



## Janusz Figura

University of Economics in Katowice  
Faculty of Economics  
Department of Transport  
janusz.figura@ue.katowice.pl

# MOBILITY AS AN ELEMENT OF SUPPORT FOR THE DEVELOPMENT OF THE GÓRNOŚLĄSKO-ZAGŁĘBIOWSKA METROPOLIS. RESULTS OF RESEARCH

**Summary:** The article presents the issue of mobility as an element of the development of the Górnośląsko-Zagłębiowska Metropolis. Mobility is an important element of the metropolitan's functioning. The aim of the research is to identify the factors of mobility development in the Górnośląsko-Zagłębiowska Metropolis from the perspective of collective and individual transport users. The article presents the results of theoretical and especially empirical research connected with the needs of mobility development in the Górnośląsko-Zagłębiowska Metropolis. The research results indicate the need to develop mobility based on rail transport. The vast majority of transport users notice the necessity of changes and the need to break the existing asymmetry of road transport – for the development of rail transport. The change of the unfavorable trend of excessive development of road transport caused disturbances in the functioning of passenger transport.

**Keywords:** mobility, transport, region, metropolis.

**JEL Classification:** R4, O1, O2, O3.

## Introduction

Mobility is currently treated as one of the essential elements of support for logistics processes, not only in the implementation of cargo flows, but also passengers in the metropolitan area [Korcelli, 2008; Belch, 2015]. The issue of passenger mobility in metropolises is the domain of interest and research of many groups of scientists, including logistics. Metropolises, due to their specific social, spatial and economic conditions, face the problem of limited mobility [Brand et al., 2009; Brzustewicz, 2013]. The issue of the functioning of a me-

metropolis is more and more a current issue of research due to the dynamic development of mobility of residents and their economic activity [COM, 2007]. The efficient movement of passengers within the metropolis, as well as in relations with the environment is an extremely important research issue. The identification of the spins shaping the mobility of metropolitan residents is, therefore, the subject of research, on which the subject of research should be focused. Disturbances related to passenger mobility constitute the development of the metropolis.

Mobility in the common understanding is a function of mobility, efficiency in changing location, moving passengers. Mobility is, therefore, a notion of the need to change places when it is purposeful. The growing expectations of mobility of metropolitan passengers result from various demographic, economic, social and cultural reasons, but it is important to ensure their freedom and independence in moving from one place to another. The demand for mobility is characterized by the durability of needs resulting from the spatial activity of every human being. Mobility is also permanently inscribed in the functioning of the metropolis [Tomaszewska, 2010]. Mobility as an element of metropolitan functioning is also a tool to support its development [Markowski, Marszał, 2006]. Mobility is especially a function of user expectations caused by changes in the lifestyle of residents, their professional needs, transformations of space or also relations with the environment. Therefore, it is necessary to ensure balance in the functioning of the metropolis in the social, economic and environmental aspects [Parker, 2004]. The discussion on the functioning of the Górnośląsko-Zagłębiowska Metropolis and specially in its aspect of the development of mobility becomes the subject of lively discussion and research, especially from the perspective of problems of passenger movement. The aim of the research is to identify the factors of mobility development in the Górnośląsko-Zagłębiowska Metropolis from the perspective of collective and individual transport users.

## **1. Concept of mobility – concept perspectives**

Mobility is a concept whose scope, as well as significant is not easy to define. Mobility in the context of movement, efficient movement of people and loads from place to place is commonly referred to [Rudnicki, 2010]. Mobility is an issue whose essence results from the elementary needs of human movement. Mobility is, therefore, a concept that defines the need to change places using certain techniques and technologies to achieve a specific goal in space. Mobility is, therefore, a deliberate action and this means that it has a specific dimension

of rational action to overcome space, the effect of which is to achieve a specific goal in space [Smełkowski, Jałowicki, Gorzelak, 2009]. The mobility concept can, therefore, be considered from different perspectives:

- space that is not only the sum of kilometers traveled or the time spent on its defeat, but also
- entities and objects carrying out the movement process – passenger, cargo (means of transport), route,
- the modes on the basis of which movement is carried out.

