URBAN TRANSPORT AREAS WITH REGARDS TO SUSTAINABLE DEVELOPMENT ON EXAMPLE OF CZĘSTOCHOWA CITY

Marta Kadłubek

Czestochowa University of Technology, Faculty of Management, ul. Armii Krajowej 19 B, 42-200 Czestochowa, Poland

Abstract
The article is devoted to the analysis of transport within the boundaries of a city with regards to the concept of sustainable development. Its main purpose is to analyze the state of selected areas of urban transport related to sustainable development on the example of the city of Częstochowa, with special emphasis on the transport network coverage and the perspectives of improvement. The strengths, weaknesses, opportunities and risks of the urban transport in the city of Częstochowa in reference to the assumptions of sustainable development are presented in SWOT analysis.

Key words: *urban transport, sustainable development, SWOT analysis*

1. THE TERM OF URBAN TRANSPORT

Transport is a set of activities associated with transferring people and material goods using appropriate means (Fertsch, 2006). Since the beginning of its existence, transport has played a very important role in human life. As the economy grew, the transport needs of society changed. They became increasingly large and included searching for new goods and services at lower prices, of better quality, etc. Nevertheless, the need to deliver passengers or loads in the most efficient and effective way will always remain in the first place.

O. Wyszomirski defines urban transport as a "regular, public collective transportation carried out upon the commission by the local government transport organizer, exclusively in the area of one district, two or more districts based on inter-district agreements, or districts forming an inter-district public utility association" (Wyszomirski, 2010). This is identical to the definition given in the Act of 6 September 2001 on the road transport. In other words, these are any forms of movement within the city using collective and individual means of transportation. In contrast, collective public transport is referred to as "the widely available regular transportation of passengers performed at specified intervals and over a certain transport line, transport lines or a transportation network" (Dziennik Ustaw, 2011). The notion of urban transport, as used interchangeably with municipal transportation, is closely related to the definition of urban logistics (Otola and Szczupak, 2010).

W. Rydzkowski and K. Wojewódzka-Król point out that making the strict definition of this type of transportation is extremely difficult due to the range of the activity involved (Rydzkowski and Wojewódzka-Król, 2009). The basis for the definition of this notion is the so-called analysis of horizontal classification by different types. In the case of public transport, the identification of boundaries between the areas within which transport operations are performed should be adopted as the division criterion. Yet, this is not the full explanation of the issue. The word *urban*, by nature, should refer to the area of a city. In practice, the range of operation of urban transport more and more often goes beyond the administrative boundaries of cities to include both suburbs and nearby communes. It is associated with a more frequent commutation of the inhabitants of those areas to workplaces, and thus a unification of the passenger traffic around and inside the city. The areas of inhabitation outside the city become then a kind of city districts. Sometimes the operating range of urban transport is even greater, because town complexes, so-called agglomerations and conurbations, can form. Indeed, from the point of view of transport, a city complex together with the adjacent areas constitutes a territorial entirety that requires specific needs for passenger transport to be met (Witkowski, 2007).

Due to the fact that public transport is a specific type of passenger carriage, it can be classified depending on the adopted criterion. Table 1 presents the urban transport in the context of other modes of transport. It can be seen from Table 1 that public transport is part of long-distance and haulage passenger transport, and its types include road and rail transports.

Classification criterion	Classification
By functionality	- Individual transport (bicycle, moped, motorcycle, taxi, passenger car) - Group transport (minibus, taxi, passenger car) - Public transport (bus, trolley bus, tram, metro, urban railway)
By type	- Haulage (commutation) transport • Technological transport (trucks, wheeled vehicles) • Urban transport (road and rail vehicles) • Regional transport (road and rail vehicles) • Long-distance transport (road and rail vehicles, aircraft, ships) - Flow transport (conveyor-type)
Work environment	- Road transport (omnibus, bus, trolleybus) - Rail transport (tram, metro, high-speed urban railway) -Waterway transport (urban ferry, water bus)
Range of movements	- Long-distance (local [urban], regional, national, continental, intercontinental) - Short-distance
Transport object	- Passenger carriage - Cargo carriage

