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FREE-FARE PUBLIC TRANSPORT IN THE CONCEPT OF SUSTAINABLE URBAN MOBILITY

Summary. The dynamic development of cities based on the role of the car in addressing transport needs leads to a reduction of mobility, as well as to an increase in external costs generated by the transport system. This problem can be solved thanks to the sustainable mobility concept, in which transport needs are limited at the stage of planning spatial development and then covered by public transport as well as by cycle and pedestrian journeys. This article identifies arguments justifying the implementation of FFPT in Poland, and also evaluates their relevance based on the experiences described in the literature and the example of Żory. On this basis, it can be concluded that the evidence for the impact of FFPT on sustainable urban mobility is poor. Neither does FFPT reduce mobility exclusion. At the same time, the introduction of this solution is expensive, especially in the metropolitan areas.

1. INTRODUCTION

The growth of cities, combined with the increase in mobility, is a source of multiple adverse phenomena - congestion, air pollution, noise, and accidents, and it also leads to limitations in the fulfillment of individual transport needs. This is the reason why urban mobility management is becoming so important. In particular, there is currently a tendency to ensure sustainable mobility in order to mitigate the marginal social costs of mobility. This can be achieved by reducing external costs, the main elements of which are the effects of car use in the fulfillment of transfer needs. However, sustainable mobility does not only refer to a limited use of cars - the packet of instruments for sustaining mobility is broad and complex.

One of the directions for sustaining mobility is the increase of public transport share in meeting transport needs. This requires an increase in competitiveness of public transport. The so-called 'zero tariffs', also referred to as free-fare public transport (FFPT), are listed among multiple instruments intended for this purpose. The first publications on this subject were released as early as the 1970s; however, the discussion in this field (both in science and in the practice of transport policies of cities) is currently becoming very intense again both globally and in Poland. Google Scholar search engine shows 1,800 results for the phrase 'free public transport' in 2001-2017, whereas the search result for the period 1950-2000 is 317. Keeping in mind the imperfection of such a comparison, it should be noted that the growing number of publications indicates a revival of this issue, both in theory and in practice.

Publications on FFPT in Poland are rare and practice in this respect precedes scientific research and debate. The problem of FFPT implementation made front-page headlines before the local government elections in 2014. However, there is a lack of a thorough economic analysis on the basis of a literature review and domestic experiences, whereas the public debate is dominated by simplified and frequently demagogic messages.

The aim of this article is to assess FFPT efficiency in sustaining mobility in cities in light of global and Polish experiences. The relevance of arguments used by FFPT supporters will be evaluated on the basis of a literature review and experiences gained during research and implementation work carried out for Jastrzębie-Zdrój. The article should be considered an introduction to discussion on the basis of the literature analysis and research on the phenomenon using scientific instruments. The author intends to continue research on FFPT or more generally on public transport prices, which are considered a factor of competitiveness.

2. COMPLEXITY OF THE SUSTAINABLE URBAN MOBILITY CONCEPT

Mobility enables access to goods and services. It is a condition for participation in social and economic life, as well as a determinant of personal freedom, and it may even be considered a fundamental human right. Restriction of mobility, which sometimes takes the form of mobility exclusion, limits individual rights. Implementation of the right of mobility cannot infringe this right for other individuals, which occurs especially in urbanized areas, where the limited availability of space and substitution of means of transport may lead to such a situation. We should also note the growing energy consumption of mobility; under conditions of limited energy options, this constitutes a restriction in the implementation of transport needs [17]. Therefore, it is very important to undertake mobility management and aim to search for optimum economic and social solutions.

Mobility management can be identified by managing the demand for transport services. In the literature on the subject, mobility management is presented as activities directed toward limiting the fulfillment of transport needs by means of cars [19]. The significance and complexity of mobility management issues make it necessary to plan mobility. For this reason, mobility plans are prepared for huge sources of traffic (workplaces, universities, shopping centers, sports facilities) and urban areas. Mobility plans are also applied for incidental events, such as sports events, outdoor events, and fairs [20]. Mobility plans for traffic generators are only one of the elements of mobility management. For urban areas, Sustainable Urban Mobility Plans (SUMP) are developed - this is a concept supported by the European Commission [30]. SUMP aims at improving the quality of living of inhabitants and the functioning of the city through integrated planning that covers all means of transport and transport behaviors. SUMP is developed with the participation of many stakeholders, and the participatory approach is an important element of this concept. According to the assumptions of the European Commission, this should enable the achievement of the following goals [29]:

- ensure availability of transport to key travel destinations,
- improve safety,
- reduce the external costs of transport,
- increase transport efficiency, and
- increase the (social, environmental, and economic) attractiveness of the city.

