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PRESENT STATE OF URBAN RAIL TRANSPORT NETWORKS IN POLAND AND ITS PROSPECTS

Abstract: In his paper the author showed direction of the urban rail transport (the MTS) development in Polish cities since the end of the 19th c. to the present epoch. Basic stages of this development, those before the 1st World War, 1919-39, 1939-45 and the post-war period were presented on examples of the cities of Wrocław, Poznań, Warsaw and Cracow. The crucial projects were also considered. In the second part the author deals with the future of the rail transport in Polish cities against the West-European experiences. He criticizes the present transport policy realized in Poland. Finally, the author shows two extreme scenarios of the MTS further development and express an idea, that the MTS will be an opportunity to improve the poor transport situation in Polish cities if the transport networks are modernized and the transport policy is changed.

Key words: city, rail transport, tram, underground, transport policy

Introduction

The MTS in Poland contains 14 tram networks, one underground line and two small networks of the so-called Fast Urban Railway. All those serve 4 cities, but in 18 this transport mean was liquidated.

During the socio-economic transition of Poland, since 1990 the use of the MTS fell considerably, although, when the private motorisation is developed quickly, the MTS advantages are often cited, i.e. those of low pollution level or the limited space demand. Therefore the main author's aim is to answer, whether the MTS networks can improve the transport situation of Polish cities.

These problems were analysed by S. Dziadek (1991) in his publication on the urbanized areas transport systems, by J. Petryszyn (1998) dealing with the interurban bus and tram links in the Upper Silesian Conurbation, and by B. Meyer (1998) who wrote on socio-economic conditions of the urban transport in Szczecin in the light of the barrier analysis theory.

The MTS networks spatial development against that of the cities

Most of Polish tram network was built before the 1st World War and their spatial pattern partially function nowadays. Basic factor of this development was the demographical and economic growth of the cities, modified considerably by the urban population income level and the political situation: the MTS were developed then mostly in German part of present Poland's area. Its worth to remember that the tram was then the only efficient public transport mean. The good example of the developed system is that of the city of Wrocław (Fig.1).

In the interwar period only the tram network in the eastern part of the Upper Silesian Conurbation (that of Dąbrowa Górnicza Coal Basin) and the urban railway line (the EKD in Warsaw were built) The new tram lines were opened in Warsaw and Łódź, while in other cities only some routes were lengthened, like in Poznań (Fig.2.). This stagnation of the MTS development was mainly due the new transport means introduction, those of private cars, buses and trolleybuses-and the poor economic situation of Polish cities.

The 2nd World War caused considerable material destructions in Polish cities. During the post-war reconstruction the central parts of the MTS patterns in some cities were transformed the most in Warsaw (Fig.3).

In the post-war period (to the 70s) the MTS grew considerably in numerous cities. Many new routes were opened, others were modernized: second lines were built and the track subgrades were separated from the urban traffic. This development was stimulated by industrialization-and by the underdevelopment of the private motorization, due to ideological principles, like at Nowa Huta, the new district of the city of Cracow (Fig.4).

But in some cities, especially in the smaller ones, lying in western Poland there were neither investment nor modernization, thus the MTS became less efficient and – finally – were liquidated.

Other negative effects of the above mentioned political factors were: a subordination of the new MTS routes projects to that of industrial plants and an inconsequence in modernization. Therefore some highly efficient routes (of the fast tram parameters) were built only to transport workers to such the plants, and lacked the modern lines within the city-centres.

In the 60s and 70s the MTS development rate became smaller and in the 80s was nearly none. But the spatial growth of the cities was continued (the new districts were served by the bus transport). After this break, lasting over 10 years, in the second half of the 90s, several MTS routes were opened, mostly in Warsaw (a fragment of the first underground line and the tram line to the Bemowo district), in Poznań (the fast tram line, that of PST) and in Cracow, too.

The post-war output of the MTS investment within the Upper Silesian Conurbation is highly negative. Although there are long tram and bus lines, this 2-million people agglomeration has no efficient MTS system. The respective projects, realized to the 70s, expressed only needs or those of the great industrial plants, like Huta Katowice in Dąbrowa Górnicza. Later two modern routes (NS and EW) began to be planned – but nothing of this “Regional Railway Transport System” was realized.