Tab. 1 The position of urban transport in the transport classification

Source: The author's compilation based on: Kacperczyk, 2010; Matulewski, Konecka, Fajfer and Wojciechowski, 2007

2. SUSTAINABLE DEVELOPMENT IN REFERENCE TO URBAN TRANSPORT

Sustainable development is receiving increasing attention from contemporary towns and cities. It has been over 20 years since the World Commission on Economic Development used „sustainability" as the mainstream of public and private organizations, institutions, regions as well as scholarly research. The sustainability is pursuing to make decisions based on the categories of environmental integrity, social equity and economic prosperity (Bansal, 2005).

Hereafter the concept of sustainable development arises. It is an approach that creates added value by embracing opportunities and managing risks deriving from economic, environmental and social developments. Sustainable development is defined as the "socio-economic development, in which the process of integrating political, economic and social activities takes place, while maintaining the natural balance and the stability of basic natural processes in order to guarantee the ability to satisfy the basic needs of individual communities or population of both the present and future generations" (Toczyński, 2004). The main areas of sustainable development are the economic, social, ecological and spatial areas. The social area includes issues related to the functioning of society in the context of social ownership and the supply of, and access to public goods. The spatial aspect concerns the issues related to planning and territorial organization of individual regions. The economic aspect affects, in turn, the economy of business and market processes and the external and internal costs of production processes, services and consumption. All social needs are satisfied as a result of the exchange and flow of goods and information, in a broad sense (Kadłubek, 2014).

In the uncertain contemporary economic environment, in the conditions of progressing globalization and rapid urbanization, several strategic challenges are emerging with respect also to the urban transport (Brdulak, 2012):

- the growing importance of the natural environment,
- an increase in the importance of sustainable development in a broad sense (respect for the environment, but also the balance between occupational work and rest in towns and cities, self-development and individual interests),
- an increase in the importance of transport services conducive to a healthy lifestyle,
- an increasing inclusion of non-governmental transport organizations as partners for capturing new trends, but also as a new model for building relations and cooperation between organizations.

In the towns and cities with economic growth also increased demand for transport services. It significantly contributes to overcome barriers of further development of civilization. Unfortunately with the importance of transport in the towns and cities, it is also multiplication of negative impacts on the environment. It causes irreversible changes in the natural environment and carries risk of increased in morbidity of society.

Taking into the consideration the aims of sustainable development in reference to the towns and cities, the main priority of governmental entities, local governments and private entities should be to improve the quality of life of the citizens by developing the urban transport services and reduce the emission of harmful substances which negatively affect the health of people (Nowakowska-Grunt and Strzelczyk, 2014). For the European Union countries there are two basic documents, which has significant influence for urban transport policy in the Member States, namely: "White Paper: European transport policy for 2010: time to decide" from 2001 and "White Paper – Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system" from 2011. The "White Paper" from 2011 include i.a. the priorities as following (European Commission, 2014):

- reduction and elimination in urban transport conventionally powered vehicle; the main task of government is to promote the alternative fuel, electric cars or hybrid,
- implementation of "polluter pays" with reference to the contributors of air pollution – they should be obligated to bear the costs of the damage they cause in the environment; introduction of this regulation should influence the choices for ecological means of transport by the users of urban infrastructure,
- encourage to use public transport in the cities and the promotion of walking and cycling movements,
- reduction of the share of road transport in the total amount of transported goods,
- promoting multimodal passenger travel and freight transport,
- creating an effective network of multimodal travel and goods transport between cities.

The indication of the connections of the urban transport concept with sustainable development on the example of the Polish city - Częstochowa, the state of development of selected areas of the urban transport in Częstochowa in the light of the sustainable development, its problems and challenges, constitutes the main contents of this article. It's principal aim is identification and analysis of selected urban transport areas in Częstochowa city with regards to the sustainable development.