The mobility planning concept is directly linked to the vision of a sustainable city, as well as a smart city, which, in this context, may be an idealistic concept (especially in the case of an orthodox approach to its assumptions). Sustainable city and sustainable mobility have a specific dimension under the conditions of strong urbanization - this is the current dominating approach in the discussion on the development of cities and mobility [2]. Planning sustainable mobility in metropolitan areas is particularly complex because of a complicated transport system, as well as social complexity and numerous stakeholders. It shall be emphasized that SUMP is a holistic approach and progress in this process is achieved through the systematic application of various instruments of transport policy. The prices of public transport services are one of many such instruments.

The practice of sustaining urban mobility in Europe and Poland is rich with experiences. The basic directions of activity include the following:

- increase of competitiveness of public transport,
- development of low-carbon mobility forms,
- limitation of car availability.

It is necessary to continue increasing the competitiveness of public transport. Public transport is considered the main alternative to the use of cars in meeting transport needs [14]. Public transport in cities is the area where multiple innovations are implemented in order to make this form of transport more attractive. Over the last quarter of the century, numerous investments in this field have also been made in Poland. This direction for municipal investments will probably be continued, although it is undoubtedly a capital-intensive area of municipal economy. It appears, however, that currently more attention must be paid to the instruments that can be referred to as 'soft': integration of transport subsystems with priority positioning of public transport, organization, and especially marketing management of relationships with consumers, i.e. passengers. The marketing approach has a determining influence on transport behaviors. The contemporary services are characterized by an increase in quality expectations, including those related to individual approach to consumers.

The second area of activities intended to sustain mobility is support for low-carbon mobility - in urban areas, this concerns facilitations for pedestrian and cycle traffic. Bicycles (both private and public) are a significant element of urban systems in Europe. Although there is a high potential for growth of demand for cycle traffic in Poland, the cycling infrastructure is poorly developed. It is necessary to separate cycle traffic from car and pedestrian traffic, as well as to integrate bicycle systems in metropolitan areas. There is a severe lack of proper traffic signs (despite the fact that in many cities the so-called 'cycling officers' were already appointed several years ago).

The restriction of access of cars to urban areas is a politically controversial instrument of mobility management and it may have a negative impact on the possibility of fulfilling transport needs. Taking into consideration the secondary nature of transport, this may lead to a decline of city competitiveness. Therefore, this instrument should follow the previously presented actions, especially the increase in competitiveness of public transport. Car access to cities (especially to downtown areas) can be restricted by means of economic tools (congestion and parking fees), or technical and organizational tools (engineering facilities intended to calm traffic, entry restrictions).

3. SPECIFIC NATURE OF MANAGEMENT OF PUBLIC TRANSPORT PRICES IN THE CITIES

When evaluating the complexity and relationships between sustainable mobility instruments, we cannot forget that prices have a significant impact on transport behaviors - including especially the prices for access to means of transport. In urban areas, this particularly refers to prices for access to the city (fees for entering the city, the so-called congestion charges, and parking fees in the cities) and prices of public transport services, which are substitutes of individual transport. Until now, congestion charges have been a relatively rarely used tool - in Europe, they have only been applied on a wider scale in London and Stockholm. Moreover, the efficiency of this solution in sustainable mobility is not clear - the data on London do not allow to conclude whether the charges helped to reduce congestion, which would be the evidence of progress in sustaining mobility [12]. The price of access of car to the city also depends on the parking fees. Because of the fact that a complete parking ban, which would be most effective, is not an option, access is restricted by means of parking fees. Parking is never free of charge and it always causes certain costs [22]; however, parking fee does not always include marginal parking costs. Apart from the fuel costs, parking fee is the main element of marginal cost of car travel. However, parking fees cannot be perceived only as a factor of modal selection in transport - they have a significant influence on many decisions connected with locations, including those concerning commercial activity [15] and prices of flats [13].

