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THE IMPACT OF EU POLICIES ON THE MODERNIZATION OF TRANSPORT INFRASTRUCTURE IN POZNAŃ AND OTHER MAJOR POLISH CITIES

Abstract: In the years 2004–2014 transport networks in the major Polish cities have changed significantly, mainly because of EU funds. These financial resources helped to overcome the deficiencies in high-quality infrastructure density and introduce new technological solutions. The main aim of this article is to present these changes in the largest Polish cities – Gdańsk, Cracow, Łódź, Poznań, Warsaw and Wrocław. The starting point was the presentation of the assumptions of the European Union transport policies as well as identification of the contemporary transport problems in major Polish cities, caused to a large extent by new urbanisation processes. The emphasis was put on the scale and scope of transport investments co-financed from EU funds. There is also a comparison of the situation in individual cities. Finally, the stance of selected cities' inhabitants towards changes in transport networks and their future expectations have been analyzed.

Key words: transport infrastructure, urban transport, transport policy, transport networks, European Union

Introduction

In the first decade of Poland's membership in the European Union, many areas of socio-economic reality experienced fundamental changes. Access to the European funds made it possible to launch a number of investments aimed to increase competitiveness of Polish economy and improve the quality of life. Large cities got involved in the reconstruction of infrastructure (supported by the organization of UEFA European Championship 2012), although many projects were also implemented in other areas. On the other hand, voices have been raised that the funds awarded are not always used in an appropriate way. However, there is no doubt that in the years 2004–2014 the landscape of major Polish cities underwent remarkable transformation.

The aim of the analyzes presented in this paper was to capture the changes that have occurred in the largest urban centers in Poland in the years 2004–2014, i.e. after the country's accession to the European Union. The focus is primarily on the effects of financing new infrastructure projects from EU funds. The results have been presented for six largest Polish cit-

ies: Warsaw, Cracow, Łódź, Wrocław, Poznań, Szczecin and Gdańsk. A total of 134 projects were analyzed, related to the construction of road, rail, air and port infrastructure. The results presented at the end of the article were obtained in a survey conducted in 2012 on a sample of 1,600 people – the users of different means of transport. They were collected during interviews with the residents of Cracow, Poznań, Warsaw and Wrocław¹.

EU transport policy in the years 2004–2014

Since the onset of the European Economic Community (1957), the transport, especially on international scale, was an important area of interest and joint actions of the Member States. Developed legal regulations related primarily to such areas as transport safety, transport services, transit. However, it was not until 1992 that the provisions supporting the need for

¹ The research was conducted with the method of direct interviews in four selected cities (400 interviews in each city). Detailed information on the survey methodology can be found in Gadziński (2013).

the construction of cross-border transport corridors between major cities were established and included in the Treaty of Maastricht. Initial specific regulations concerning the integration of transport systems of the Member States in respect of all forms of transport were signed in 1996 (*Decision No 1692/96 of the European Parliament and the Council of 23 July 1996 on Community guidelines for the development of trans-European transport network*). As a result, the aid program called the *Trans-European Transport Networks* (TEN-T) was created, which enabled to finance investments regarded as essential (road and rail infrastructure, inland sections of waterways, airports, sea ports, river ports, intermodal solutions). Following Poland's accession to the EU in 2004, the course of four pan-European transport corridors was established on its territory (in accordance with the Decision No. 884/2004/EC of the European Parliament and the EU Council of 29 April 2004):²

- I: Helsinki – Tallinn – Riga – Kaunas – Warsaw (with IA offtake: Riga – Kaliningrad – Gdańsk);
- II: Berlin – Warsaw – Minsk – Moscow;
- III: Berlin – Wrocław – Katowice – Lviv – Kiev (with IIIA offtake: Dresden – Legnica);
- VI: Gdańsk – Katowice – Żylinia with offtakes (VIA: Grudziądz – Poznań and VIB: Częstochowa – Katowice – Ostrawa).

Integration of transport networks of the Member States is one of the most important tasks included in the strategic documents prepared by the European Commission (compare Mulley, Nelson 1999). At the time of Poland's accession to the EU, the White Paper on Transport titled *European transport policy for 2010: time to decide*, enacted in 2001, was in force. It was a short-term strategy for the development of transportation sector throughout the Community. Many sections of this document point to the problems which directly relate to major urban centers and connecting corridors. The key issues of urban transport included in particular: increasing congestion, pollution and noise levels, as well as the excessive development of costly road infrastructure and its large land consumption (compare Banister 2011). In case of freight transport, the negative factors included as a high percentage of cars in transport and the occurrence of "bottlenecks" in road traffic. As the ways to solve these problems, the au-

thors suggested, for example, the improvement of urban transport quality, development of new environment-friendly technologies, additional investments in railway transport, promotion of inland waterway transport and the creation of trans-European corridors under TEN-T program (in particular, the inclusion of the main centers in new Member States into the European transport network after the 2004).³

In 2011 the European Commission adopted a new strategy for a much longer time perspective. The new White Paper on Transport entitled *Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system* (2011) provides a specific roadmap for the development of the transport sector with a shorter outlook by 2030 and longer by 2050. In addition to the provisions which focus on different transportation sectors, the document also includes a vision for creating a competitive and sustainable urban transport systems ("Clean urban transport and commuting to work"), under which four basic postulates were established:

- transition to a greener transport in cities (elimination of conventionally-fueled cars, efficient and accessible public transport, good travel conditions on a bicycle and on foot, small number of accidents, low transport emissions),
- use of public transport on a wider scale (high availability and frequency) and the use of space conducive to reducing the need for mobility,
- widespread use of smaller, lighter and more specialized passenger vehicles,
- limited transport of goods in cities (through appropriate combination of transporting goods over long distances and transport in the last kilometers, reducing individual supplies, the development of intelligent transportation systems).