3. THE COVERAGE OF URBAN TRABSPORT AND SUSTAINABLE DEVELOPMENT IN THE CITY OF CZĘSTOCHOWA

The most important feature of urban transport should be its unlimited range according to the assumptions of spatial area of sustainable development. In that case its advantage over passenger cars can increase. It is also important to have a well designed urban transport network. This element is crucial considering the fact that even a transport network connecting all parts of the city, if poorly organized, might not meet the transport needs of the inhabitants and therefore do not pursue the assumptions of social area of sustainable development.

Częstochowa is a city with district (poviat) rights, situated in the Silesia province in southern Poland (Nowakowska-Grunt, 2010). It is the 12th largest city in Poland in terms of occupied area, which is 160 km², and 13th in terms of population, with 234 472 inhabitants.

The public transport system in Cęestochowa is characterized mainly by an extensive network of bus and tram lines in the context of spatial area of sustainable development. However, the deficiency of the organizers' management is failure to make use of the ways that favour the urban vehicles. Due to this, especially the running speed and frequency of buses are heavily dependent on the congestion in street traffic. As a consequence, the time of travel between the northern and southern districts in the afternoon hours often increases twofold. By using innovative priority solutions it will be possible to improve both the transport quality level and the statistics related to the number of correctly made bus runs. Częstochowa has a better developed bus transport network. This is due to the fact that the city has no well-developed tram network yet. Depending on the point of view, it is complementary to the motor-car transport. However, it can more and more often be heard that the current three tram lines are getting at the forefront in the city's transport system due to the speed of travel that they offer, among other things, significant in reference to social area of sustainable development. The transport system of the city of Częstochowa and its surrounding area consists of:

- 3 daytime tram lines,
- 23 daytime urban bus lines,
- 11 daytime commuter bus lines, including 8 lines operated by Miejskie Przedsiębiorstwo Komunikacyjne sp. z o.o. (the Municipal Public Transport Company Ltd.),
- 1 night tram line,
- 4 night urban bus lines,
- 5 special urban bus lines,
- 6 free bus lines.

The tram line in Częstochowa has a total length of 14.5 km, of which 7.5 km make a common section for all currently operated lines. Since 2012, the network has had a "Y" arrangement, where the 2.6 km-long section runs toward the hospital in the Kucelin district and the Huta Częstochowa (Częstochowa Steel Mill) ISD, and the second section with a length of 4.5 km runs towards the Błeszno estate. The rail track runs along the streets located centrally in the city. Such an arrangement ensures a fast connection between all parts of the city due to the small distance between the tram track lines and the remaining bus links that branch off from it at right angles. On the other hand, this network is one of the shortest in Poland. In addition, its potential has not been fully utilized. Trams run at a frequency of 5 minutes on weekdays (less frequently in early morning hours and late at night), and every 10 minutes on Sundays and on public holidays. Trams of lines nos. 1 and 2, that run up to the Kucelin district, travel alternately with line 3 trams in the Błeszno direction. Due to the fact that the tram is the most important means of transport for the Częstochowa inhabitants, also night-time tram transport operates in the city. Since 2012, a night tram has been running along the line 3 route at a frequency of every 30 minutes.

The bus network in the city complements the tram transport. These connections are designed chiefly in locations where it is not possible to build a rail track for infrastructural and economic reasons, which are also important areas of sustainable development. The form of this network has changed over the last few months – mainly due to the revitalization of the central avenues of the city. Still, the fixed transport system provides connection with all city districts, both residential and commercial.

The vast majority of the bus lines runs from the north to the south of the city. This is justified due to the vertical urban development. Buses run at a frequency of 15 to 60 minutes, depending on the demand for transport services on a particular line. In order to increase the transport availability, night bus lines have been introduced to the night-time public transport in Częstochowa. In contrast to the prototype, they only run from Friday to Sunday (occasionally, they are also activated on other days of

the week, for example, in the case of mass events being organized or the need for an increased throughput). So, four night lines operate in the direction of all residential districts.