The perspective of mobility understood as a function of spatial and temporal relation is a reference point for defining the distance of travel and the time needed to overcome it, from the economic point of view for defining the costs of movement [Szymańska, 2007]. The perspective of the mobility of the entity carrying out the shipment is a reflection of the point of view of the needs of the passenger and cargo, for which the efficiency of overcoming space at a given time at specified costs is the essence of mobility [Susser, 2002]. Finally, the perspective of the method on the basis of which the movement takes place results from the technology and technology that transports people and loads. The concept of mobility is, therefore, conditioned by at least a spatio-temporal, subjective and methodological perspective, about which defines the implementation of the movement [Thorns, 2002]. Mobility can, therefore, be defined as a process of deliberate relocation, the implementation of which results from spatio-temporal, subject-related and methodical relations for the implementation of specific social, economic and cultural needs.

## **2. Research methodology**

The methodology of mobility research, as an element of support for the development of the Górnśląsko-Zagłębiowska Metropolis, was determined by the adopted research goal. The issue of mobility as an element of support in the Górnśląsko-Zagłębiowska Metropolis is a new research issue. Due to the exploratory nature of research, which was accepted for implementation, a survey was conducted with a deliberate selection of a sample that was carried out among passengers performing bus, tram and car mobility, in the area of Górnśląsko-Zagłębiowska Metropolis. The aim of the research was to identify the factors of mobility development in the Górnśląsko-Zagłębiowska Metropolis from the perspective of collective and individual transport users. The users of collective and individual transport were divided into four groups due to the type

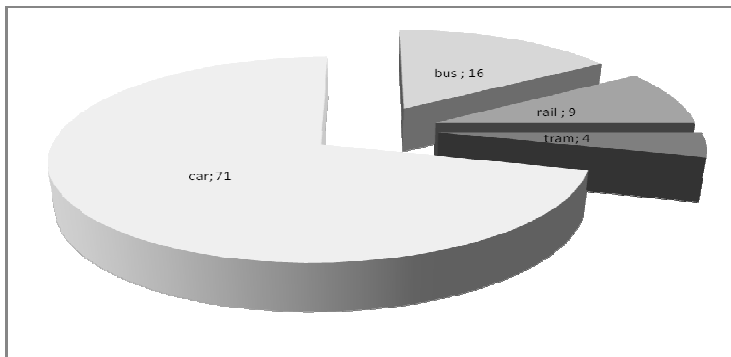
of transport used for accommodation within the Górnśląsko-Zagłębiowska Metropolis:

- bus,
- tram,
- railway,
- car.

There were identified 41 areas (cities, commune) constituting the Metropolitan of Silesia and Zagłębie (N = 4179 observations). During the diagnostics two research techniques were used – a questionnaire and in-depth interview. To determine the impact of the studied phenomenon, the Likert scale (1 min. – 5 max.) was used. The period of research covered a period of seven months, i.e. February – August 2018.

### 3. Selected results of mobility research in the Górnśląsko-Zagłębiowska Metropolis

The results of the research carried out indicate a significant asymmetry of mobility among users of public transport (bus, tram, rail) and individual – passenger car – see Figure 1.



**Figure 1.** Observation structure (N = 4179) according to the transport mode criterion

Source: Own research.

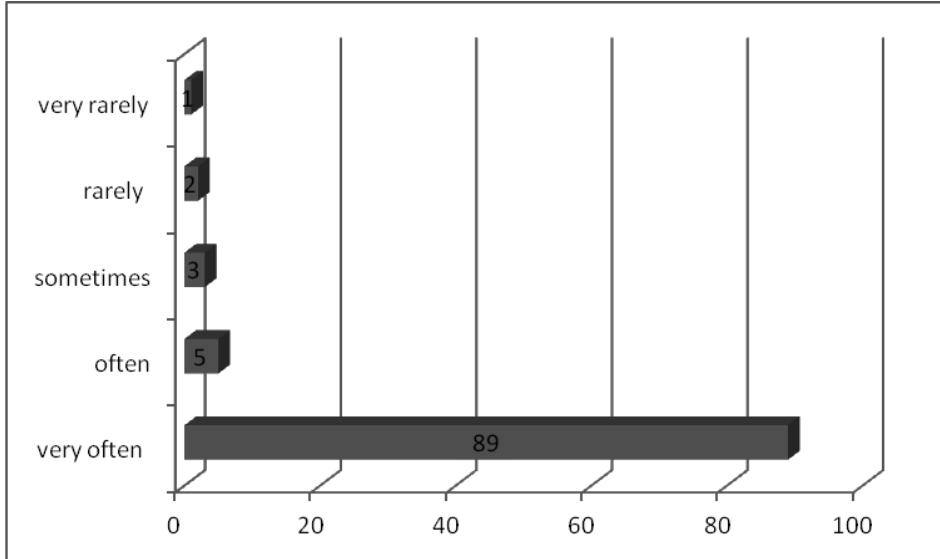
The vast majority of the surveyed respondents use 71% passenger car, as the basic means of transport realizing mobility, 16% bus transport, 9% railway, and 4% tram. The structure of identified areas of research, according to the administrative division criterion of the Górnśląsko-Zagłębiowska Metropolis, is illustrated in the form of Table 1.