The role of the prices of public transport services has been recognized and examined to a much larger extent. A characteristic feature of the prices of public transport services in cities is a wide range of regulations - therefore, a service provider is not fully free to determine prices. This has an impact on the implementation of price functions, including especially the income and incentive functions. Price regulation can be carried out in different ways and to a different extent (e.g. an authorized public authority may determine the price amount, or only the maximum or minimum price, or both, and leave certain flexibility for the carrier to perform their own activity). Regulation may also consist of

introducing reduced tariffs for using services [25]. A large scope of price regulation and provision of transport services that do not ensure profitability are the reasons why the income from sale of tickets is significantly lower than public transport own costs.

The regulations differentiating (and in fact lowering) the prices of public transport services are the reason why operators usually have little opportunity for marketing management of ticket prices. There are also cases of cross-subsidization of various tariff preferences (price reductions). The ticket prices for different customer groups are sometimes not only higher than the marginal cost of public transport travel, but they also exceed the marginal cost of substitute car travel. This leads to transport behaviors that are unfavorable from the point of view of sustainable mobility.

When considering the service price, and especially in case of its reduction to increase the demand, one should be familiar with the nature of price flexibility of demand. For many years, the fact that transport needs played a secondary role in comparison with other needs led to the belief that transport demand was inflexible. Research confirmed that the flexibility ratio was rarely lower than -1 [7]. However, demand flexibility increases during an extended observation period [3]. The increase in demand flexibility also occurs along with the increase in price reduction volume [7,21]. In particular, it can be expected that price reduction to zero will cause a high growth of demand. The potential of a particular market is obviously a limiting factor. The experimental introduction of FFPT in 8 middle-sized and large cities (above 50,000 inhabitants) in USA and Canada caused an increase in demand by 30-60%, with the exception of Salt Lake City, where the demand grew only by 13% [28]. The European experiences with FFPT referred to in Item 4 showed an even higher increase in demand.

When introducing FFPT, the incentive role of price should be taken into consideration - the decision to introduce FFPT means high and large growth of demand, provided that there are no restrictions on the extent to which this solution is implemented (related to area, routes, or social groups). Growth of demand requires an increase in the supply of services; otherwise, the means of public transport can be overcrowded, or even the mobility of individuals who have limited access to cars can be restricted - this is precisely what happened in Ashville (USA), where younger users limited the access to services for elderly individuals, whereas the disabled individuals limited the use of public transport [28].

4. FREE PUBLIC URBAN TRANSPORT IN POLAND

The problem of FFPT is not new. Discussions on this subject were already present in the literature of the 1970s [3]; however, nowadays, they are more intensive. One of the reasons is the search for effective instruments for sustaining mobility - urbanization, mobility, and use of cars in cities have significantly grown over the last half a century, which led to an increase in congestion and pollution in the cities. Moreover, new urban movements have appeared. From their perspective, a city should be friendly, open, and free. In particular, this concerns young individuals - the so-called generation Y.

The behaviors of young individuals - generation Y born and educated during the Internet age - have a very important long-term impact. Research carried out in Europe shows the following changes occurring simultaneously within this group [23]:

- increased share of non-motorized mode travel (bicycles, pedestrian traffic) and decreased use of cars (Germany),
- decrease in the total annual travel length (UK),
- decrease in the number of individuals with driving licenses (Germany, France).

Free public urban transport is currently a subject of discussion for politicians, journalists, and NGO representatives in Poland. The fundamental arguments raised in favor of implementation of free-fare public transport in the cities are as follows:

- improvement of the condition of the natural environment as a result of substitution between individual and collective transport; it is assumed that individuals using passenger cars will give up this form of transport in favor of public transport, and therefore, the external costs of transport, including especially fume and greenhouse gas emissions, will be reduced,

- reduction of the extent of the so-called 'freedom exclusion' of individuals who have limited access to cars and low income at the same time,
- low level of coverage of public transport costs with income from sales of tickets and high costs of ticket distribution systems, which means that a potential cancellation of service fare collection will reduce public transport costs by the costs of distribution and, at the same time, a decline of income from implementation of this solution will not be a problem for public authorities financing public transport.