The above described MTS development influences considerably its actual efficiency and the further prospects. The pre-war crisis and that of the end of the 20th c., together with its unproper evolution in the 50s and 60s deteriorated its accessibility (measured by the growing distance from the tram stop to the work (residence place) in residential urban zones. Moreover, the routes leading to the old great industrial plants serve nowadays few passengers, thus the economic efficiency of the whole system is reduced. The lack of consequent modernization of the MTS, especially in the city-centres causes the low transport velocity and the low competitiveness of the public transport system. In great cities streets are overburdened by the tram traffic. The actual socio-economic transition of Poland caused the violent motorization growth and the dispersion of the places of work and residence. The unequal treating of the public transport means made the MTS infrastructure and roiling stock degraded and technologically back warded.

Some MTS projects in Poland

Plans of the spatial development in many Polish cities contain projects on the MTS development. But nowadays such the plan is not a list of projects to be realized, but rather that of opportunities, sometimes backed on in actual premises.

The quite new project is that of the underground network in Warsaw¹. Understanding fully the necessity of this network development (the respective plan contains projects of three lines) the author points out, that the fast realization of this plan does not consider neither the difficult financial situation of Poland, nor other transport problems of Warsaw. Those problems need not the best solution – but the fastest one. If the building of the new underground lines is retarded, one will be able to modernize the remaining urban transport, etc. – all those would improve the transport could be competitive with the private one, thus the road investment could be limited and the spared means-used and order to continue the underground system project realization, necessary in the further future.

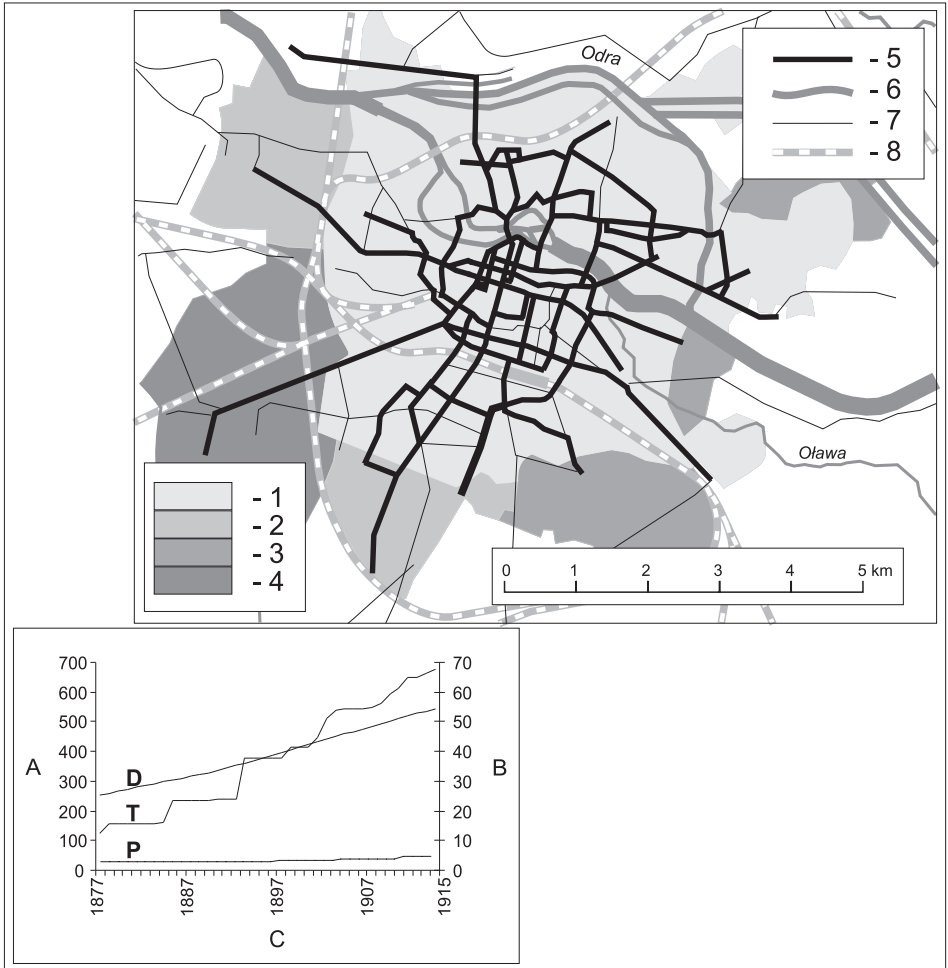
The new project are also those of the “fast ram lines” in Bydgoszcz, Poznań, Szczecin, and Cracow, from the city-centres to the housing estates built in the 80s.