**Table 1.** The structure of the administrative division of the Górnośląsko-Zagłębiowska Metropolis

City / Commune Górnośląsko-Zagłębiowska Metropolis	N
Będzin	68
Bieruń	194
Bobrowniki	51
Bojszowy	79
Bytom	167
Chełm Śląski	82
Chorzów	196
Czeladź	117
Dąbrowa Górnicza	193
Gieraltowice	72
Gliwice	214
Imielin	82
Katowice	598
Knurów	46
Kobiór	45
Lędziny	76
Łaziska Górne	74
Mierzęcice	28
Mikołów	85
Mysłowice	117
Ożarówice	41
Piekary Śląskie	115
Pilchowice	23
Psary	27
Pyskowice	31
Radzionków	48
Rudziniec	29
Ruda Śląska	114
Siemianowice Śląskie	112
Siewierz	59
Sławków	54
Sosnowiec	183
Sośnicowice	26
Świerklaniec	41
Świętochłowice	78
Tarnowskie Góry	78
Tychy	267
Wojkowice	37
Wry	49
Zabrze	159
Zbrosławice	24
<b>Totality</b>	<b>4179</b>

Source: Own research.

Respondents were also asked why they prefer a car, instead of collective transport they most often answered that due to the high mobility of a car 89% – see Figure 2.

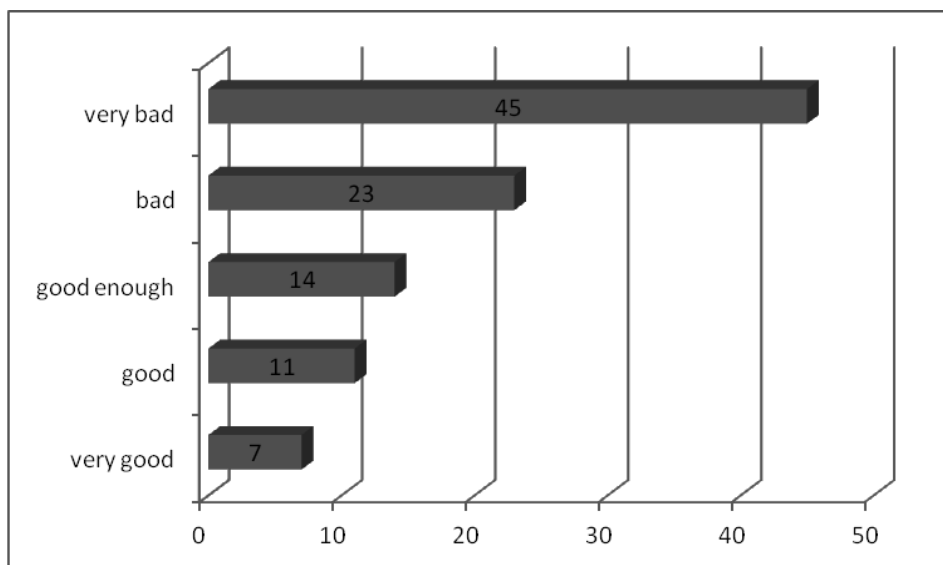


**Figure 2.** Identification of the mobility level of a passenger car in the Górnśląsko-Zagłębiowska Metropolis

Source: Own research.

