

## Article

# The Impact of Transport Infrastructure on the Sustainable Development of the Region—Case Study

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**Abstract:** The transport infrastructure can be defined as a factor that guarantees the growth and economic development of the region, due to the functions of traversing space in terms of the movement of people and the exchange of goods. The effects of the impact of transport infrastructure on the economy of the region largely depend on how the society uses the services offered by infrastructure facilities and devices. The study examines the impact of transport infrastructure on the sustainable socio-economic development of the Wałcz Lake District. To conduct the analysis, a questionnaire addressed to entrepreneurs from this region was used. In the second part of the research, the indicators of sustainable development at the regional level were applied: the level of transport infrastructure and the level of socio-economic development of the studied area. The study is an attempt to fill the cognitive gap for areas outside the country's main transport corridors. The existing differentiation in both the development of infrastructure and the economic attractiveness of urban and rural areas was shown. Factors influencing the effectiveness of implementing the concept of sustainable rural development were indicated.

**Keywords:** transport infrastructure; sustainable development; rural areas



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## 1. Introduction

One of the important factors in the development of the region is the appropriate communication infrastructure, and its task is to provide the basic conditions for the development of the socio-economic system as a whole and for other elements of the economy. From an economic point of view, the most important feature of the transport infrastructure is the public nature of the services it provides. It affects the economy and society by creating favorable conditions for the movement of people and goods [1]. Changes taking place especially in telecommunications and transport, resulting from the ongoing technological progress, force the development of transport and communication infrastructure, thanks to which less developed areas are better connected with those with higher economic activity, which contributes to an easier flow of production factors, including knowledge and technology, opportunities to raise qualifications, and to obtain employment. Transport infrastructure is regarded as one of the most essential, since the related cost is critical in setting the location for firms, and hence the economic development of a region [2]. A properly developed transport infrastructure may have a stimulating effect on a given area, lead to an increase in economic activity and competitiveness in relation to the environment. Particularly on a regional scale, the condition of the road infrastructure and its compatibility with the main communication arteries are, according to many authors [3–5], a necessary condition for the region's attractiveness for potential investors and running a business, which, however, may also contribute to the inflow of other areas or an outflow of skilled labor.

Infrastructure influences the formation of human, social, and cultural capital, opportunities for the development of economic initiatives and attracting external capital, opportunities for modernizing the growth of agricultural production, improving the lives of inhabitants, and shaping multifunctional and sustainable rural development. Moreover, it conditions the possibility of civilization progress and the increase in territorial cohesion. According to Thacker et al. infrastructure either directly or indirectly influences the attainment of all the Sustainable Development Goals (SDG) [6].

According to Jovovic [7], sustainable development has been defined in a variety of ways, but in practice it has three dimensions—economic, environmental, and social ones. The word “sustainability” has become a global buzzword as a potential solution for many international, regional, and local problems which societies face today: overpopulation, diseases, political conflicts, infrastructure deterioration, pollution, and boundless urban expansion with limited resources’ availability.

The idea of sustainable development is summarized in one sentence of the World Commission on Environment and Development (WCED) report from 1987—Our common future [8]: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. The doctrine of sustainable development aims at social justice through, inter alia, economic, and environmental effectiveness of projects ensured, inter alia, by strict production cost accounting, also expanding to external resources.

The concept of sustainable transport development is a planning concept that constitutes a long-term, integrated action plan, aiming to achieve strategic goals that are embedded in the overall strategy of sustainable development. The first dimension of these objectives (economic) is expressed in the desire to improve the economic efficiency of passenger and cargo transport. In the social dimension, activities are subordinated to increasing the accessibility, quality, and safety of transport. The third, environmental dimension tends, inter alia, to reduce environmental pollution and greenhouse gas emissions, lower energy consumption and noise emissions [9].

The negative impact of road transport on the environment is in contrast to the needs of the economy. According to Krupska [10], innovative solutions are important for sustainable development, as allowing to provide transport services in accordance with this idea and contribute to achieving a satisfactory economic result by enterprises providing transport-related services, while obtaining beneficial effects in the form of improving the availability and quality of this type of transport services and at the lowest possible cost, resulting from the use of natural resources.

In the process of rural development, transport and tourism infrastructure are the elements of creating economic activity, they determine its scope, spatial distribution, and shape the elements of demand and supply [11]. Transport accessibility may decide about the attractiveness or unattractiveness of the region, and thus may determine the opportunities or barriers to its further development. A poorly developed transport network compromises a town’s, city’s, or region’s opportunities for dynamic socio-economic growth [12]. For an investor, the geographical location of the region and its transport infrastructure components are important. Infrastructure, as a factor activating social and economic progress, is also one of the important determinants of the living conditions of the population [13]. It is widely believed that improper planning and implementation of an infrastructure project can have a negative impact on the economy and the environment of the region. In some cases, an investment in infrastructure may pose a threat to the communities that will be directly affected by it [14].