In Łódź and Katowice such the routes will be realized due to the modernization of the present lines. In the Upper Silesian Conurbation the new lines will join sections lying from both sides of the former German(Russian border, some interurban lines are also planned).

In many cities is considered also the use of railway lines in the urban transport system-by the traditional way, or by introducing of trams on the railway tracks. Such the plan is also discussed in Cracow (Czyczuła, 2001).

In Wrocław the basic aim is to make the velocity higher and to improve the MTS spatial pattern, new lines to the housing zones and the circular ones are also discussed.

¹ the first section of the first line, Kabaty-Politechnika, was opened on 7th April, 1995. On 11th May, 2001, that of Centrum-Ratusz (Bankowy Sq.) was put into operation. Next two stations, those of Dworzec Gdański and Wilson Sq. are to be opened soon and the line will finally reach the Młociny district, although the site of the most distant station is not precised yet.

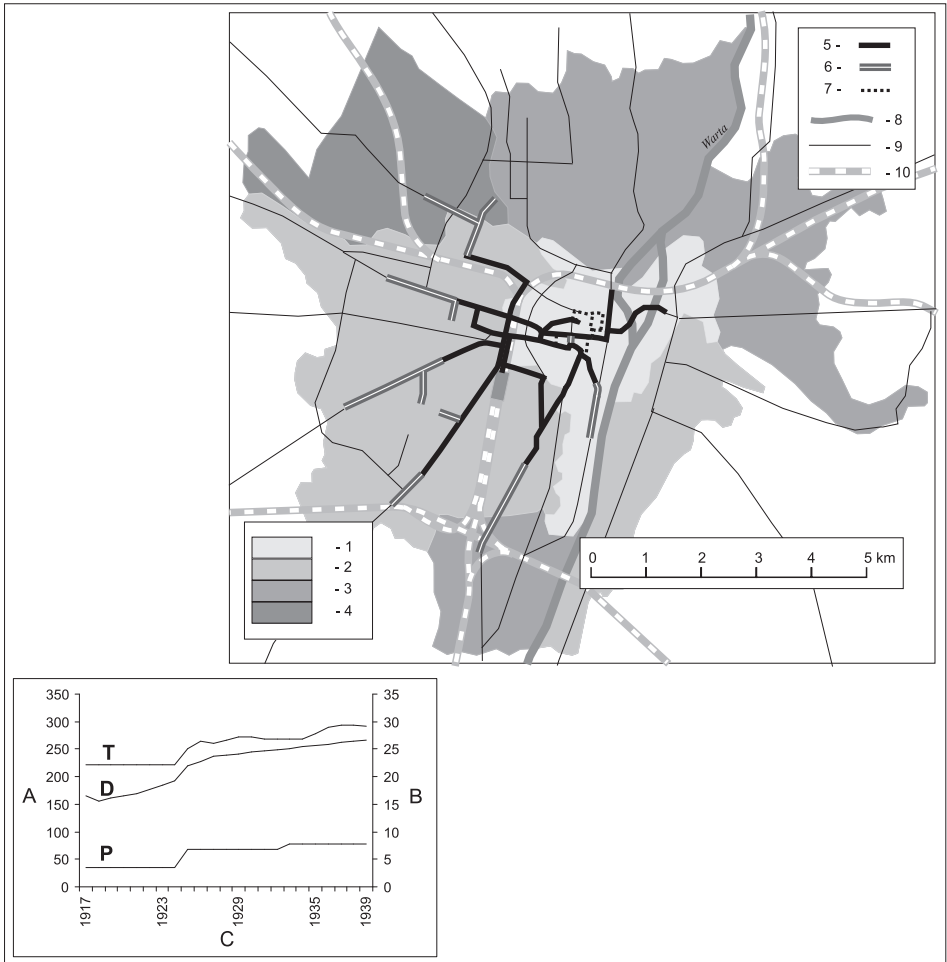


1. Wrocław's area in 1867-1897; 2-4. areas included in: 2. 1897, 3. 1904, 4. 1911; 5. tram lines opened before 1917; 6. rivers; 7. main roads; 8. railway lines, A. population number (in thousand), area (in km²), B. the MTS routes length (in km), C. years, D population (in thus.), P. area (in km²), T-the MTS routes length (in km)