Similar arguments in favor of FFPT introduction are presented around the world. In a research carried out in USA (in small towns, universities, and health resorts), among the responses of public transport organizers, the willingness to increase the passenger transport and high costs of ticket sales in comparison with the income were mentioned in the first place, followed by a reduction of congestion and use of cars [28]. In the discussion on implementation of zero tariffs, examples of the cities that have implemented such solutions are provided as an argument. The Fare-Free Public Transport website (https://farefreepublictransport.com/city/) contains over 100 cities; however, almost all of them apply zero tariffs only to a limited extent, for selected passenger groups. FFPT has been fully implemented only in a few cities - apart from certain experiments and promotional campaigns, all of these locations were small settlements. None of the locations in USA is served by more than 100 vehicles (buses) [28]. The only exception in Europe is Tallinn, where FFPT was implemented only for the city inhabitants, which means that the ticket system has actually been maintained. Among the cities that have implemented the zero tariffs, there are no metropolitan cities. In Poland, however, the demand to introduce completely free-fare urban transport is one of the areas of political discussion. This subject will probably be an element of the campaign before the local government elections in 2018.

The key argument in favor of fully free-fare transport in the cities based on the application of substitutability of motorization and public transport seems to be relatively clear. If it is true, a change in transport behaviors and decrease in external costs caused by cars can indeed be expected. However, it must be taken into account that a car offers almost unlimited availability of transport in time and space. Is the price factor capable of neutralizing these competitiveness factors of the car? The research shows that despite being aware of the disadvantages resulting from the use of public transport, passengers declare the willingness to replace the car with public transport relatively cautiously, even in Western European agglomerations, which have good public transport infrastructure - in the Brussels region, only 25% respondents declare a strong will to make such a change, and one must be aware that these are merely declarations – tab. 1 [8]. According to the research, upon implementation of FFPT, there are only 5-30% transitions from the use of other motorized systems (mainly cars) to public transport in USA [28]. An interesting model related to the possibility of transition from cars to public transport was executed in USA in the 1950s and the 1960s. According to its results, implementation of FFPT would cause transition at the level of 13%, whereas higher ratios would only be achieved after the introduction of negative prices [18,3].

The best known case of a middle-sized European city that implemented FFPT is Hasselt in Belgium (a city of approximately 76,000 inhabitants), which implemented the zero tariff in 1997. The effects exceeded the expectations - the number of passengers increased four times during the first year - from 360,000 to almost 1.5 million. In the subsequent years, the transport grew systematically, but from 2005, the increase slowed down and stabilized at the level of approximately 4.6 million passengers, which meant that the expenditure related to maintenance of public transport increased more than ten times. In 2013, the city authorities canceled the zero tariffs for financial reasons and introduced payments at the level of 60 eurocents per journey, while maintaining free-fare transport for young individuals under 19 years of age. The research on the so-called additional passengers in Hasselt showed that only 16% of them are individuals who gave up using the car in favor of public transport, whereas the others chose substitutes in the form of pedestrian and cycle journeys, as well as additional mobility - therefore, it can be concluded that paradoxically, this solution increased mobility and led to substitution that is unfavorable from the perspective of sustainable development [5].

In other cities where free-fare urban transport was introduced fully or for selected social groups, there was also a reported increase in demand - from the theoretical point of view, it is a natural and

expected phenomenon. Also, the example of Tallinn, where zero tariff was introduced for city inhabitants in 2013 (430,000 inhabitants), shows an increase in public transport (although smaller than in Western European cities, which is caused by low ticket prices and high initial share of public transport in meeting transport needs). However, with an 8 per cent increase in public transport, the decrease in car transport amounted to 3 percentage points, whereas pedestrian journeys decreased from 12 to 7 per cent and the share of cycle journeys remained at the unchanged level of 1%. Therefore, it can be noticed that substitution and replacement of cars with public transport is not carried out as expected – tab. 2 [6]. Tallinn is the largest European city to have implemented FFPT. So far, the only clear effect is the increase in inhabitant registrations in the city area, which consequently allows to compensate FFPT expenditure as a result of tax acquisition [11].