The document clearly indicates that future development of transport systems in the cities will mainly relate to public transport. Individual motor transport was considered the least efficient and most emissive (compare Whitelegg 1994, Mess 2010). This direction is supported by objectives of the strategy – as a result of its

² According Adamiec (2012), in the years 2004–2011 Poland acquired nearly EUR 96 million from the TEN-T program (in projects with a total value of EUR 211 million). Majority of the projects related to the preparation of planning documentation, and only a few to the modernization of infrastructure and introduction of modern traffic control systems.

³ However, according to some experts (Whitelegg 2003), the White Paper lacked specific (though often unpopular) provisions in relation to the ways of reducing road traffic and solving the problem of congestion, and also the methods to lower transportation demands. Europe is becoming a continent where most people are on the move most of the time and if we can buy an apple that has travelled 1,000 km then this must be much better than one that carries with it thousands of years of history, culture and taste and has travelled 50 kms (Whitelegg 2003, p. 130). As a result, the proposed transport policy was considered disappointing.

implementation, by 2030 the numbers of conventionally-fuelled cars in the cars should be reduced by half, and by 2050 they should be eliminated completely. At the same time, the “polluter pays” and “user pays” principles are to be pursued, introducing charges to be collected from road users (taking into account the costs of construction and maintenance of infrastructure as well as external expenses, including environmental costs). This makes it possible to acquire funding for the construction and maintenance of a modern transportation infrastructure.

In accordance with the transport policy of 2011, TEN-T corridor network, connecting the largest European centers, will be continuously developed. In this regard, greater emphasis has been put on the rail transport investments (including high-speed railway network), as well as inland waterway transport. Intermodal solutions are particularly stressed, including connection of airports, sea ports and river ports with the railway network. What is more, the document assumes that transport goods over long distances by road using trucks will be greatly limited. By 2030, the weight of goods transported in this manner (over a distance greater than 300 km) is to be reduced by 30%, and by 2050 – by 50%.

Problems with the development of transport infrastructure in Polish cities

In Poland, as in other countries of Central and Eastern Europe, the development of transport networks in the twentieth century had a very different character than in other parts of the continent. Prevailing ones were the investment in freight services and infrastructure linking main industrial centers of the country (including the Broad Gauge Metallurgical Railway Line and Central Railway Line, built in 1970's). At the same time, many railway track sections got neglected, however, which led to decrease in the average speed of trains. Road transport was regarded as less important. Under-investment in road infrastructure at the national and regional level was particularly apparent. Broad traffic arteries were constructed in large cities (characteristic of modernist urban planning and motor city model), connecting large residential areas with districts of different character (compare Jałowicki, Szczepański 2002).

As a result, at the beginning of 21st century Poland experienced a significant underdevelopment of the transport network in comparison to the countries of Western Europe. In 2000,

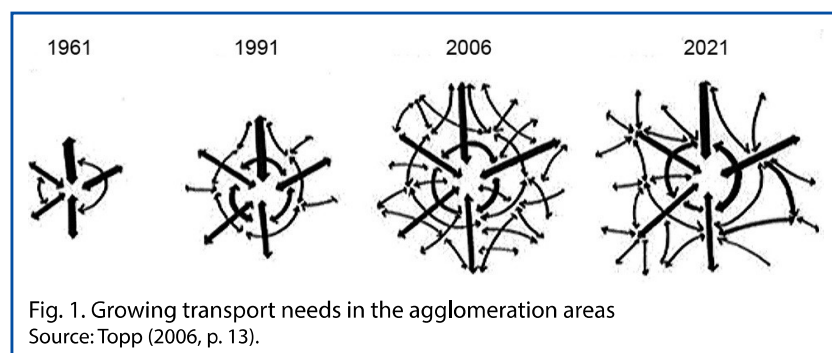
Poland had only 551 km of motorways and express roads (mainly small fragments of A4, A2, A6 motorways). The condition of many sections of national and provincial roads was very low, which translated into high accident rates. Road networks in the cities were not ready for the “automotive boom” which began in the 1990's when the population has begun to get richer and the cars have become more widely accessible (including used cars) on the market (Komornicki 2011).

The country also lacked high-speed railway infrastructure. Moreover, many railway line sections were in a poor condition which made the travel time considerably long. According to the report *Polish transport diagnosis (2011)* in 2001, 7.8 thousand km of nearly 19.8 thousand km of railway lines managed by PKP PLK (39%) was defined as “unsatisfactory”. In most sections (56%) the trains could only move at a speed lower than 80 km/h (including 12% with the maximum permissible speed of 40 km/h). There were no trackways with a permissible speed greater than 160 km/h. Also, the state of waterways, ports and airports in many cases deviated from Western European standards.

At the turn of the centuries the major Polish cities had to face new challenges in the organization of transport. This was largely due to the progressive urbanization processes associated with the depopulation of city centers and simultaneous urbanization of the suburban zones. As a result of the progressive settlement dispersion and increase in the number of circular migrations, the average distance and time of everyday travel began to increase (compare Gayda, Lautso 2007, Sessa 2007). Public transport has lost its attractiveness and become less available, while individual road transport has become increasingly popular (Komornicki 2011).

Still, taking into account the whole agglomeration area, the largest urban centers attracted new residents from smaller towns and rural areas (including students), which led to the increase in the number of people traveling in the agglomeration areas. As a result of these intensive and relatively fast processes, a set of completely new spatial behaviors of the population has been developed (Fig. 1; compare: Wegener 2004, Scheiner 2006, van Wee 2011). Their transportation needs could not be met by the existing transport networks, and as a result, a number of problems associated with mobility occurred.

It should also be mentioned that the living standards, rising in the new socio-economic reality, led to significant increase in the range



of needs, expectations and activity of an average person (in accordance with the principle noticed already in the 20th century by Maslow (1954), who created his famous hierarchy of needs). New needs have brought about the need to reach out to places where they could be fulfilled. Also for this reason, the number of daily trips significantly increased especially in big cities, which are strong economic centers.

A new set of needs of the large cities inhabitants, dramatically increasing number of vehicles on roads and constantly increasing weights of transported goods resulted in traffic problems (congestion). Infrastructure investments, intended to improve mobility in agglomeration areas and beyond, have become necessary. Expanding road infrastructure and adapting it to the growing traffic flows seemed the easiest solution (such methods have been repeatedly criticized later by experts in urban

transport – Plane 1986, Topp 2006, Banister 2011). However, due to huge costs, only small part of the planned investments have been implemented.