1. obszar Wrocławia w latach 1868-1897; 2-4. tereny przyłączone w latach: 2. 1897 r.; 3. 1904 r.; 4. 1911 r.; 5. linie tramwajowe zbudowane przed 1917 r.; 6. rzeki; 7. drogi główne; 8. linie kolejowe; A. ludność (w tys.) oraz powierzchnia (w km²); B. długość tras MTS (w km); C. lata; D. ludność (w tys.); P. powierzchnia (w km²); T. długość tras MTS (w km).

Fig. 1 Development of the MTS network against that of area and population of the city of Wrocław in the 1877-1915 period

Ryc. 1. Rozwój sieci MTS na tle rozwoju przestrzennego i demograficznego Wrocławia w latach 1877 – 1915



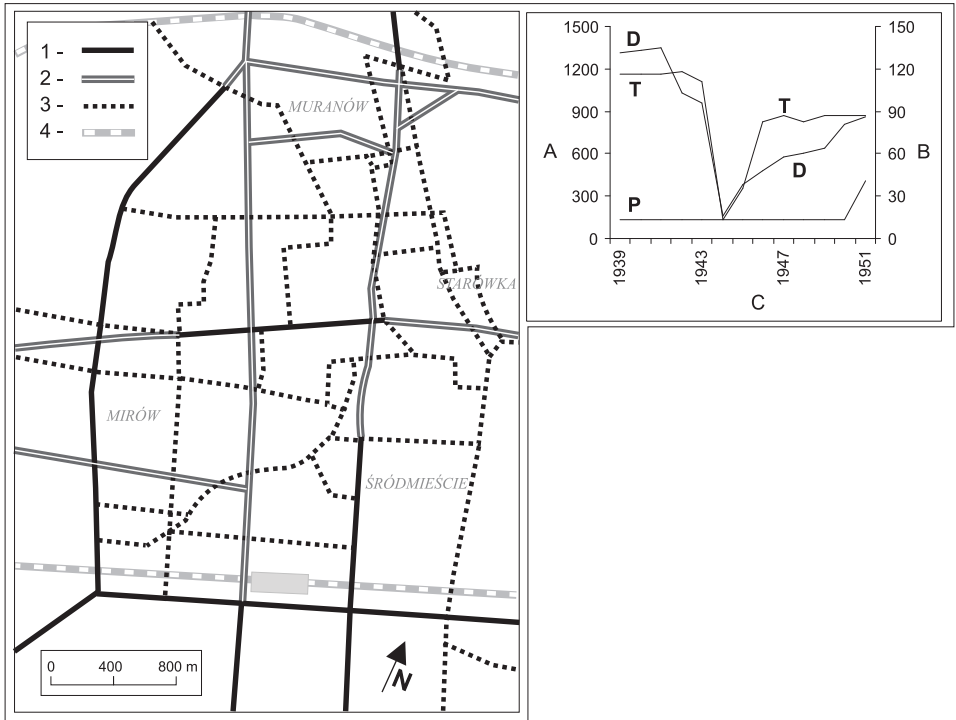
1. Poznań's area in 1800-97; 2-4.area included in: 2. 1897-1907, 3. 1923-25, 4. 1933; 5-6. tram lines opened in: 5. before 1917, 6. 1918-39; 7. tram lines closed before 1939; 8. rivers; 9. main roads; 10. railway lines, A. population number (in thousand), area (in km²), B. the MTS routes length

(in km), C. years, D population (in thus.), P. area (in km²), T-the MTS routes length (in km)

1. obszar Poznania w latach 1800-1897; 2-4. tereny przyłączone w latach: 2. 189-1907; 3. 1923-25; 4. 1933 r.; 5-6. linie tramwajowe zbudowane przed: 5. 1917 r.; 6. w latach 1918-1939; 7. linie tramwajowe zlikwidowane przed 1939 r.; 8. rzeki; 9. drogi główne; 10. linie kolejowe; A. ludność (w tys.) oraz powierzchnia (w km²); B. długość tras MTS (w km); C. lata; D. ludność (w tys.); P. powierzchnia (w km²); T. długość tras MTS (w km).