The expansion of the transport infrastructure will determine the local and regional development of rural areas, being one of the most important factors in their development. Having their own potential, rural areas will be able to absorb and use external conditions of development, which are created by an appropriate spatial policy and the possibility of obtaining the European Union (EU) funds for its implementation [15]. Inadequate

infrastructure may contribute to the degradation of the natural environment, deteriorating at the same time the living conditions of their inhabitants [16].

Infrastructure is closely related to the area for which it fulfils its tasks and functions, so it is a specific resource associated with the territory. The level of infrastructure development is related to the level of foreign and local investments, to the level of economic development of the country, to the level of the human capital development and to the standard of living within the country. Simultaneously, transport system can be a bottleneck of any economy since the problems of transportation system facilitate the infrastructural restrictions and create the threat of deceleration of social development of the country [17]. According to Nidziy [18], increasing investments in transport infrastructure is a proven and reliable way to stimulate economic growth. In the short term, an increase in the number of investments in construction of transport infrastructure creates new workplaces. In the medium term it stimulates economic growth, and in the long term it reduces transport costs of enterprises and improves the quality of life of the region's inhabitants.

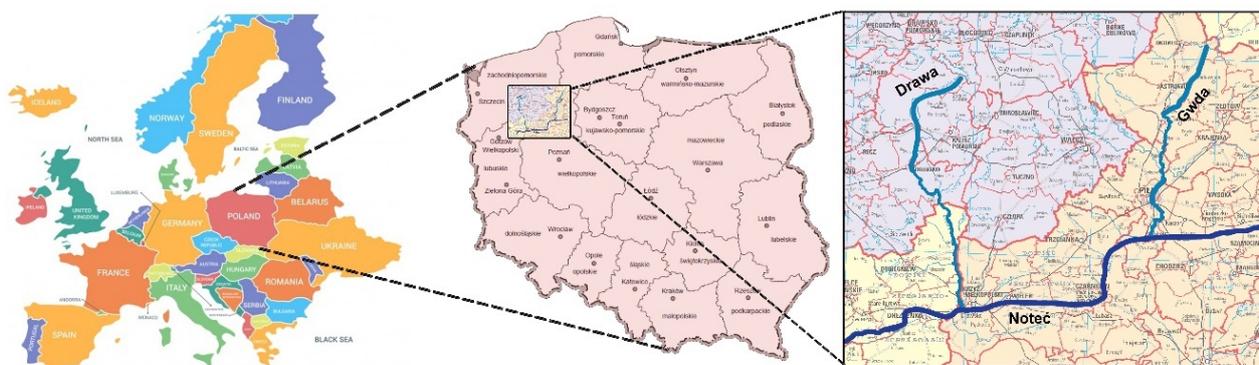
In addition to the territorial dimension, organizational, cognitive, normative, economic, and environmental aspects contribute to infrastructure development. Thus, it may contribute to the improvement of living conditions in larger areas [19]. Sustainable development as an element of regional development, apart from sustainable development, economic development, social development is determined by the level of transport infrastructure development [20].

The study is an attempt to fill the cognitive gap for areas with underdeveloped transport infrastructure. When planning the research, it was noticed that there was a lack of studies covering comprehensive studies of urban areas in terms of infrastructure, including transport. Most of the publications relate to large and small towns, urban transport and suburban areas. Therefore, an attempt was made to fill this gap using one such area as an example.

The aim of the publication is to show the impact of transport infrastructure on the sustainable socio-economic development of the Wałcz Lake District.

## 2. Materials and Methods

Wałcz Lake District is a mesoregion located in the southern part of the West Pomeranian Voivodeship and the northern part of the Greater Poland Voivodeship. It is located between the two largest tributaries of the Noteć: the Drawa and the Gwda (Figure 1) and is an economically active region. Many companies with a significant position in the country and abroad operate here. There are schools and universities in the region that provide highly qualified staff responding to the needs of the labor market. Wałcz itself is located at the intersection of two important national routes: Szczecin-Warsaw (No. 10) and Słubice-Gdańsk (No. 22). Many provincial and local roads also run through the region.