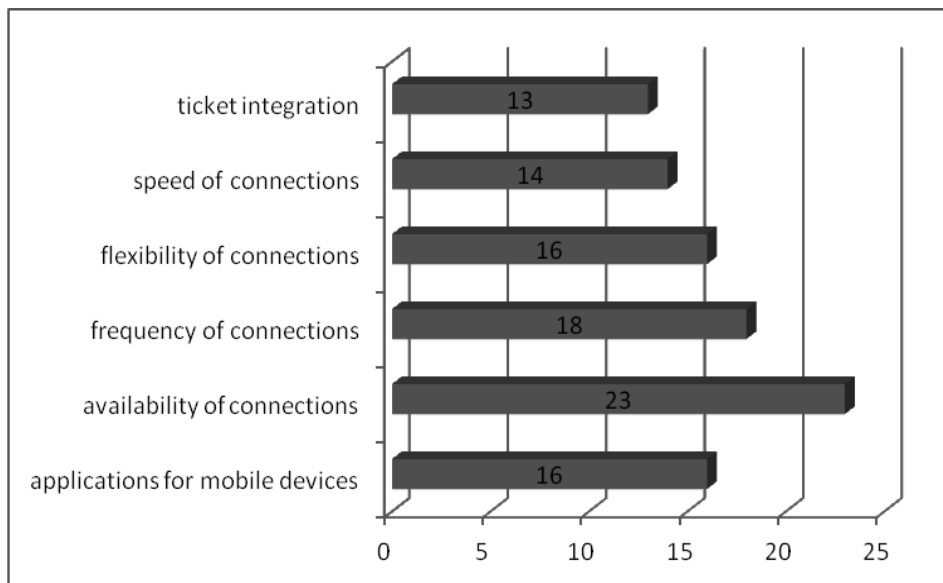
High mobility of car use has a specific source, which in the opinion of respondents lies in the unsatisfactory level of collective transport – see Figure 3. The results indicate that very low and low assessment of the level of mobility of collective transport in the Górnśląsko-Zagłębiowska Metropolis was identified in 68% of respondents and 32% are inclined to a positive assessment (Figure 3).

Further research included identifying the reasons for the low assessment of mobility of public transport in the Górnśląsko-Zagłębiowska Metropolis, according to respondents, due to the low availability of 23% connections, followed by 18% frequency and 16 flexibility and applications for mobile devices 16% followed by speed 14% and ticket integration 13% – see Figure 4.



**Figure 3.** Identification of the mobility level of public transport in the Górnśląsko-Zagłębiowska Metropolis

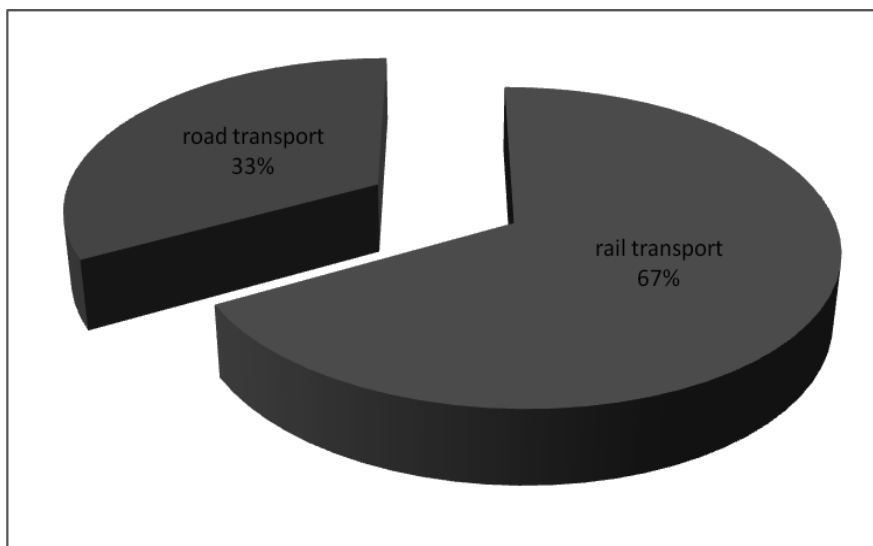
Source: Own research.



**Figure 4.** Identification of reasons for low mobility of collective transport in the Górnśląsko-Zagłębiowska Metropolitan

Source: Own research.

Respondents were also asked what branch of transport should be developed to increase the level of mobility in the area of collective transport in the Górnośląsko-Zagłębiowska Metropolis. The vast majority pointed to rail transport 67%, for road transport 33% (Figure 5).