Fig. 2. Development of the MTS network against that of the area and population of the city of Poznań in the 1917-39 period

Ryc. 2. Rozwój sieci MTS na tle rozwoju przestrzennego i demograficznego Poznania w latach 1917-1939



1-2. tram lines opened: 1. before 1940, 2. in 1940-64; 3. closed tram lines; 4. railway lines, A-D, P, T – see Fig. 1.

1-2. linie tramwajowe zbudowane: 1. przed 1940 r.; 2 w latach 1939-1964; 3. linie tramwajowe zlikwidowane.; 4. linie kolejowe; A-D, P, T – patrz Ryc. 1

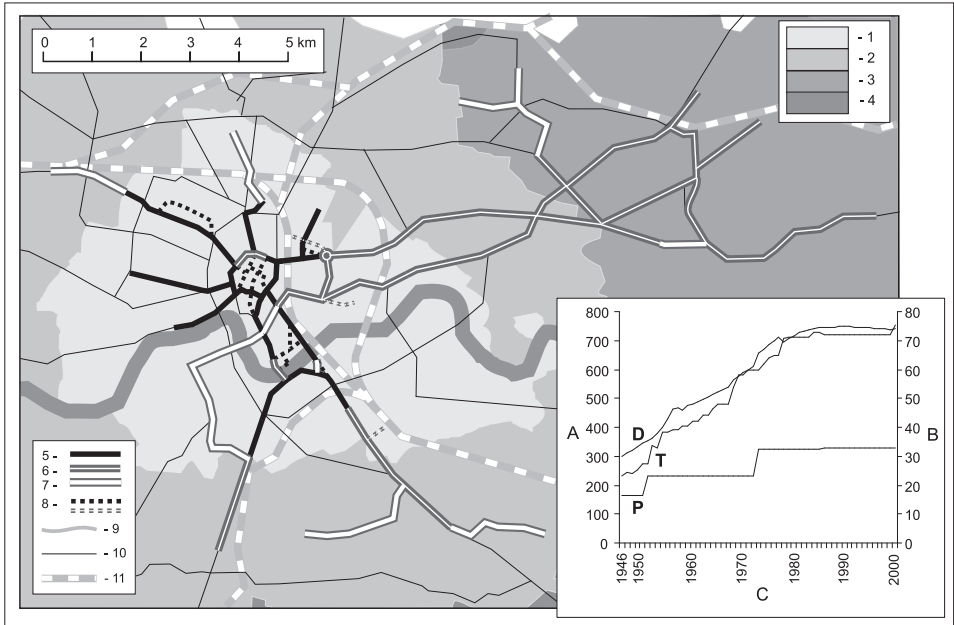
Fig. 3. The post-war MTS changes in Warsaw against the spatial and demographical growth of the city
Ryc. 3. Zmiany w sieci MTS na tle rozwoju demograficznego Warszawy po II wojnie światowej

Source: various materials collected by the author (see Koloś, 2001, Fig. 42 and VIII).

The new “classical” tram lines are planned also in Toruń, Gdańsk and in some smaller cities. But all those plans have no necessary financial base, and the predicted passenger flows seem to be insufficient. In some cities, like those of Białystok, Lublin and Radom, the MTS introducing is discussed, but it is the time being improbable.

The MTS chances in Poland against the foreign experiences

The above discussed MTS development projects depend mostly on the transport policy of the given city. “The general aim of the transport development policy is a creation of conditions for efficient, safe, economical and non-oppressive for the natural environment transport of passengers and goods. Such the policy should harmonize contradictory interests, causing by the social differentiation” (Rudnicki, 2001). The principles of the transport policy were for the first time defined in Cracow (1993)



1. Cracow's area before 1939; 2-4. areas included in: 2. 1945, 3. 1951 (Nowa Huta), 4. 1973; 5-7. tram lines opened: 5. before 1944, 6. in 1945-69, 7. after 1970; 8. closed tram lines; 9. rivers; 10. main roads; 11. railway lines, A-D, P, T-see Fig.1.