**Figure 1.** Location of the Wałcz Lake District. Source: own study.

The study examines the impact of transport infrastructure on the sustainable socio-economic development of the Wałcz Lake District. For this purpose, a survey was used,

which, in 2019, was addressed to 20 large entrepreneurs from this region. The European Business Institute, which has run the Cheetahs of Business Competition since 2006, European Business Institute found in Wałcz 20 dynamic companies awarded with the title of Business Cheetah 2017, and 4 valuable companies awarded with the title of the 2017 Diamond of the Polish Economy. Thanks to this, Wałcz won the title of “Company-Friendly City 2017”. Out of 24 companies, to which the questionnaires had been sent, 20 of them responded. The questionnaire contained 7 closed questions such as “yes”, “no”, “I have no opinion on this subject”, and 4 semi-open questions, requiring the respondent to choose one of the options provided or enter their own answer. The questions concerned issues such as the economic attractiveness of the city and the region, its main values, factors that may help the development of the Wałcz Lake District, economic sectors requiring remedial action. The respondents were asked about the visibility and effectiveness of local government activities around regional development and the impact of such activities on the functioning of local economic entities.

Nearly 2500 business entities are active in the Wałcz region. They include Polish companies and those with foreign capital, some of them are based in the “Wałcz Subzone” of the Słupsk Special Economic Zone. Entrepreneurs were selected for the study due to the huge role of entrepreneurship in contemporary socio-economic systems. Entrepreneurs constitute the social layer which increasingly determines the dynamics of the welfare of the whole society. The vast majority of entrepreneurs have a sense of having an impact on the reality that surround them. This applies to both running multi-person and one-person companies: 71.3 and 76.2% of them think so [21], respectively. One of the basic problems of the modern economy is the persistent differences in the economic potential of individual regions. The nature of interregional differences leads to the separation of central and peripheral regions in the spatial structure. According to Demianiuk [22], the dynamics of the development of large enterprises is the key to the development of the potential of modern economies, including regional economies. At the same time, the authors are aware of the need to conduct more extensive research on a larger target group in the future.

In the second part of the research, indicators of sustainable development at the regional level were used. The quantity and quality of road infrastructure enable fast and efficient turnover of goods and people. Therefore, an important and strategic issue for the commune and the entire economy are the development and modernization of road infrastructure. The basic measure determining the relative impact of road infrastructure on economic growth are the spatial indicators of saturation with road and rail infrastructure. It is estimated that the density of the road network in the richest 15 countries of Western Europe affects approximately 75–85% of the GDP produced by these countries [23].

Bartniczak [24] presented indicators that can be used to monitor sustainable transport in Poland at the regional level, but for many of them there is currently no coverage in the statistical data.

The basic indicators of saturation with road infrastructure in a given area include the density and quality of roads per 100 km<sup>2</sup>, which in turn translates into the so-called transport accessibility of a commune or a poviat.

To analyze the level of technical infrastructure, in 2019 the density of hard roads per 100 km<sup>2</sup> was used, which allowed an objective presentation of the road infrastructure of the analyzed area. The amount of funds allocated to the construction or modernization of local roads was also analyzed according to the amounts of payments made under the Rural Development Program (RDP) 2014–2020, covering Measure 7. Sub-measure 7.2.

The level of sustainable socio-economic development and the possibility of further transformations of individual spatial units in this respect depend both on the own, endogenous potential based on the current level of development of the commune, as well as on the external environment, and on interdependencies and functional connections within a given region [25]. To analyze the level of socio-economic development of the studied area, the following elements of the index model for evaluating investments in road transport infrastructure were used [11,13]:

- own income of communes per capita (in PLN—Polish złoty);
- number of economic entities (according to REGON—National Economy Register identification number) per 1000 population;
- migration balance per 1000 inhabitants;
- population density per 100 km<sup>2</sup>.

### 3. Results

#### 3.1. Survey Results

The vast majority of local entrepreneurs considered both the city of Wałcz and the Wałcz Lake District to be economically attractive (90%), only 5% contradicted it, and the remaining 5% were not able to answer this question. As the main advantage of the city and the region, the respondents most often indicated a large tourist potential (85%), then human capital, including an educational offer, a developed labor market, educated and qualified workforce (10%), and indicated the Wałcz region as an area attractive to investors, economic, i.e., offering discounts, facilities, and a developed transport infrastructure (5%).

Entrepreneurs asked to indicate factors that could help in the development of the region most often mentioned advertising and promotion (60%), followed by investments in, e.g., transport infrastructure (20%) and tourism development (20%).

Ensuring the efficient movement of goods and people improves the economic situation of regions and encourages investments in a given area. The attractiveness of the region, being a spatial factor, influences in the social dimension the decision to choose the place of residence, in the economic dimension it positively influences the allocation of capital, the number of jobs created, and tourist attractiveness [11].

The surveyed entrepreneurs were asked about the branch of the economy which needs modernization most urgently. Among three given options: industry, tourism, and transport infrastructure, the first option was most often indicated (70%), 15% considered that corrective measures should be taken in the field of tourism, and the same number of respondents (15%) indicated transport infrastructure.