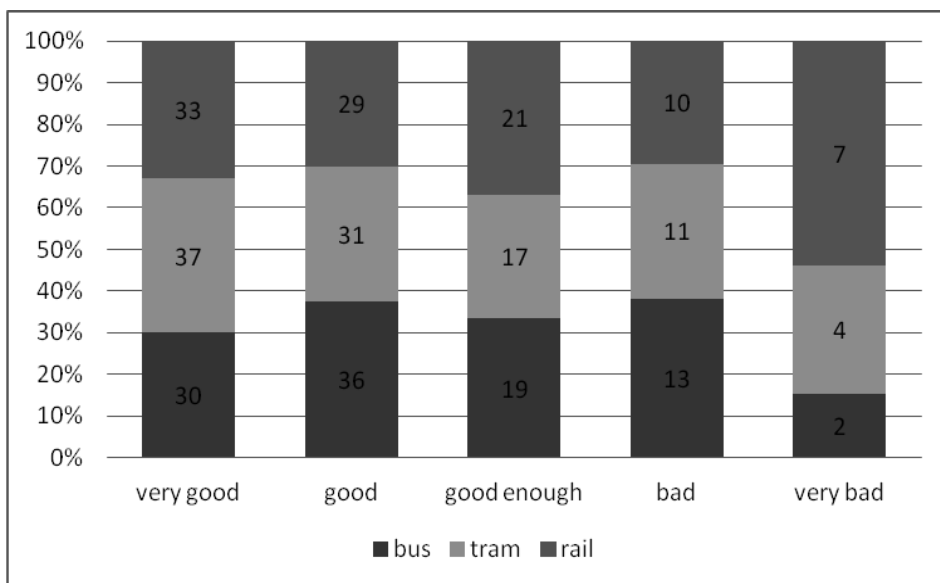
**Figure 5.** Identification of directions of development of transport modes in the Górnośląsko-Zagłębiowska Metropolis

Source: Own research.

A further area of research was to determine to what extent a specific means of public transport could meet the mobility needs of passengers of the Górnośląsko-Zagłębiowska Metropolis. The results of the study express the need for the development of rail transport: 70% of the tram is clearly supported by 37%, and rail transport by 33%, the remaining information on mobility preferences has been included in Figure 6.

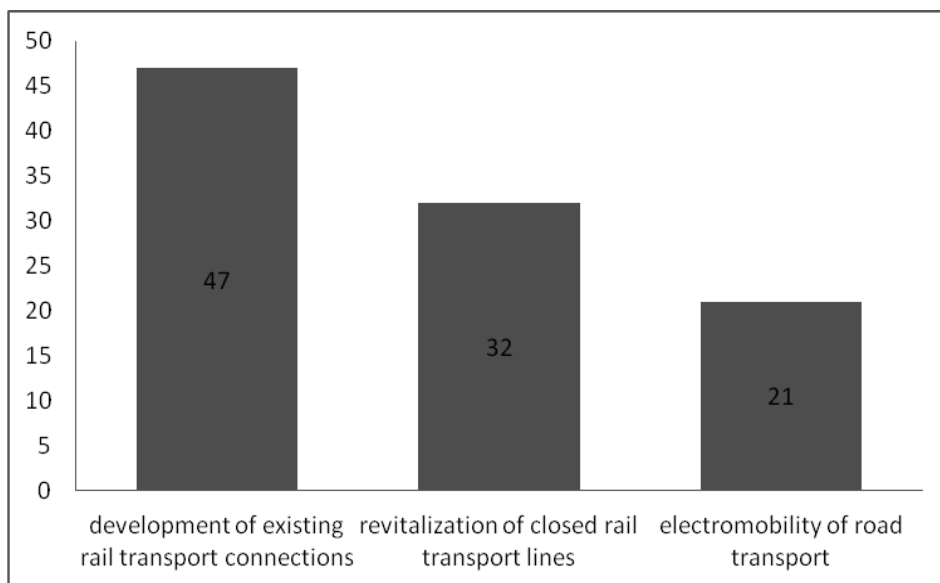
The respondents' preferences were also examined according to the criterion of the directions of the development of mass transport in the Górnośląsko-Zagłębiowska Metropolis. The research results show that a significant majority are in favor of the development of rail transport by 47%, and the revitalization of closed rail connections – 32%. Other respondents point to the need to develop electromobility of road transport; see Figure 7.