Since 2004, after Poland's accession to the European Union and adoption of common transport policy rules, transport networks at the national, regional and local levels have begun to change at a much faster pace. This was particularly evident in the country's major cities, which raised significant resources for the investments in infrastructure of various means of transport.

Financing transport infrastructure from EU funds

On account of the crucial role played by the trans-European networks in the European integration process, in the years 2000–2006 and 2007–2013 EU allocated significant resources to the development of passenger and freight transport infrastructure. They were intended mainly for cross-border investments in the framework of TEN-T program, and in the less developed areas also for the construction of basic transport connections (in order to increase cohesion and competitiveness of the area -facilitating the flow of people and goods within the region and outside). In large urban centers, considerable resources could be obtained for

Table 1. Sources of transport infrastructure funding from EU funds in the years 2004–2006 and 2007–2013

The prospect of funding	Operational Programme/ programming document	Sources of funding	Investment
2004–2006	Sectoral Operational Programme Transport (SOPT)	European Regional Development Fund (ERDF)	<ul style="list-style-type: none"> – improving the quality of national and urban transport infrastructure – improving safety, – multimodal solutions
	Integrated Operational Programme for Regional Development (IOPRD)	European Regional Development Fund (ERDF)	<ul style="list-style-type: none"> – improving the quality of regional and city transport infrastructure, – modernization of public transport in the city and agglomeration.
	The Cohesion Fund strategy for the years 2004–2006	Cohesion Fund	<ul style="list-style-type: none"> – construction, modernization or reconstruction of roads, expressways and motorways, – modernization of railway lines, – preparation of design documentation.
2007–2013	Infrastructure and Environment Operational Programme	European Regional Development Fund (ERDF) Cohesion Fund	<ul style="list-style-type: none"> – development of TEN-T network components, – solutions to reduce negative impact of transport on the environment, – improving safety,
	16 regional operational programmes (ROP)	European Regional Development Fund (ERDF)	<ul style="list-style-type: none"> – improving the quality of regional and city transport infrastructure, – modernization of transport components in the city and agglomeration.

Source: own study.

the improvement of traffic safety, development of public transport, but also for the reconstruction of the road network.

Since 2004, Poland has had the opportunity to apply for funds from the European Union (Table 1; previously it could only avail of the pre-accession funds, i.e. PHARE, SAPARD, ISPA). In the first financial perspective (2004–2006), it was possible to obtain funds for the investments related to transport network development, for example from the Cohesion Fund (including financing for projects which had earlier qualified for the pre-accession ISPA programme). The programme's budget funded mainly large infrastructure investments.

At the national level, among the tools to implement the *National Development Plan 2004–2006* was the *Sectoral Operational Programme Transport* for a total of EUR 1,160 million (approx. 9% of the funds granted). Its main objective was to “increase the transport cohesion in the country and improve spatial accessibility of Polish cities, areas and regions in the European Union system in order to achieve the objective of CSF” (SOPT, p. 28). Financing the investments in the improvement of transport infrastructure was also possible under the Integrated Operational Programme for Regional Development designed for the provinces (voivodeships), especially as part of the measures: “Modernisation and development of the regional transport system” and “Public transport infrastructure in agglomerations”).

In the second programming period 2007–2013 Poland could distribute a decidedly larger pool of resources. The largest portion (EUR 28,3 bilion, 42% of the funds granted) was reserved for infrastructure investments under the Infrastructure and Environment Operational Programme (in the framework of the priorities: “Road and air TEN-T network”, “Environment-friendly transport” and “Transport safety and national transport networks”). Funds for slightly smaller infrastructural investments could be acquired by local governments and transport companies from the regional operational programmes (distributed by the marshal offices of individual provinces).

In total (according to the government website mapadotacji.gov.pl) in the period of 2004–2014 the transport sector obtained PLN 113 billion from the European Union. During that time, nearly 3,250 projects were implemented, with a total value of PLN 197 billion (the average level of funding was 58%). These amounts prove the enormous scale of investments which within 10 years led to the transformation of transport network on the national, regional and local scale.

Transformation of transport networks in Polish cities with the support of EU funds

Road infrastructure

The funds obtained in the years 2004–2014 have significantly contributed to the development of road infrastructure – both on the national (motorways, expressways) and local levels. However, only the investments located within the boundaries of selected urban centers were analyzed in the further part of this paper. It should be noted, however, that the infrastructure located at a certain distance from the individual units is very important for urban transport network (e.g. the ring roads).

During the period of 2004–2014 in six major Polish cities 81 projects related to the construction, reconstruction or modernization of road infrastructure were implemented, with the support of the European Union funding (Fig. 2). The largest number of projects was implemented by Warsaw and Wrocław (20), while the smallest number – by Cracow (only 8). In the first programming period (2004–2006) 21 applications were accepted for grants, and in the second programming period (2007–2013) – 60 applications. Cracow was the only city not to obtain the EU funds for transport in 2004–2006 (at the time, however, the city implemented the project in the framework of PHARE – Reconstruction of Klasztorna street, section from Jana Pawła II street to Żaglowa street). In Poznań 12 projects with a total value of PLN 1115 million were financed (in the same time the value of the most expensive project in Warsaw was PLN 1151).