The commune, which is the basic territorial unit in Poland, has a specific geographic potential, population, socio-economic situation, a network of education, healthcare, and technical infrastructure [26]. The economic condition of a commune depends, to a large extent, on the economic entities operating in its territory and their development opportunities [27]. The attractiveness of the commune and the development opportunities for business entities depend not only on the already existing socio-economic infrastructure, appropriate management of the territorial unit, but also on pro-development activities, also in the field of transport infrastructure [20].

When asked about the visibility and effectiveness of local government activities in the development of Wałcz and the region, 75% of respondents confirm visibility and effectiveness to them, 10% do not see the presence of pro-development activities by local government authorities, and the remaining 15% did not have an opinion on this subject. Consistently, the same proportions were indicated in terms of the effectiveness of local government actions on the development of Wałcz and the region—75% of respondents confirm, 10% do not see the impact of these actions, and 15% do not have an opinion on this subject.

Local entrepreneurs were asked whether the actions taken by local authorities to date have helped the development of their company. More than half of the respondents did not notice the impact of these activities (55%), 40% confirmed assistance in the development of their company, and 5% could not assess this issue.

Further issues raised in the study concerned the visibility and effectiveness of private entities (e.g., associations, local media) in the development of the city of Wałcz and its vicinity. The visibility of such activities was confirmed by only 10% of the respondents, 40% assessed that the activities were not visible, and the remaining half did not have an opinion on this subject. When it comes to the effectiveness of the activities of private entities to date for the development of the city of Wałcz and the surrounding area, 15% positively assess

the impact of private entities, 40% assess negative the effectiveness of pro-development activities, and the remaining 45% did not have an opinion on this subject.

The respondents were asked to forecast the development of the socio-economic situation of the studied region. The vast majority of respondents (80%) assessed that the Wałcz region will develop in the next few years with a positive impact on their company, 5% believed that the indicated development will not affect their activities, and 15% predict that the social and economic situation will be the region's economy will not change.

### 3.2. Development Indicators

In the context of the presented survey research, selected features characterizing the level of socio-economic development of the studied region were analyzed. For this purpose, data that can be collected at the level of communes and poviats covering the studied region of the Wałcz Lake District were presented, because at the regional level there is currently no statistical coverage for them.

In 1999, a three-tier administrative division of Poland was introduced, and the territory of Poland was divided into voivodships, then poviats (including communes with poviat rights) and communes. There are three types of communes: rural communes with only rural areas; urban–rural communes covering both the city and rural areas; municipalities covering only the city area. Urban–rural and urban communes consist of only one city, and each city is the part of only one commune. Cities with poviat rights are also communes—in these cases, the poviat borders strictly correspond to the border of one commune. The names of almost all communes are the same as the names of their seats. The area of cities included in urban communes exactly coincides with the area of these communes, while the areas of cities included in urban–rural communes constitute only a part of the area of these communes.

When comparing individual communes in terms of the level of socio-economic development, it should be noted that the average values are higher in the urban communes of the Wałcz Lake District (Table 1). The urban communes of Wałcz, Piła, and Czarnków have the largest number of economic entities per number of inhabitants. The rural commune of Szydłowo in the Piła poviat is an exception here, which was placed in 4th place. The highest own income in 2019 belonged to the urban commune of Czarnków (3059 PLN), while the least of these funds was attributed to the rural commune of Czarnków (1544 PLN).

**Table 1.** Selected features of communes characterizing the level of socio-economic development of the analyzed area in 2019.

Poviat	Commune	Type of Commune	REGON Units Per 1000 People	Own Income of the Commune Per Capita in PLN	Balance of Migration Per 1000 People	Population Density Per 1 km <sup>2</sup>
Choszczno	Drawno	urban-rural	81	1932.97	−5.3	16
Czarnków-Trzcianka	Czarnków	rural	81	1544.25	−0.4	33
Czarnków-Trzcianka	Czarnków	urban	110	3058.55	−8.0	1043
Czarnków-Trzcianka	Krzyż Wielkopolski	urban-rural	85	1896.06	−3.3	50
Czarnków-Trzcianka	Trzcianka	urban-rural	96	2017.79	−1.4	65
Czarnków-Trzcianka	Wieleń	urban-rural	77	1895.29	−5.8	29
Drawsko	Kalisz Pomorski	urban-rural	100	4343.66	−2.2	15
Piła	Piła	urban	117	2598.64	−4.9	712
Piła	Szydłowo	rural	107	2620.56	9.6	34
Piła	Ujście	urban-rural	84	1953.45	1.3	62
Wałcz	Człopa	urban-rural	75	2337.21	−10.7	14
Wałcz	Mirosławiec	urban-rural	89	3086.24	−5.5	27
Wałcz	Tuczno	urban-rural	84	1613.19	−4.4	20
Wałcz	Wałcz	rural	86	2013.33	−0.9	22
Wałcz	Wałcz	urban	132	2379.90	−1.0	660
Złotów	Jastrowie	urban-rural	80	1876.63	−7.0	33
Wałcz	Drawno	urban-rural	81	1932.97	−5.3	16
Choszczno	Czarnków	rural	81	1544.25	−0.4	33

Source: own study based on data from Statistics Poland.