**Figure 6.** Identification of the collective transport which will best meet the needs of mobility

Source: Own research.



**Figure 7.** Identification of directions of public transport development of the Górnśląsko-Zagłębiowska Metropolis

Source: Own research.

## Conclusions

Increasing problems related to the functioning of the Górnośląsko-Zagłębiowska Metropolis indicate that the issue of mobility is becoming particularly important, the aim of which is to shape new mobility based on rail transport. The results of the research indicate the direction of mobility development in the Górnośląsko-Zagłębiowska Metropolis. The vast majority of transport users notice the necessity of changes and the need to break the existing asymmetry of road transport – for the development of rail transport. The change of the unfavorable trend of excessive development of road transport caused disturbances in the functioning of passenger transport. The conducted research is only a part of wider diagnoses related to the development of the logistics policy of the Górnośląsko-Zagłębiowska Metropolis.

## References

- Belch P. (2015), *Analiza założeń koncepcji integracji transportu zbiorowego z indywidualnym*, „Modern Management Review”, vol. 20, nr 22, p. 7-14.
- Brand A., Hahn C., Krätke S., Kiese M. (2009), *Metropolitan Regions in the Knowledge Economy: Network Analysis as a Strategic Information Tool*, “Journal of Economic and Social Geography”, Vol. 100, Iss. 2, p. 236-249.
- Brzustewicz P. (2013), *Zrównoważone rozwiązania w transporcie miejskim – kierunki rozwoju*, „Acta Universitatis Nicolai Copernici”, series „Zarządzanie”, vol. XL, z. 413, p. 85-96.
- Komisja Wspólnot Europejskich, COM (2007), *Zielona Księga. W kierunku nowej kultury mobilności w mieście*, 551, Bruksela.
- Korcelli P. (2008), *Megamiasta*, PAN, Warszawa.
- Markowski T., Marszał T. (2006), *Metropolie, obszary metropolitalne, metropolizacja. Problemy i pojęcia podstawowe*, KPZK PAN, Warszawa.
- Parker S. (2004), *Urban Theory and the Urban Experience*, Routledge, London – New York.
- Rudnicki A. (2010), *Zrównoważona mobilność a rozwój przestrzenny miasta*, „Architektura. Czasopismo Techniczne”, R. 107, z. 1-A, p. 57-74.
- Smętkowski M., Jałowiecki B., Gorzelak G. (2009), *Obszary metropolitalne w Polsce – diagnoza i rekomendacje*, „Studia Regionalne i Lokalne”, nr 1(35), p. 52-73.
- Susser I. (2002), *The Castells Reader on Cities and Social Theory*, Blackwell Publishers, Malden–Oxford.
- Szymańska D. (2007), *Urbanizacja na świecie*, Wydawnictwo Naukowe PWN, Warszawa.

---

Thorns D.C. (2002), *The Transformation of Cities. Urban Theory and Urban Life*, Palgrave Macmillan, New York.

Tomaszewska A. (2010), *Wpływ technologii informacyjno-komunikacyjnych na mobilność zasobów wiedzy i kreację innowacji w kontekście relacji metropolia–region*, „Acta Universitatis Lodzianis”, series „Folia Oeconomica”, nr 246, p. 49-63.

## MOBILNOŚĆ JAKO ELEMENT WSPARCIA ROZWOJU METROPOLII ŚLĄSKO-ZAGŁĘBIOWSKIEJ. REZULTATY BADAŃ

**Streszczenie:** Przedmiotem badań zawartych w artykule jest kwestia mobilności jako elementu wsparcia rozwoju Metropolii Śląsko-Zagłębiowskiej. Struktura tematyki badań obejmuje zagadnienia teoretyczne związane z identyfikacją i klasyfikacją mobilności oraz różnicami dotyczącymi tego zagadnienia. Część badawcza została oparta na wynikach badań empirycznych. Uzyskane wyniki wskazują na silną potrzebę ożywienia transportu kolejowego w celu ograniczenia rozwoju transportu drogowego. Nadmierny rozwój transportu drogowego jest efektem niewłaściwej polityki transportu, jak również powoduje wzrost kongestii w obszarze Metropolii Śląsko-Zagłębiowskiej.

**Słowa kluczowe:** mobilność, transport, region, metropolia.