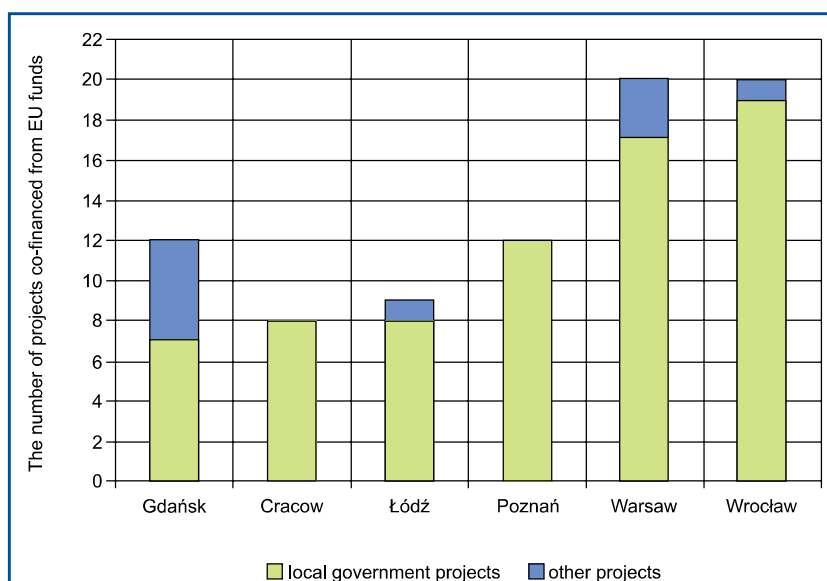
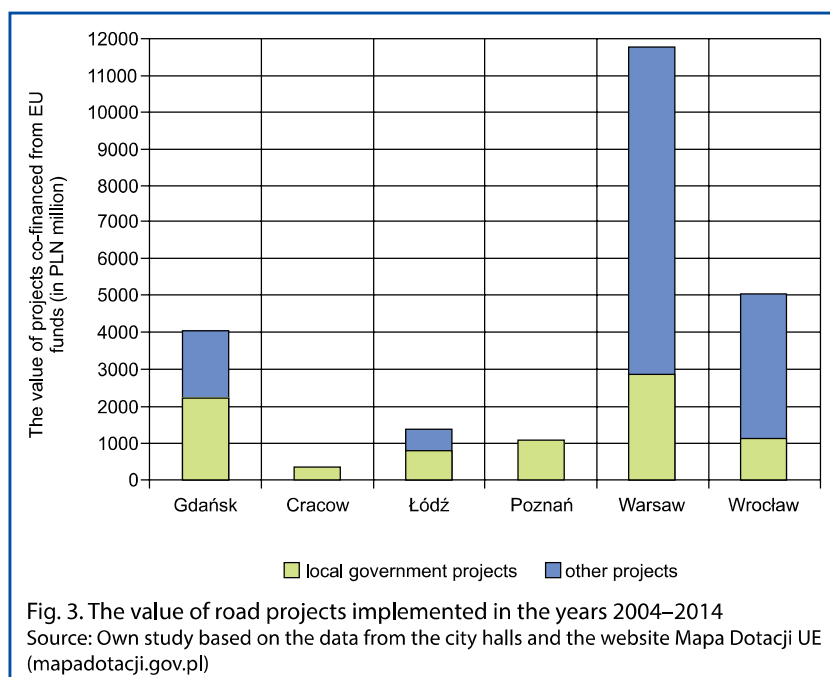
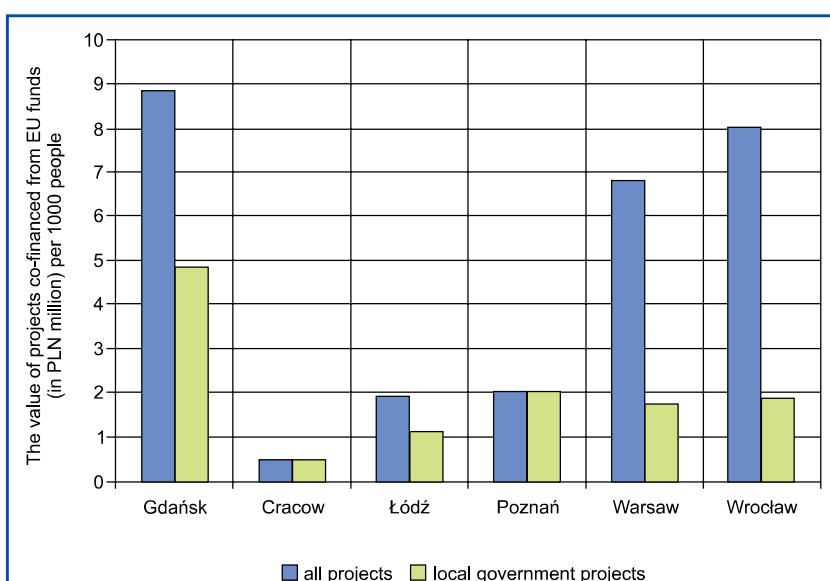


Fig. 2. “Road” projects co-financed from EU funds in the years 2004–2014
Source: Own study based on the data from the city halls and the website Mapa Dotacji UE (mapadotacji.gov.pl)



Local governments were the beneficiaries of the majority of projects (71). In other cases, the investments were carried out by the General Directorate for National Roads and Motorways (seven investment), and in Gdańsk also the company Zarząd Portu Morskiego w Gdańsku SA (two projects related to the reconstruction of road infrastructure to improve accessibility of the Gdańsk port) and local government of the neighboring commune (gmina) of Sopot (the investment located on the city border – “Extension of the Tricity communication system with ERGO ARENA commu-



nication system”). Investments made by the General Directorate for National Roads and Motorways (GDDKiA) related to the construction of motorway and express road sections within the administrative boundaries of the analyzed cities. The largest number of such projects was carried out in Warsaw, while in Cracow and Poznań there were no investments of this type.

As shown in Figure 3, the investments co-financed from EU funds with GDDKiA as a beneficiary were among the most expensive ones. For example, in 2008–2011 the motorway ring road (A8) was constructed in Wrocław, for a total amount of PLN 3.9 billion, which makes 77% of all the projects implemented in this unit. In total, GDDKiA carried out the investments in the largest Polish cities to the total amount of PLN 15.1 billion (an average of PLN 2.2 billion per project), of which approx. 66% of funding came from the European Union.