Miejskie Przedsiębiorstwo Komunikacyjne Sp. z o.o. (the Municipal Public Transport Company Ltd.) in Częstochowa also carries out carriages to some neighbouring communes. These are the municipalities of: Olsztyn and Poczesna. Some urban lines are extended to the municipalities of: Mstów, Konopiska and Blachownia. Shuttle service allows residents of the above-mentioned communes to get to the city at small time intervals according to assumptions of social area of sustainable development (assuming that the buses of Miejskie Przedsiębiorstwo Komunikacyjne Sp. z o.o. complement the fulfilment of the demand). The entire Blachownia municipality is connected with the minibuses of Bus Expres, a private bus transport company. The municipal carrier also provides a greater rotation of bus lines near the cemeteries on November the 1st (All Saints) with additional four special lines.

The above-mentioned company also ensures the fulfillment of the strategic function of the city, which is to provide recreation and entertainment to the inhabitants as a part of social area of sustainable development. It performs this function by putting a special bus line into service in the direction of the sports hall on the day of a competition. In spite of the properly organized public transport, the urban network lacks so-called change points that facilitate the passengers to get to their destination. A relevant solution could be a more frequent use of common tram-bus stops.

Due to the fact that the urban transport also includes bicycle transport, relevant and appropriate from the point of view of environmental assumptions of sustainable development, its coverage in the city's area needs to be briefly outlined. Częstochowa has no consistent system of cycling routes. In 2012, all cycling roads, both independent and separated from the pavements (so-called pedestrian and cycling routes), totalled 20 km in length. For this reason, Częstochowa is placed at the bottom of the ranking of Polish cities in respect of the length of cycling paths. Cycling paths existed in most parts in the northern districts of Północ i Tysiąclecie. The greatest obstacle to cyclists is the inability to travel directly from the Północ estate to the Błeszno estate. In the centre of the city, small road sections have been laid out, which stretch out to the border of the city centre. This means that bicycle transport is not one of the self-government's main objectives and does not contribute to the improvement of the level of environmental aspects of sustainable development.

In summary, the reach of the public transport in Częstochowa meets the basic requirements of the passengers. The highest value for the operation of this transport is the tram communication, which is also the most common form of travel in the city. It should be noted that the transport system of Częstochowa is designed with its inhabitants in mind. In reference to the aspects of spatial and social areas of sustainable development it can be concluded that they are implemented satisfactorily. In contrast, something quite different can be implied by the presented description of the network of cycling paths. These are not cohesive. It should be underlined, however, that if there were a very developed network of cycling paths in the city, most people would decide on everyday commuting to work and school, while giving up the public transport. Thus, the importance of ecological transport modes and leading a healthy lifestyle would increase. At the same time as the inference is insufficient implementation of the assumptions of environmental area of sustainable development.

4. PROSPECTS FOR THE DEVELOPMENT OF THE URBAN TRANSPORT IN CZĘSTOCHOWA

At the beginning of the city's existence, urban transport in Częstochowa did not play any significant role. This was associated with a stagnation in the growth of small towns, with Częstochowa being one of them. A rapid development of the city took place in the early twentieth century, chiefly due to industry development. In 1903, the idea of starting an electric tram was born. It was not until 1959, however, that the first tram line was started up in the city. This was associated with the growing needs of the Częstochowa inhabitants for carriage in the 50s of the 20th century. The next civilization "leap" only occurred in the twenty-first century.

The condition of the urban transport in the future is dependent on many factors. New transport solutions have no chance of succeeding, unless they rely on eliminating the shortcomings of the transport and boosting its advantages in all the aspects of sustainable development: social, spatial, environmental and economic areas (Skowron-Grabowska and Wojtal, 2013). Therefore, Table 2 shows the strengths and weaknesses, opportunities and threats of the urban transport in the city of Częstochowa in reference to the assumptions of sustainable development and determines the influence of the macro-environment on the development of the transport infrastructure.

