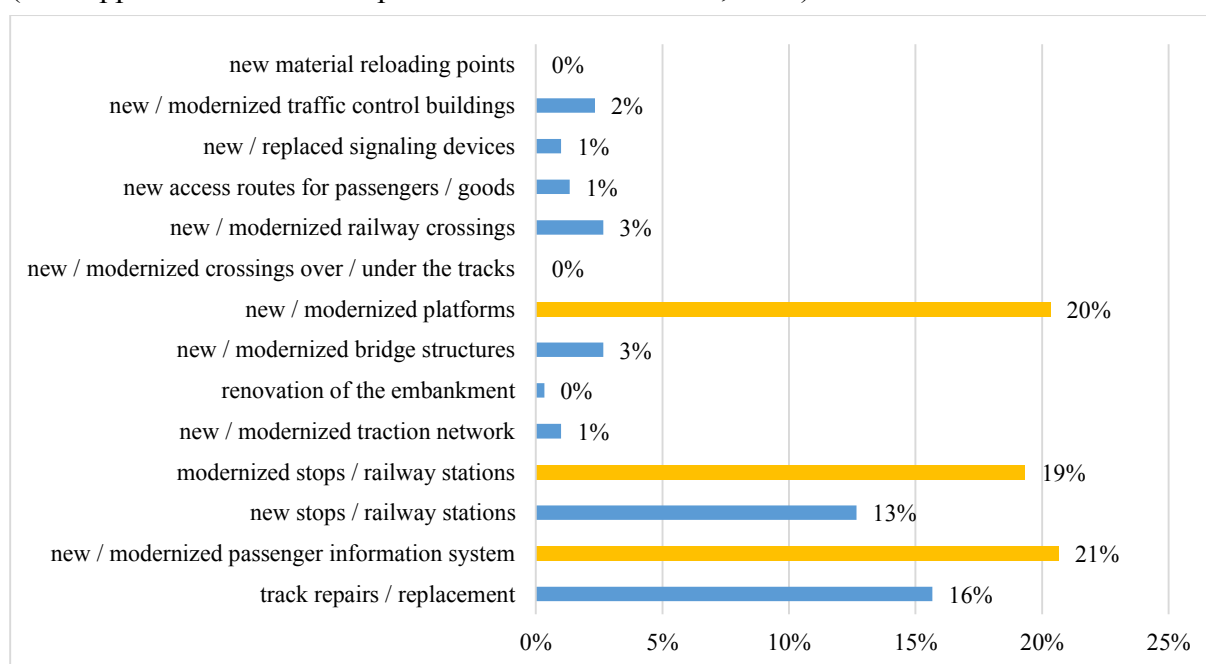


Figure 2. A bar chart showing the most frequently indicated answers to the question: "Choose the 3 most noticeable changes in the infrastructure in 2014-2020". Source: own research.

Referring to the first program, we can talk about almost 200 stations that have been or will be modernized in 2018-2023 (Project "Zmieniamy dworce", 2020). About 75% of the funds that were allocated to the implementation of these investments had been obtained from European Union programs implemented in our country. Also, referring to the reported data by Polskie Linie Kolejowe S.A. from 2018 (Annual report of the company PKP Polskie Linie Kolejowe S.A., 2019), it is worth noting the installation of new 800 passenger information carriers at 600 stations served by the company. As a result, voice announcements are made at 1,344 passenger stations, and some of them contain a system that automatically announces information for travelers. The presented data are intended to confirm the significance of the

projects implemented in the area of stations/platforms, as demonstrated by the respondents. At the same time, 16% of respondents noticed track investments. The number of investments carried out in our country is not always, but to a large extent, associated with EU funds. In the next question, the respondents had to indicate, using the Likert scale, what in their opinion, is the impact of EU funds on investments in infrastructure. Almost half of the respondents (45%) see a strong connection between the funds and the number of projects. Moreover, the average is 4.26, and the lower quartile is 4, which indicates quite high answers given by the respondents. According to data provided by CEUTP, as many as 79 agreements (out of 303) with OPI & E (worth approx. PLN 38.3 billion) and 9 contracts from the Operational Program Eastern Poland 2014 - 2020 (OP EP) (worth approx. PLN 1.6 billion) have been signed for the railroad. Therefore, it can be concluded that the implemented investments have a large share of European funds (EU support for further transport investments in Poland, 2019).

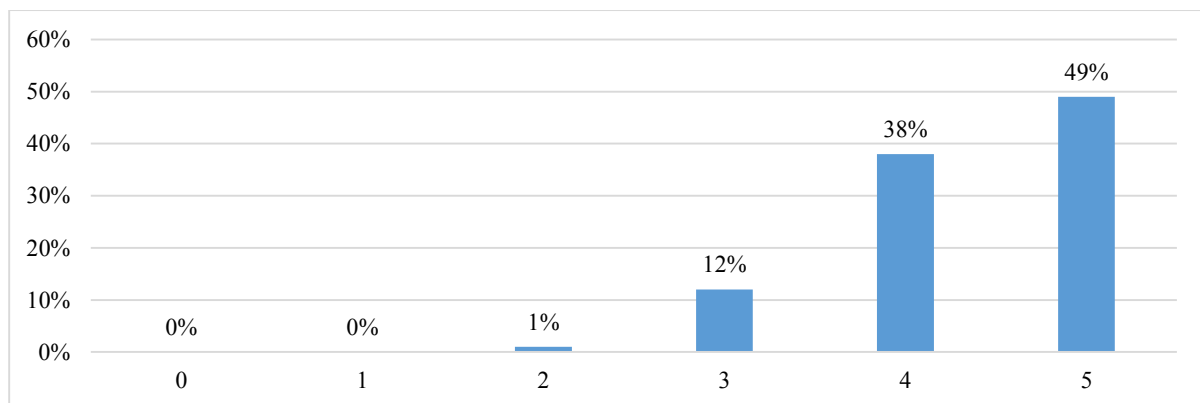


Figure 5. Bar chart showing the percentage distribution of answers to the question: "Do you think that changes in the railway infrastructure with the use of European funds have a positive impact on the comfort and quality of services provided by passenger transport operators". Source: own study.

Another issue lies in checking the direction of European funds impact in passenger transportation, which resulted in showing a positive reception of these investments. As many as 87% of respondents see the positive impact of European funds in infrastructure investments (CEUPT Information Bulletin, 2019). Interestingly, the respondents who in the previous question indicated answers 2 or 3, i.e. did not agree as to the significance of European funds impact on the number of railway investments in Poland, in this question mainly chosen answers 4 or 5, what confirms the positive reception of these investments.

8. The summary

Analyzing the above data, it can be concluded that EU funds have a significant impact on the railway infrastructure in Poland, which is visible to the citizens of our country. The changes and their effects were visible to the respondents, which could also affect the quality of the services provided. Moreover, according to the survey, the changes carried out in individual elements or infrastructure line have influenced their lives positively too. This does not mean that such investments did not take place. For example, one can refer to the construction of a footbridge for the inhabitants of Cracow at the railway bridge (Project of building a footbridge in Cracow, 2018) or at the newly commissioned Warszawa Powązki station (Construction of a footbridge and platforms in Powązki in Warsaw, 2019). However, none of the respondents chose this option in question 2, which may be related to a greater number of changes in other infrastructure elements. It may also depend on how much contact the respondents have had with these infrastructure elements along with the extent to which these elements affected their lives.

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