Local governments of the analyzed cities could not afford such large projects due to limited ability to provide own contribution. The prevailing investments were the ones related to the reconstruction or modernization of the existing road sections, as well as to the construction of short complementary segments to the missing connections in transportation networks. Among the analyzed units, the largest investments (considering the total value of projects) were carried out in Warsaw and Gdańsk, and Cracow was in the lowest position in this respect. Per 1,000 residents (Fig. 4) the majority of funds was spent in Gdańsk (as much as PLN 4.8 million). The city in the second position in this qualification – Poznań – obtained the amount of PLN 2.0 million per 1,000 people, and the last – Cracow – only PLN 0.5 million per 1,000 inhabitants.

The relative largest amount of own contribution into the projects co-financed by the European Union was made by Poznań (Fig. 5). In total, it has obtained 39% of the amount needed to carry out the investments. Completely different situation occurred in Gdańsk, where EU funding accounted for as many as 79% of invested capital. As a result, the city spent much less from the budget than Poznań did although the total value of the projects was twice as high.

Rail transport infrastructure

The need for intensive development of rail transport and restoration of its former significant role in passenger and freight transport is very strongly emphasized in the European Union transport policies (Dir. 2006). As a result, following accession to the Community,

Poland gained the ability to avail of a large pool of funds for the restoration of the existing track infrastructure and purchase of modern rolling stock. The companies managing rail infrastructure and carriers could be the beneficiaries in this respect. In total, in the period of 2004–2014, 27 projects for the total amount of PLN 17.188 billion have been implemented in six major Polish cities (or at least partially in their administrative borders). The funding obtained from the EU amounted to PLN 9.091 billion, which accounted for 53% of the entire investment. It should be pointed out, however, that many studies were conducted only partly the areas of the cities analyzed, and covered very long line sections (e.g. modernization of Poznań-Wrocław railway line in Poznań-Czempin section has covered the section of 32km and involved the construction of engineering facilities, railway station modernization, platforms reconstruction, etc., of which only some works have been performed in Poznań). It seems that the investments in railway stations and high-speed urban and metropolitan railways had have been of the greatest importance for urban and agglomeration transport.

The investments co-financed by the Community, which were at least in part located in major Polish cities, were dominated by projects related to the modernization of important railway sections (used primarily in interregional transport). As much as 7 projects of this type were implemented in Warsaw, for the total amount of PLN 7.881 billion (approx. 50% was financed from EU funds). The largest investments in agglomeration rail transport with support of the Community funds were carried out in Gdańsk. Subsidies to the total amount of PLN 1.471 billion (of which 57% was covered from EU funds) were awarded to three projects devoted to the development of high-speed Tricity railway network (two infrastructural projects and one associated to the purchase of rolling stock). Another city to obtain subsidies was Łódź, with two implemented projects for the construction of Łódź Agglomeration Railway, which in the years 2007–2013 absorbed PLN 510 million (of which 45% from the EU funds).

Participation of EU funds in the period 2004–2014 made it also possible to complete investments aimed to improve the railway station infrastructure. A brand new facility (with the underground waiting area) was built in Cracow. The railway station in Wrocław was also considerably modernized, including reconstruction of its historical appearance. Part of the EU funds was allocated to the projects aimed at the improvement of rail freight trans-

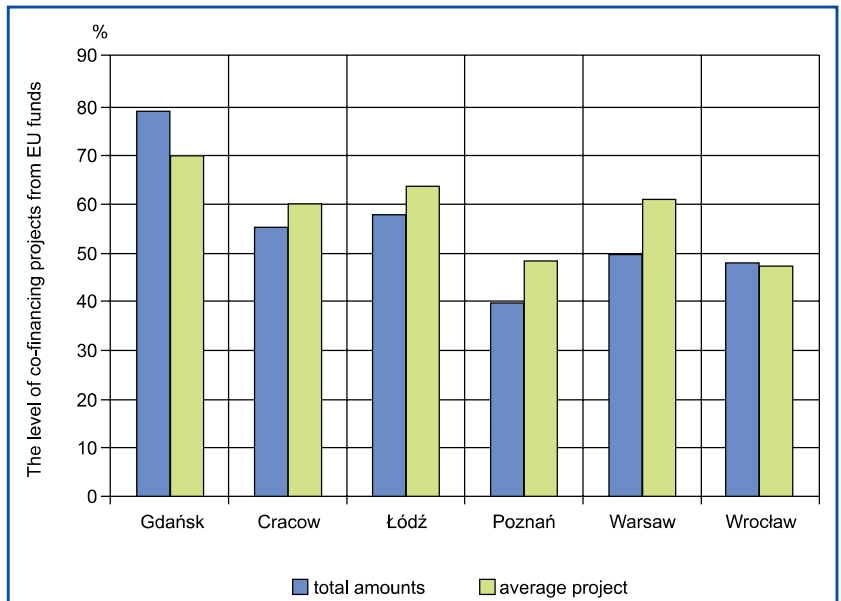


Fig. 5. The level of financing road projects implemented in the years 2004–2014 from EU funds

Source: Own study based on the data from the city halls and the website Mapa Dotacji UE (mapadotacji.gov.pl).