The urban–rural communes are of a mixed nature, as the city never functions in a vacuum. Due to the distance separating the city from the unit which the interaction takes place with, among them we can distinguish neighbor-type connections and spatial connections. Neighborhood relationships are both dynamic (pendulum movement of the

population, displacement of market goods and financial capital, disposal of waste) and static (the formation of local identity, the development of culture and symbolism of the city, the shaping of land value and legal and administrative). The mutual relations of the city and the villages in their influence remain very similar—administrative affiliation at the commune level is only one of the factors shaping these relationships, and although important, it is not dominant [28].

Among the urban–rural communes, which constitute the majority (60%) of the 18 surveyed communes, the number of economic entities per population does not exceed 100 (Kalisz Pomorski). The commune of Kalisz Pomorski also had the highest own income in this group in 2019 (4344 PLN). It should be noted that the own incomes of these communes correspond to the number of operating enterprises. The average own income of a commune per capita of an urban commune is higher by 238 PLN than that of an urban–rural commune and higher by 430 PLN than a rural commune.

This example clearly illustrates the differences between urban and rural areas. Obviously, the urban commune of Czarnków (1043 people/km<sup>2</sup>), Piła (712 people/km<sup>2</sup>), and Wałcz (660 people/km<sup>2</sup>) were also characterized by the highest population density, and the average of the next urban–rural commune was only 65 people/km<sup>2</sup>. The average population density of urban–rural communes and rural communes is similar (respectively, 31.5 and 30.5 people/km<sup>2</sup>). However, the highest, positive value of net migration per 1000 people was recorded only in the rural communes of Szydłowo (9.6) and the urban–rural communes of Ujście (1.3) in the Piła poviats. The remaining communes had negative migration balance, reaching even −9.8 (Okonek) and −10.7 (Człopa) in urban–rural communes. This means that, apart from two exceptions, there was a large outflow of inhabitants from the studied area.

Another considered characteristic is the road network, the data were available only at the poviats level (Table 2).

**Table 2.** Selected features of poviats characterizing the level of socio-economic development of the analyzed area in 2019.

Powiat	Density of Hard Communal and Poviats Roads Per 100 km <sup>2</sup>	RDP Funds for the Construction or Modernization of Local Roads in PLN
Choszczno	43.0	11,403,591
Czarnków-Trzcianka	30.5	4,829,031
Drawsko	29.3	3,203,237
Piła	60.0	6,892,936
Wałcz	24.9	7,892,848
Złotów	42.6	11,999,028
Choszczno	30.5	4,829,031

Source: own study based on data from Statistics Poland.

In 2019, the highest density of the road network in the studied area was in the Piła poviats (60 km/100 km<sup>2</sup>), the value of which was 2.4 times higher than in the Wałcz poviats (24.9 km/100 km<sup>2</sup>). Characteristically, it was in the Piła poviats that there were both communes with a positive migration balance, and in the Wałcz poviats the commune with the largest outflow of inhabitants from the Wałcz Lake District.

#### 4. Discussion

To answer the question whether transport infrastructure, as a technical factor, can shape the possibilities of sustainable development of rural areas, its impact on these areas should be analyzed. Sustainable development of rural areas takes place in the natural space, but the factors shaping it are economic and institutional structures. The infrastructure is closely related to the area for which it fulfils its functions, and the key role in shaping them is played by the activity of local government in the development of infrastructure, leading to the reduction in unfavorable social, economic, and environmental phenomena.

Therefore, the development of transport infrastructure is not only the subject of market operation, but above all an important element of the policy of supporting the development of the country, including regional and local development [29].

A characteristic feature of the Polish transport market is the growing advantage of road transport—both passenger and freight. They are also undoubtedly the most dynamically developing branches of transport in Poland [30]. In Poland, there is a large regional differentiation in terms of selected components of the transport infrastructure, which relates to the density of expressways and motorways and the density of the operated railway line [19]. In recent years, a significant increase in the density of expressways and motorways from 0.96 km/100 km<sup>2</sup> in 2014 to 1.31 km/100 km<sup>2</sup> in 2019 can be observed, but also the density of bicycle paths from 2.99 km/100 km<sup>2</sup> in 2014 to 4.97/100 km<sup>2</sup> in 2019. Undoubtedly, significant investment funds received by Poland from various investment programs of the European Union played an important role here. According to data from the Central Statistical Office, in 2019 the density of hard surface municipal and poviats roads in Poland was 82.6 km per 100 km<sup>2</sup>, i.e., 25% more than in 2005 (66.2 km per 100 km<sup>2</sup>). This means that the space of our country has become more accessible at the local level in recent years. Therefore, it should be treated as a very positive phenomenon, both from the point of view of the possibility of further tourism development and in relation to the possibilities of sustainable development of rural areas. Still, in many regions of Poland the density of hard surface roads differs significantly from the national average, which is evident in the case of the Wałcz Lake District under study, where the highest value in 2019 (60 km/100 km<sup>2</sup>) is lower than the average for Poland in 2005.