1. obszar Krakowa przed II wojną światową; 2-4. tereny przyłączone w roku: 2. 1945; 3. 1951 (Nowa Huta); 4. 1973; 5-7. linie tramwajowe zbudowane: 5. przed 1944 r.; 6. w latach 1945-1969; 7. po 1970 r.; 8. linie tramwajowe zlikwidowane; 9. rzeki; 10. drogi główne; 11. linie kolejowe; A-D, P, T – patrz Ryc. 1

Fig. 4. Development of the MTS network against that of area and population of the city of Cracow in the 1946-2000 period

Ryc.4. Rozwój sieci MTS na tle rozwoju przestrzennego i demograficznego Krakowa w latach 1946-2000

Source: various materials collected by the author (see Kołoś, 2001, Fig. 42 and VIII).

and Warsaw (1995), next in Łódź, Poznań, Gdańsk and Wrocław, and in other cities (Suchorzewski et al, 2001). Those principles are connected with the scenario of the sustainable development of the transport system, making the transport safe and efficient-and keeping the natural environment balance, important also for the future generation of the man. The respective planning documents give a priority for the rail transport growth in the great cities.

Similar policy is led also in some countries of the European Union (Kołoś 1999) and is expressed by subsidies and financial preferences for the "rail" projects. For example in France in the end of the 20th c. such the projects were realized in Nantes (1985; the second line in 1992), Grenoble (1987), in the Paris suburban zone (1992), in Strasbourg and Rouen (both in 1994), in Orlean and Montpellier (Neiertz 1997). In Nantes the project succeeded considerably: the passenger number in public transport means grew and that of the cars in the city-centre fell (Vigarie 1993)

Another opportunity is the bi-systemic tram (the rolling stock use the tram and railway tracks). Such the solution was realized several years ago in some German cities. For example in Karlsruhe the MTS system contains 5 lines of the “classical” tram and 7 bi-systemic ones. (Monkiewicz, 1998) All those pass the city-centre along Kaiserstrasse -the streets free of cars.

This street is available even from the 40-km distance, from Baden-Baden, Eppingen or Bretten. In the latter city the bi-systemic line was opened in 1992 and when the tram replaced trains, the diurnal passenger number grew 6 times, to 12000.

But losses occurred also. In Sheffield neither the urban traffic was reduced, nor the natural environment pollution level was limited-all those because of the lack of the proper transport (spatial policy, i.e. lack of priority for trams in the streets and improper stop location (Hellewell 1998)

According to the predicted passenger transport structure in Poland in 2020, expressed in the State Transport Policy for 2000-2015 periods, the public transport share will be reduced at 1/5 (from the actual level of some 49% to 38%; as the general mobility will be greater, the total passenger number will be the same) if the preferences for the public transport are introduced. If not - the above-mentioned share will fall to some 30% only.

Polish transport policy forms are sometimes radical in the spheres of the transport calming or priorities for the public transport and the bike traffic. But the policy is only a record of projects- the effects are made during the realization. Moreover, in Polish cities the practice is quite opposite to the declared principles, especially in the traffic organization and the spatial planning. The realization of the “pro-car” transport policy in our cities is against the MTS development.

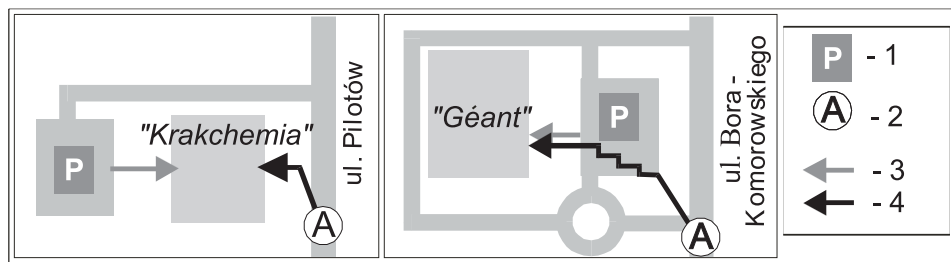
But in fact this policy is not the pure “pro-car” one. It is just a compilation of the sustained development theories and the opposite actions. Its effect can be critical for the further functioning of cities in Poland, in which there will be to less parking places and roads for the greater car number, and there will be no efficient public transport system. The good example of such the action is the reconstruction of two streets in Cracow’s city 90s. Those streets were to be transformed into the modern pedestrian-tram ones, due to the liquidation of roadways and the widening of sidewalks. But the necessary restrictions in the car traffic were not realized. Actually the wide sidewalks are used as parking, and on the track the cars and trams block each other. The parameters of the tram traffic are worse, the tram velocity fell considerably.