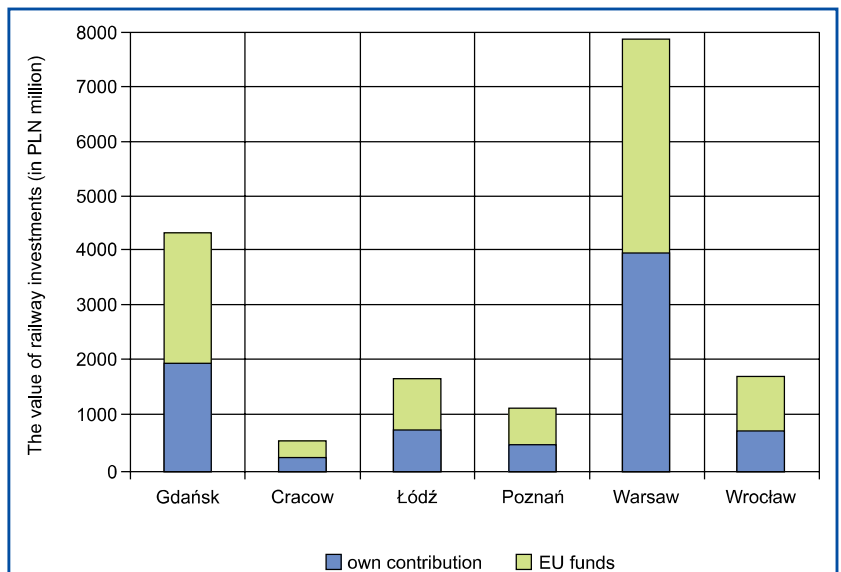


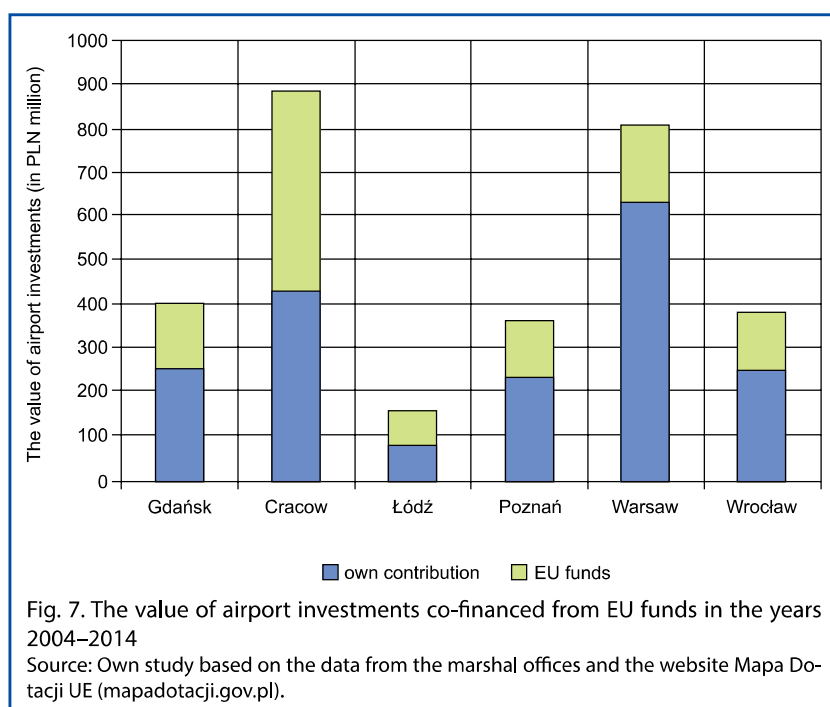
Fig. 6. The value of railway investments co-financed from EU funds in the years 2004–2014

Source: Own study based on the data from the marshal offices and the website Mapa Dotacji UE (mapadotacji.gov.pl).

port conditions. The investment into the construction of an intermodal terminal was made in Poznań, and in Gdańsk – in the modernization of container terminal.

Air transport infrastructure

Constant development of air transport in Europe caused by the increase in population mobility as well as the resulting increase in the number of passengers caused capacity problems at many Polish airports. The years 2004–2014



were then a period of intensified investments in the passenger service infrastructure. This was possible thanks to a substantial amount of EU funds allocated for infrastructure improvements within the trans-European transport corridors. As a result, 19 projects related to improving airport operation were implemented over 10 years in six major Polish cities. Their total value amounted to PLN 2,998 million, of which 1,885 million (37%) came from European funds. The investments related primarily to the expansion and modernization of facilities for handling passengers (e.g. construction of new terminals), and the improvement of the surfaces of airports and networks of their internal traffic systems.

The largest number (9) of projects related to improving airport infrastructure have been implemented in the years 2004–2014 in Cracow. Their total value amounted to PLN 889 million – and as much as 52% of this amount was covered by the European Union. These investments contributed to the increase by 615% in the number of passengers at the airport in Cracow in the period 2003–2013 (from 0.6 million in 2003 to 3.6 million in 2013.).

Almost as expensive investments (though under two projects only) were implemented at Okęcie International Airport in Warsaw, devoted mainly to the expansion of airport terminals. In other cities, the value of investments was a bit lower, however, it also contributed to the improvement in the quality of airport infrastructure.

Sea transport infrastructure

Another important components of the national transport system are sea ports which facilitate international trade. Many investments in the transport sector have been carried out with the support of EU funds in Gdańsk (the local port belongs to the trans-European transport corridor IV). In the period 2004–2014, the expansion of the port, modernization of waterways and intermodal solutions absorbed PLN 422 million with the implementation of seven projects. The funding obtained from the European Union amounted to PLN 288 million, which accounts for approx. 68% of the total amount. New investment have largely contributed to the increase in cargo handling capabilities of the port. In the years 2003–2013 the cargo turnover has increased significantly, and in 2013 it reached the level of 30.3 million tons (an increase by 42%).

Transformation of transport networks in large cities in opinions of their inhabitants

In 2012, the survey on population travel behaviors and future directions of local transport policies was conducted in four cities (Warsaw, Wrocław, Poznań and Cracow). It was the basis for assessing the level of citizen satisfaction with traffic conditions prevailing in the cities after the investment in the infrastructure of various means of transport. It should be noted however, that a number of projects with the EU funds support is still in progress, which may cause local traffic problems (often affecting the assessment made by the users). On the other hand, the survey conducted provide also an answer to the question whether the current urban transport strategies are consistent with the expectations of local communities.

During the interviews, the respondents were asked about their assessment of the conditions of travel in various means of transport. They could rate each of them from one (the lowest level) to ten points (the highest level), depending on how they assessed liquidity and an ease of traveling. As a result, after collecting the citizens' opinions, the average values were determined for individual towns and means of transport, which ranged from 3.9 to 6.5 (Fig. 8).