STRENGTHS	**WEAKNESSES**
- a large percentage of high-standard buses in the fleet - an advantageous topography of the city - an organized public transport system - qualified and experienced staff of the carrier - the existing tram network being part of an ecological transport system - the monopoly the municipal carrier - the tram movement being independent of the urban car traffic	- the ageing low-standard tram fleet - formation of traffic congestions in the city centre - no priority for public transport in street traffic - a poor condition of the road and tramway infrastructure - an incompletely utilized tram transport potential - no system of change points to service the passengers - no modern traffic management and control system - no modern system to inform the passengers about changes in public transport operation - lack of financial resources for vehicle replacement and modernization of the urban network
OPPORTUNITIES	**THREATS**
- increasing demand for transport services - integration of the urban, road and railway transports - creation of new tariff solutions with the aim of enhancing the attractiveness of the public transport - development of the strategic functions of the city (tourism, culture, higher education, recreation, etc.) - the possibility of acquiring financial resources from European Union sources for the development of the transport system - implementation of modern solutions to favour public transport vehicles in traffic - implementation of many concepts for the city's transport policy (e.g. parking fees, extending pedestrian-only areas, etc.) in order to reduce the use of passenger cars - urbanization of the suburban areas	- an increased number of passenger cars in the city - the rapidly growing demand for individual transport - the dissipation of the urban development - a decrease in transport speeds in the conditions of increasing congestion - the state and local government authorities' socio-economic policy unfavourable to the development of the urban transport - the increased costs of fuels and energy - the absence or reduction of foreign funds for transport modernization - the decreased number of passengers

Tab. 2 SWOT analysis of the urban transport in Częstochowa in reference to the assumptions of sustainable development

Source: The author's own compilation

The above SWOT analysis (Table 2) shows that the urban transport in Częstochowa is supported in improvements, but disproportionately to its needs. This is evidenced by the large number of its deficiencies, weaknesses and threats in the context of sustainable development. However, there are many opportunities to change this. The possibilities of changing the functioning of the transport are shown below.

The development of the public transport is a strategic goal of all the state and local government authorities. Currently, aiming at achieving the assumptions of sustainable development and modernizing the public transport, the emphasis is being laid on the development and modernization of the ecological passenger transport subsystems, such as the rail and tram transports. This is in line with European Union directives contained in the legislation and regulations. Despite the rapid growth of industry in the twenty-first century, the city Częstochowa is not presently able to bear high investment costs by itself. Therefore the economic area of sustainable development is the most troublesome sphere in the context of improvements of urban transport in Częstochowa city. Also, transport companies are dependent on a variety of financial factors. Therefore, neither the carrier nor the local government authorities can invest in the modernization of the transport infrastructure solely from their own financial resources. For this reason, the further development of the urban transport in Częstochowa is uncertain. Therefore, the implementation of all infrastructure projects is only possible with the use of available foreign funds. One of the ways may be to obtain a subsidy from the European Union's *Infrastructure and Environment* Operational Programme for the years 2014-2020.

At the moment, there are a few ideas providing for the modernization of the urban transport in the Częstochowa area and peripheral areas. These concepts include the extension of the existing tram network, replacement of the obsolete tramway rolling stock, purchase of environmentally-friendly buses, construction of streets and modernization of intersections to ensure a smooth movement of vehicles, or building of a cycling route network. They all refer respectively to the spatial, environmental and social areas of sustainable development, and need proper support from economic area.

5. CONCLUSIONS

Taking into account the above aspects of urban transport development in the context of sustainable development, it should be emphasized that one of the most important logistic tasks is to organize such a transport system that will allow all inhabitants to conveniently move within the city. The range of the public transport as a part of spatial area of sustainable development must be designed with passengers in mind and continuously improved to be able to pursue the assumptions of social area of sustainable development. At the same time, where possible, modern technological solutions should be taken into account, such as the attempt to reduce the operating costs in reference to the economic area of sustainable development and to care for the environment by purchasing modern vehicles in the context of environmental area of sustainable development.

When solving the problems related to the functioning of the urban transport in the enlarged European Union, the transport policy of the public authorities must take into account the guidelines contained in the European Union's Green Paper, which are as follows (Rydzkowski and Wojewódzka-Król, 2009):

- the application of so-called intelligent transport systems,
- increasing the availability of the public transport,
- ensuring a smooth traffic in cities by promoting walking, cycling, motorcycle and scooter riding and the use of the public transport,
- improving the environmental conditions by promoting and subsidizing ecological public transport (trolleybuses, trams, metro and the suburban rail),
- increase the safety and reliability of the public transport.

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