Table 1

Readiness of car users to select public transport

Level of readiness for change	average (N=472)	company car (N=134)	private car (N=338)
Definitely yes	22%	16%	25%
Possible	49%	39%	53%
Definitely not	29%	45%	22%

Table 2

Split model in Tallinn before (2012) and after implementation of FFPT (2013)

Manner of relocation	2012	2013
Public transport	55%	63%
Car	31%	28%
Bicycle	1%	1%
Pedestrian	12%	7%
Other	1%	1%

In Poland, the example of a location where free-fare public transport was implemented is Żory in Silesia Province - a town of less than 60,000 individuals that implemented FFPT on 7 internal routes in May 2014. Fees are still charged on other routes. The city does not finance public transport directly, but through an intermunicipal association - Międzygminny Związek Komunikacyjny (intermunicipal transport association) in Jastrzębie-Zdrój. On the basis of the data on operating activities (MZK), we can notice its growth by 40% in 2014-2016, as well as an increase in the level of subsidy contributions made by Żory to MZK by 63% (public data on the financial plans of Żory) [26]. Taking into consideration the complexity of financial settlements at MZK, it is possible that flows and financing of free-fare public transport in Żory have crossed with other municipalities and consumers. This problem requires examination, whereas on the basis of the available public data (http://www.bip.zory.pl), we can only notice a high increase in public expenditure on public transport in Żory (Fig. 1), and this trend seems very likely to continue (similarly as in the case of Hasselt), with the growth of demand for transport services and supply for operating activities.

A lower than expected change in transport behaviors, which is especially visible in Tallinn, led us to pay attention to the actual initial price and cost substitutability of car and public transport. In Poland (similarly as in many countries of Central and Eastern Europe), this initial substitutability, measured with the relationship between the prices of fuel and public transport tickets is very low (unlike in Western European countries), the nominal prices of tickets are lower, whereas the price of fuel is comparable with the prices in Western Europe (the relationships between prices in the period starting from the quoted research have not undergone any significant changes) [25]. Therefore, in countries such as Poland, lower sensitivity of substitutability of car and public transport can be expected, which means that the actual modal transitions will be located at lower levels than in the examined cases from USA and Western Europe.