Public transport (average 5.7) and car traffic (average 5.7) were rated highest, and railway (5.2) was rated lowest by the inhabitants. Significant differences, however, can be observed between the cities. The respondents in Cracow were most satisfied with travelling by public

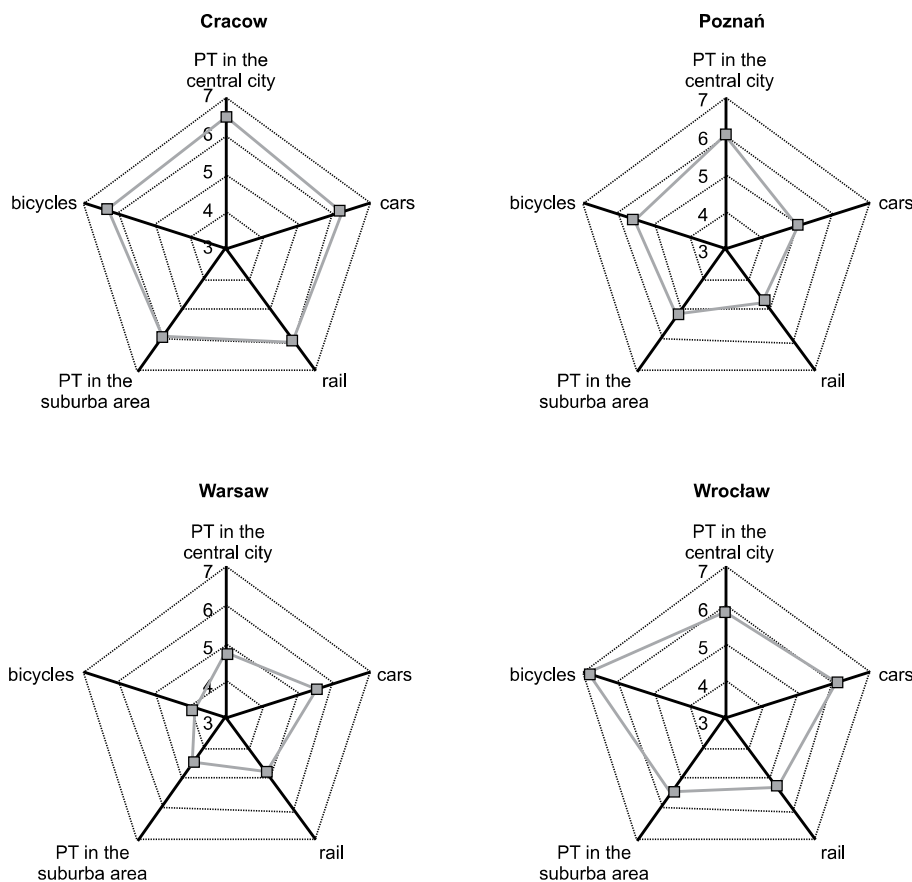


Fig. 8. Quality of the means of transport in opinions of the residents of Cracow, Poznań, Warsaw and Wrocław (axes values – average number of points, axes descriptions – categories)
Source: Gadziński (2013).

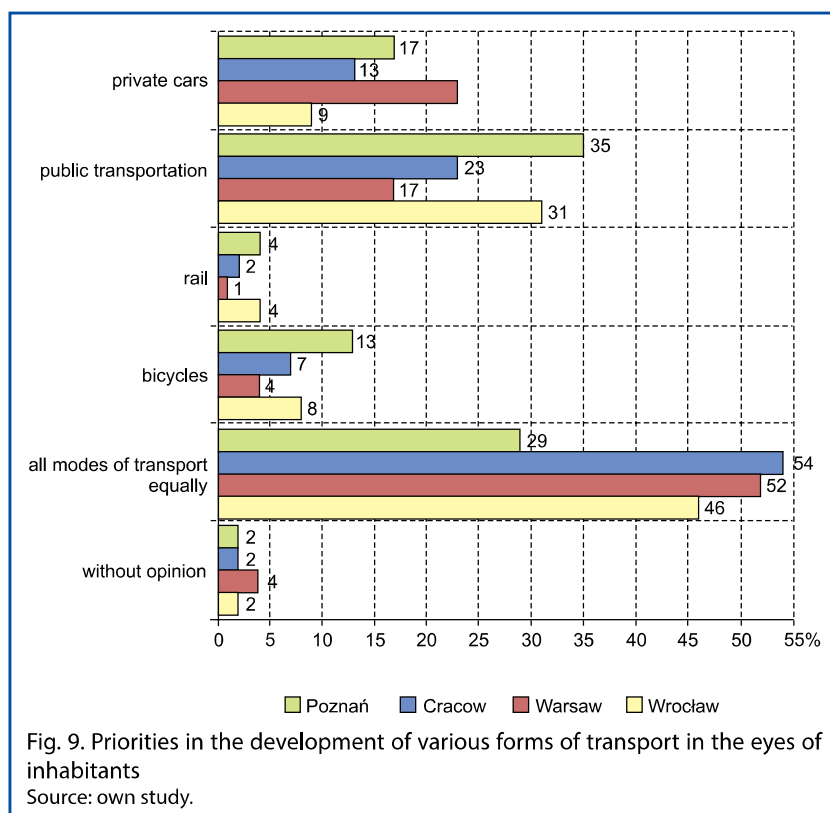
transport and bicycles, although all means of transport received high ratings (average approx. 6). On the other hand, the residents of the capital were very critical towards the way the transport operates in their city. Among the positions that were rated particularly low was travelling on bike (average 3.9) and public transport (4.7). In their opinion, the best way to move around Warsaw is to travel by car (5.5). The respondents in Poznań, when asked about the quality of travel by various means of transport, expressed best opinions on public transport (average 6.0), and were the most critical towards travelling by railway (4.7) and car (average 5.0). In contrast, Wrocław residents rated two-wheel means of transport as the most comfortable (average 6.8), while the lowest rating was assigned to railways (5.3).

Despite the relatively low ratings, travelling by car was most frequently indicated as a means of transport the residents would be most willing to choose (if they had an opportunity). It would be chosen by half of the population of cities where the study was conducted. Bus or tram would be chosen by 16% of the respondents, and a bike – similarly to travelling

on foot – 10%. Only 2% of the population was interested in travelling by trains (Fig. 9). Responses to this question point out to still great growth prospects for private motoring.