According to an expert opinion commissioned by the Ministry of Regional Development [31] (currently the Ministry of Development Funds and Regional Policy), technical and social infrastructure is one of the key factors supporting and intensifying the development of rural areas.

The separation of the location of workplaces from the location of places of residence and the breakdown: a village as the place of residence of the agricultural population, a city as the place of residence of the non-agricultural population, together with the development of cities led to the development of a suburban area. Urban transport systems and the popularization of individual motorization have led to a decline in population in city centers, with a rapid growth of suburbs [16]. This may create threats to the natural environment, the living conditions of the inhabitants and, above all, to the social and economic development of rural areas. The degradative impact of transport on the environment entails significant costs. The total social cost of transport is the sum of external costs (air pollution, noise, accident costs, land take) plus costs borne by transport users and the state [32]. However, the transport sector is a key sector for sustainable development due to the social and economic benefits it can bring, while minimizing its negative effects on society, the economy, and the environment [24].

One of the observed negative processes is also depopulation of peripheral rural areas, which weakens the possibilities of economic and social development of these areas, because young and well-educated people are the most frequent migrants. This, in turn, causes a deterioration of the investment attractiveness of local communities due to the low quality of human capital or the decreasing demand for goods and services in rural areas. It is clearly visible in the results of the research, in which 15 out of 17 communes of the Wałcz Lake District showed a negative migration balance, especially visible in rural areas. Czudec et al. [19] indicate that at the same time the process of urbanization of rural areas located near larger cities is systematically progressing. It consists mainly in the disappearance of agricultural functions in the countryside and the influx of new residents who change their place of residence in the city to the areas located near the cities, without changing the place of work and sources of income. Another symptom of such a process is the transfer of various forms of economic activity from cities to rural areas, which increases the scale of threats to the natural environment.

The so far conducted research indicates many factors influencing the effectiveness of implementing the concept of sustainable rural development, provided that activities belonging to various spheres of economic and social life are implemented [19]:

- the ability of rural residents to use the local specificity;
- creating jobs in non-agricultural sectors of the economy;
- using the values of the natural environment and cultural capital;
- innovation based e.g., on regional and traditional products or the transfer of new technologies in agriculture;
- development of social and technical infrastructure, improving the quality of life of residents and supporting the development of entrepreneurship.

In 2017, the Government of the Republic of Poland adopted a new national development strategy—the Strategy for Responsible Development (SRD). The Strategy for Sustainable Transport Development until 2030 (STD2030) included in it assumes limiting the negative impact of road car transport on the environment. The transport system based on the principle of sustainable development should maintain the harmony of the transport system with its landscape environment: natural, cultural, and socio-economic, consisting in the use of existing resources in a way that enables the continuity of their use and preservation for future generations [33]. The implementation of the goals regarding the development of transport infrastructure in the National Strategy of Regional Development 2030 (NSRD2030) [34] is related to the measures envisaged in STD2030. It puts emphasis on the sustainable development of the entire country, i.e., reducing disproportions in the level of socio-economic development of various areas, mainly urban and rural areas. The connection of regional, sub-regional, and local growth centers into a coherent transport network and increasing the territorial accessibility of rural areas remains an important issue. In this regard, it is important to fill in the gaps in the basic transport infrastructure of national, regional, and local character, which determine the appropriate accessibility of voivodships and areas. It foresees actions to link:

- rural areas with an urban labor or sales market;
- local growth centers (small and medium-sized cities) with regional growth centers;
- city—functional area.

Infrastructure modernization aims to integrate the economy with transport better, and the convenient access to local commercial and economic centers allows for the development of entrepreneurship. Meanwhile, in many regions of the country there are limited possibilities of access to various services and infrastructure devices. This differentiation occurs between individual voivodships, as well as between urban and rural areas [35]. This is confirmed by the data presented in the paper, where in the areas with urban characteristics (shown by other indicators) the density of the road network is several times higher than in typically large areas.

According to Rosik and Szuster [36], the difficulty in indicating the relationship between the transport infrastructure and the economic development of the region and the related economic effects lies in its technical features connected, inter alia, to the long-time elapsing between planning and the implementation of an infrastructural project, life span, network development strategy roads focused on meeting the needs of the population or with expenditure on poorly used roads.