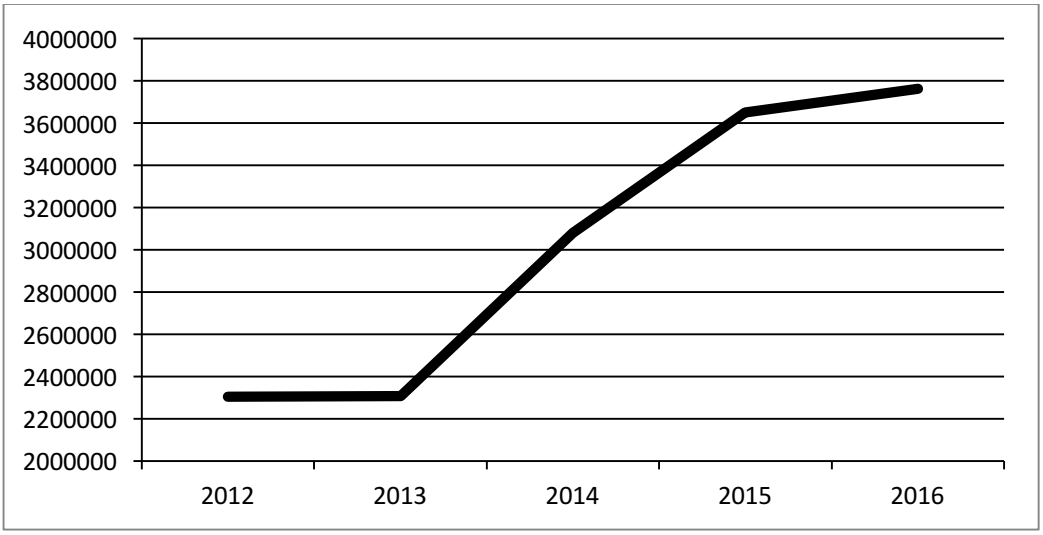

Fig. 1. Expenditure of Żory (PL) on FFPT

The argument for limiting mobility exclusion by means of FFPT should be referred to the actual expenditure on transport in household budgets. It shall be noted that they are not high - because of the fact that the total household expenditure on transport in Poland (including all types) amounts to 8-9% [24], it is very likely that 2-5% is spent on public transport, as it was estimated in the 1960s in Germany [3]. In case of individuals with lower incomes, the share of transport costs in the expenditure structure will be higher. However, it should be noted that in Poland (and not only in Poland), the individuals whose mobility is limited because of the income, or lack of car availability (youth, elderly individuals, individuals needing assistance) take advantage of benefits (50% price discount) and rights to free-fare transport (mainly for individuals older than 70 years old). Will further fare reduction change the transport behaviors of these social groups? If they replace cycle or pedestrian journeys with public transport (as in Hasselt), will this be an activity oriented toward sustaining urban mobility? And a question related to municipal policy - is financing mobility with public funds socially just? In this last case, certain subversive yet thought-provoking questions have been asked by W. Bakowski, who indicates that transport needs are preceded in Maslow's hierarchy of needs by other needs related to municipal public services (e.g. water supply) [4]. Zero tariff in public transport means an increase in public expenditure on public transport; therefore, a question arises: at the expense of what does it take place? Assuming that tax revenue is maintained at an unchanged level, this means a transfer of public expenditure from other areas to public transport. Moreover, the transfer is executed directly to consumers (passengers), rather than to investment in infrastructure or rolling stock. If we recognize the postulate to limit mobility exclusion as reasonable, attention should be paid to the instruments of social policy, in particular, to the support addressed to individuals actually affected with the income-related mobility exclusion. In the first place, it is necessary to identify the population that should be covered with support. If social arguments dominate and lead to implementation of FFPT, because of the universal nature of the recommended solution, the costs related to the individuals who are in need of support will be significantly higher, leading to the phenomenon of the so-called 'free rides' of individuals who do not need such support.

The third argument, referring to the high costs of ticket distribution and its relationship with the income from ticket sales, shall be considered by referring to the present and future costs. The costs of the distribution of paper tickets constitute approximately 5% of the income value, whereas the costs of modern distribution systems, introduced e.g. as a cheaper alternative for electronic ticket systems, are difficult to estimate because they are frequently related to large investment expenditure, whereas the future operating costs are unknown. However, there are no grounds for claiming that application of this type of solutions will increase distribution costs clearly and rapidly. The currently built systems have a centralized and autonomous nature - in particular, this consists of the fact that the ticket is an electronic card. This means that the system is separate and, with expanded card functionality, it may

lead to high investment expenditure and large costs of system maintenance [16]. It should also be noted that systems of this kind, servicing metropolitan transport, are investments characterized by a high risk of final expenditure and date of commissioning [9]. However, it should be emphasized that electronic ticket cards are not just service payment tools. In particular, they allow to [27]:

– integrate payments in transport systems (not only public transport) in metropolitan areas where multiple transport organizers operate,
– carry out measurements of transport volume, which is especially important for financial settlements of municipalities subsidizing public transport and constitutes a basis for optimization of transport connection system,
– integrate multiple urban functions (e.g. access to sports infrastructure, cultural facilities, administration).

The development of mobile payment technologies allows to make payments using universal payment platforms [1]. The establishment of separate distribution systems of urban transport seems to be an outdated solution, which will soon be replaced with mobile solutions. This means that the distribution costs of urban transport will not be an important element of economic calculation. Moreover, it is worth noting that in the frequently quoted example of Tallinn, the distribution system remains because free-fare transport is applicable only for the citizens of Tallinn; this also concerns solutions applied in the cities where fares for using public transport have not been fully eliminated.