The surveys included also a question about the priority means of transport and infrastructure in which the local governments should invest largest amounts of money. The vast majority of respondents opted for equal development of all forms of transport. Among those who were more firm about priority direction of future investments, the most numerous were the supporters of public transport. Only in Warsaw more respondents were determined to support mainly the development of road infrastructure.

The survey enabled respondents to refer to specific proposals to solve transport problems and increase traffic flow, which usually sought to introduce certain restrictions for motor traffic (Fig. 10). In most cases, the opinions of the residents were divided. The idea of calming traffic in central parts of the city gained the largest number of supporters (42%), although there were nearly as many opponents to this solution (41%). For other solutions, the majority of residents proved to be the opponents



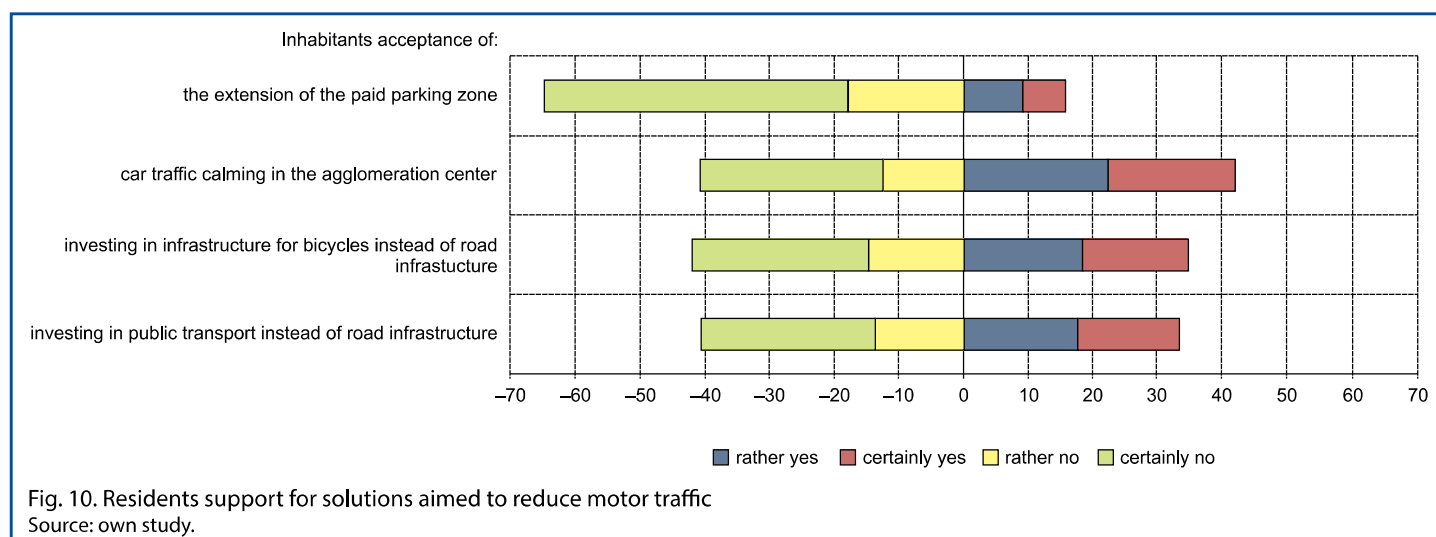
of change. The expansion of paid parking zones was especially strongly protested (65% of the residents). Analysis of the population responses in individual cities shows that people living in Poznań and Wrocław were more favorable towards new solutions limiting car traffic and promoting other means of transport.

The results of questionnaire surveys conducted in four cities show that the reconstruction of transport networks in Polish cities is a long process. Rising traffic flows and still ongoing investments to improve transport infrastructure make the residents not fully satisfied with the quality of their travel. As a result, various means of transport are rated as

average. Not everyone can understand the need for change to create more sustainable transport system, in which the means of transport other than cars, more effective in the urban space, are preferred. It is necessary to educate people in this respect and to draw patterns and solutions (so called good practices) from other cities where public transport operates very smoothly. The survey results also show that it is not always easy to determine the direction of transport policy. Very often, the users of different means of transport have conflicting opinions on these issues and their demands are associated with the infrastructure they are using themselves (which is also confirmed by the analyses carried out – more in Gadziński 2013).

Conclusion

Investments conducted in the years 2004–2014 in major Polish cities significantly contributed to the reorganization of local transport systems. Many infrastructural shortcomings have been overcome and some wrong engineering solutions have been improved. Many new sections of roads with the highest traffic parameters were constructed to enable safer and faster travel between major cities in the country and abroad. Many investments are still ongoing, aimed to improve the condition of major railway lines, which will shorten travel time and enable faster transfer to other means of transport as well as efficient transshipments. Polish airports have also changed, as they had to adapt to handling much greater numbers of passengers (especially after Poland's accession to Schengen Area in 2007 and opening up the borders). Sea ports also underwent transformations, which significantly increased the weights of transported goods.



It should be noted, however, that the assumptions of EU transport policies are not focused solely on improving the standard of transport infrastructure. In subsequent years, after partial elimination of infrastructural underdevelopments, major Polish cities should proceed to implementing other items of transport sector strategy. As emphasized by many experts, continuous development of infrastructure (especially road infrastructure) in the long run can even lead to deterioration of traffic conditions in cities (Plane 1986, Newman, Kenworthy 1999). It is therefore important to focus on the investments that improve the existing networks quality – modern traffic management systems, solutions to integrate different means of transport and facilitating transfers (or transshipment of goods), as well as the accessibility of public transport (van Wee 2002, Gaffron et al. 2007).

In the nearest future cities will need more radical changes associated with reducing the role of road transport and promotion of other ways of movement. Future investments should focus on the solutions which are positive from the general social point of view, and not those which lead to the improvement of living conditions of only a small group of the residents (Banister et al. 2000). The most important tasks include appropriate policy planning, which at least to some extent would lead to reduction of movement needs (e.g. by reducing further building dispersion), because, as stated by Whitelegg (2003), we cannot continue to build a polarized and divided society, where poorer and weaker social strata suffer negative consequences of the continuous increase in mobility of richer strata (who do not bear these consequences).

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