The new infrastructure increases mobility and affects the local lifestyle. At the same time, it entails many changes in spatial development: it disturbs the environment and changes it permanently. The lack of land that could be allocated to the construction of transport infrastructure is becoming an increasing barrier to transport development. The occupation of land for the construction of infrastructure in highly developed countries is growing at a pace that poses a threat to the possibility of meeting other needs (food, construction, leisure, tourism) as the transport infrastructure covers 85–93% of the total communication area. The economic aspect of the development of transport infrastructure is also associated with a better use of the existing infrastructure thanks to the use of traffic

management systems, the use of logistic tools and the integration of the transport network allowing for increasing the choice of transport method [37].

The physical impact of transport on the environment is the result of noise, vibration, air pollution by gases and dust, pollution of surface and ground waters, and the risks associated with the transport of dangerous goods. The growing concern for environmental protection has become the cause of the search for environmentally friendly directions for the development of the economy, and the development of methods of measuring and assessing the harmful impact has become helpful in determining the least harmful technologies, processes, and structures, and in searching for the most beneficial solutions for the environment in individual areas. The research carried out in Spain by Lopez and Monzón [37], related to the accessibility potential of less developed regions, shows that the implementation of the rail option improves the criteria of efficiency and cohesion, while the induced road traffic and the impact of habitat fragmentation worsen the environmental criteria.

One of the main goals of transport policy is the sustainable development of transport, considering economic efficiency, environmental rationality, and social viability [38]. According to the definition adopted by the Organisation for Economic Co-operation and Development European Conference of Transport Ministers [39], the sustainable transport system enables, *inter alia*: meeting the basic need of access to the transport system by individuals and society, supports the economy and reduces emissions, waste, and consumption of non-renewable resources, land use, as well as the noise level [24,40]. When defining sustainable transport, a further specification can be made in terms of environmental effects. These may be local environmental effects, in terms of unhealthy local pollution, noise and barrier effects, or wider climatic impacts caused by greenhouse gas emissions [41]. This definition indicates that sustainable transport must equally reflect the different economic, social, and environmental objectives. One of the goals of sustainable transport is to encourage the public to use public transport services. The possibility of using public transport for the purpose of commuting to work, school, and shopping will allow to save environmental resources (lower emission of pollutants), but also to achieve considerable benefits in the social sphere (less road accidents, less congestion with private cars) [24].

As mentioned earlier, the development of transport is one of the factors determining economic growth. In this case, the quantitative and qualitative condition of the transport infrastructure is important. Investments in infrastructure can have a significant impact on the economy, and especially the economy of a region, usually through [42]:

- fall in unemployment in a given community;
- favorable conditions for settlement;
- increasing the value of land and real estate;
- increasing the investment attractiveness of the areas.

Investments in transport infrastructure can increase the scope of this impact by improving transport accessibility or improving the impact zone of smaller urban centers on rural areas, allowing for the integration of neighboring labor markets. Transport connections make it possible to meet the needs of people in a specific area. The effects of investments in the field of transport infrastructure have a direct impact on lower transport costs of its users and on increasing the area of operation of companies and enterprises in the sale of services. Many authors [43–45] also indicate that apart from the reduction in travel time, other benefits associated with the developed infrastructure include social effects such as increasing the level of mobility of the society, which facilitates not only access to education and health care, but also the movement of workers or lowering the costs of economic activity [46,47]. A well-developed infrastructure improves the comfort of traveling and contributes to the improvement of the general standard and quality of life and is an important element of business development [48–50].

The inequalities in the accessibility values by regions and means of transport still exist are also indicated by Vilevic et al. [51] who made an Accessibility Assessment under Cross-Border Cooperation (CBC) to overcome challenges and obstacles to sustainable transport

in the border regions of Alto Alentejo (Portugal) and Badajoz (Spain), where the case study method (CSR) made accessibility a key factor in territorial success.

Gherghin et al. [52] analyzed the relationship between major modes of transport, related investments, specific air pollutants and sustainable economic growth in the EU-28 from 1990 to 2016. The empirical results provide support for a positive impact of road, inland waterways, maritime, and air transport infrastructure on economic growth. Investments in transport infrastructure also have a positive effect on gross domestic product per capita. Unfortunately, transport emissions and other specific air pollutants exhibit a negative impact on economic growth. Cigu et al. [53] confirm that in the EU countries the improvement of transport conditions plays an important role in sustaining the requirement of economic growth. Public institutions and the policy-makers decisions not only have a major influence over maintaining sustainable growth path but can help achieve superior results regarding the status of transport infrastructure.