Giving up income from sales of tickets means approximately a 30-40% decrease in income for covering the costs of public transport [31]. Taking into consideration the amount of costs and capital intensity of the public transport system in the cities would mean the necessity to cover a significant loss in municipal finances. In case of metropolises such as the Upper Silesia Agglomeration, it would amount to approximately PLN 300 million. However, this is only a partial and static calculation. Price reduction to zero means a large increase in demand (definitely higher than in Tallinn because the prices of tickets in Poland are at a higher level against the income [25]); on many transport lines in agglomerations, at least during transport rush hours, the supply of services is already lower than the demand. Therefore, the necessity of a clear large increase in supply should be expected. This means the necessity of investment expenditure on the purchase of rolling stock, development of infrastructure, and then the increase in maintenance costs of the transport system. Therefore, the costs of implementing free-fare public transport in the cities will increase. The case of Hasselt - a city that ultimately abandoned this solution - shows how difficult such increases can be for the city budgets.

The calculation with reference to the costs and lost income is extremely unfavorable for the proposed free-fare public transport in the cities. At the same time, the benefits related to sustaining mobility and development of cities are uncertain and raise many doubts. To date, science has not provided any convincing arguments to prove that free-fare public transport will allow to sustain mobility in the cities. Moreover, there are grounds for assuming that the implementation of zero tariff will not reduce vehicle traffic considerably, and it will also cause a decrease in bicycle traffic and pedestrian journeys (if there is a lift in a building, who would use the stairs?). However, an increase in the costs of public transport will be a significant burden for the municipal finances. It is also possible that in the face of limited financial resources at the disposal of municipalities, the offer will be limited or reduced, whereas the demand increase will result in overcrowding, and therefore deterioration in the quality of services.

5. CONCLUSIONS

Sustaining mobility in the cities is a complex process. This results both from the spatial conditions and the specificity of social capital in urbanized areas. Sustainable mobility is carried out thanks to integrated application of diversified instruments, the interactions between which have not been examined well as yet. In particular, this is applicable for the prices of public transport in the cities.

The discussion on implementation of zero tariffs, which has been going on in Poland, is based on many simplifications and demagogic arguments, which is unfavorable for reasonable formation of transport policy. However, the progressing expansion of fare exemptions for selected passenger groups

and examples of full elimination of fares in some cities have far-reaching financial consequences in the long term because they are very difficult to revoke once they have been introduced, especially if they result in an increase of demand. The effects of substitution of individual car transport with free-fare public transport are smaller than could be expected. As a result, sustaining mobility by means of such price operations is at least dubious - especially if substitution concerns pedestrian and cycle journeys. The decisions to apply sustainable mobility instruments should be made on the basis of reliable research and integrated into Sustainable Urban Mobility Plans constructed on the basis of the use of social capital.

It should be particularly noted that the actual level of transition from cars to public transport is significantly lower than expected. In Poland, where public transport is more important than in USA and Europe, the level of transitions will be lower. This has been confirmed by the comparison of the effects of FFPT in Hasselt and Tallinn. Transitions from pedestrian traffic to public transport are also likely, especially in areas of dense development.

The social significance of FFPT in Poland, where a majority of passengers use transport discounts, whereas the share of public transport expenses in household budgets is lower than that in Western Europe, the impact of FFPT on the reduction of mobility exclusion will be small. There is a risk that the increase in demand will even reduce the access of elderly and disabled people to the means of public transport.

The costs of implementation of FFPT will be high. The increase in demand and abandonment of income will mean a quick, durable, and high increase of public expenditure on public transport. The result can be a decrease in investment expenditure on public transport infrastructure and other public expenses. This is evidenced by the example of Żory, where FFPT was implemented to a very limited extent.

The risk of introduction of FFPT in metropolitan areas is significantly higher than that in small towns. The example of Tallinn has not been properly examined as yet; moreover, it concerns a city with a large share of public transport in transport generally and low prices - in this case, potential demand is probably close to effective demand. Therefore, application of this example to other cities is unjustified.

It is possible that a broader research and analysis of effects of the so-called new urban movements supplemented by assessment of the effectiveness of other public expenses will correct the above conclusions. However, there are currently no scientific grounds to claim that FFPT will have a significant influence on sustainable mobility.

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