The French government makes 1% of the cost of the motorway project available to communities for studies and other projects to implement sustainable and coherent development projects. Besides preliminary territorial studies, the main actions that have been carried out with regard to road infrastructure under “1% Paysage et Développement” provisions, have consisted in projects concerning natural or urban sites, landscapes, historical monuments, public or private buildings, improvements to urban facades, the development of or promotion of tourism in the territories crossed by the infrastructure, the provision of staging villages, discovery routes, burial of electricity transmission lines and telephone lines, reinstatement of the landscape in land previously consolidated, etc [39].

Infrastructure as the basis for transport development is closely related to other elements of transport systems—means of transport, transport technologies and the latest achievements in this field, considering national and international requirements [54]. Transport infrastructure has become the basic and permanent element of the technical infrastructure of the regions, creating conditions for their further economic development [55,56]. Transport as an economic factor is a measure of economic activity, and at the same time it reflects economic activity [57]. Therefore, transport functions as a factor in the economic evolution of the region. Economic progress in individual parts of the country has usually been preceded by the development of transport, which brings closer the supply markets, including raw materials [1].

## 5. Conclusions

Investments in road infrastructure should contribute primarily to the development of lagging regions, deprived of development opportunities, the densification of overpopulated regions, and an increase in labor mobility [23,58]. The estimated calculations that generate average employment in the modernization of transport infrastructure indicate that the modernization of 1 km of the road generates 15 workplaces, the construction of a single-carriageway road requires 32 workplaces, and the construction of 1 km of the highway on average 37 workplaces [11].

Based on the analysis of the literature and the conducted research, it seems reasonable to conclude that the transport infrastructure influences the development of the Wałcz region by stimulating economic and social development. At the same time, as the research shows, too slow development of the region may result in a large outflow of inhabitants from the study area. Employers are quite optimistic about the forecast of the socio-economic development of the region, noting the actions of local authorities aimed at making the region more attractive. Apart from promotional activities, they also clearly indicate the need to invest in transport infrastructure and in the development of tourism.

Transport accessibility facilitates the functioning of local enterprises, facilitating transport related to the acquisition of materials needed to produce goods or the provision of services, and ordinary residents who can move quickly and meet their daily needs. According to Surówka et al. [56] despite new financial possibilities in the form of the EU resources or public-private partnerships, some rural communes are not able to improve their infras-

structure. The research shows that urban communes have the largest number of economic entities per number of inhabitants. The differences between the own incomes of urban and rural communes, as well as urban–rural communes per capita are also clearly visible.

The concept of sustainable mobility, that is, people moving in ways that are socially just, environmentally responsible, and economically viable, has also gained traction in research, policy, and public life [59]. Sustainable development is largely related to promoting appropriate patterns of transport behaviors, leading to lasting changes in collective and individual mobility. Educational and information activities carried out in this area should consider the special role and competences of regional and local governments, as well as sectoral governments, by encouraging them to join campaigns promoting sustainable transport at the local level.

Due to changes in the methodology of data collection by Statistics Poland and the lack of statistical data at the lowest level (communes and poviats), many indicators cannot be estimated. However, this issue requires further research and selection of indicators previously used in many studies [11,23] and possible to be determined for individual areas. They will allow for a commonly used cost–benefit analysis (CBA) of investments in transport infrastructure, but also on the local labor market.

The research carried out on a group of 20 thriving enterprises should be considered as preliminary and further studies should be carried out, taking into account not only large but also medium and small enterprises operating in the studied area. The limitation in presenting precise indicators enabling the monitoring of sustainable transport in selected regions (poviats and communes) is that for many such areas there is currently no statistical data. The available data are collected at the level of voivodships or macro-regions. The data, such as road network density, were available only at the poviat level, making it impossible to precisely assess individual communes.

There are many studies in the literature on the impact of transport infrastructure on the quality of life of city dwellers and the economic development of urban areas [60], while there is a cognitive gap regarding rural areas. Carrying out such research in areas outside the country's main transport corridors is an attempt to fill this gap and indicate the possibility of further research and the resulting benefits. Policymakers, by strengthening infrastructure and enabling better opportunities for the transport and movement of people and goods, create opportunities for development for society as a whole. A well-developed rural commune attracts new residents and new investments.

Empirical evidence, however, suggests that transport investments might not be a magic wand for economic growth. The case of the freeway Salerno-Reggio Calabria in Italy illustrates that new transportation infrastructure can produce relevant re-allocation effects across municipalities, without boosting regional economic development. In this case, benefits and losses associated with the infrastructure mostly compensated within the region, without prompting additional growth [61].

In Poland, as in other European Union countries, there are many similar regions with poorly developed road and rail infrastructure. On the basis of such examples, it is possible to plan development that will contribute to the increase in the attractiveness of the region in rural areas remote from the main transport routes and will use the local resources of the region, such as tourism, natural values, cultural capital or innovation.

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