Another example is the location of parking by supermarkets (Fig.5).

In the case of Krakchemia supermarket, the parking and building were located according to the sustainable development principle-the parking and the ways from the bus stops, are situated in the opposite sites the shop.

But usually the parking lies between the shop and the street. It does not matter to the motorized clients (they can see their cars), but the pedestrians must cover the way longer and more difficult-among the parked cars².

² the non-motorized clients in the supermarkets is quite high – in the case of Géant in Cracow, in March 2000 60% came by car, 30% – by bus, and 6-8% – on foot (Albricht et al., 2000)



1. parking; 2. bus stop; 3. ways of motorized client; 4. pedestrian way.

1. parking; 2. przystanek komunikacji publicznej; 3. trasy dojścia klienta zmotoryzowanego;
4. trasy dojścia klienta niezmotoryzowanego.

Fig. 5. Ways of motorized clients and the pedestrian ones to the supermarkets of Krakchemia and Géant in Craow

Ryc. 5. Drogi dojścia do sklepu klientów zmotoryzowanych i niezmotoryzowanych na przykładzie supermarketów „Krakchemia” i „Géant” w Krakowie

Source: the author's own work.

The MTS development is also uneasy due to the traffic organization, preferring the car traffic, the lack of investment for over the decade, and the use of rolling stock and the infrastructure.

It is worth to stress, that everybody want to move as comfortable and fast – as possible. According to P. Jones (1992), most of the interviewed British motorized population cannot imagine the life without the car³.

If the above described factors are influence the further development of urban transport system, in the nearest decade the MTS efficiency in Poland will be continuously reduced, and the greater and greater degradation of this transport mean will cause the reduction of necessary funds. In 10-15 years the small MTS systems (in Elbląg, Gorzów Wielkopolski, Grudziądz, maybe also in Bydgoszcz and Toruń) will be liquidated, and those in the greater cities-limited. In the Upper Silesian Conurbation only the interurban lines will be left. Those restrictions will be probably the least in Warsaw – owing its size and probably State assistance in transport investments. The crisis of the 50s and 60s will be repeated.

But another, positive scenario is also possible, that of:

- the change of the actual transport policy in polish cities, in order to the realization its proper premises,
- the new system of the public transport financing, making possible the MTS modernization (i.e. the separating the lines from the urban traffic) and the new routes building) to make the whole systems more flexible),

³ 84% backed the opinion „it would be very difficult to me to fit my style of life to not using the car”, 69% – “the car is an essential element of our life and we could not live without it”, 58% declared that the car is absolutely necessary (Jones 1992)

- the introduction of the railway to the transport serving of the urban agglomeration (especially their suburban zones), in the form of the traditional trains and the bi-systemic trams.

The actual tram network will be preserved-and developed in the most of the cities. The new lines will reach the fast tram standards, or will use the railway tracks. In the further future the new MTS lines in the cities in which there is no such facility could be discussed, especially in those, where the spatial pattern is favourable, or the natural environment should be protected.

The good example of such the investment is Orlean-French city populated by some 250,000, strongly stretched north south. The main railway station lies some 3 km northward from the historic core, while 10 km southward is located new university district, for some 17,000 students. The tram line passes along this very axis (Archambault 1997). It is estimated, that in the whole Orlean agglomeration the share of the public transport will increase from actual 15% to 23%, while that for the NS line-to 40% (Buisson 1997).

Such the project can be discussed in the cases of the greatest Polish cities without MTS, like Radom and Białystok. To use the rail-way tracks, the scope of Silesian tram lines can reach the city of Tychy. From the ecological point of view, it is worth to build (rather rebuild) the tramlines in Bielsko-Biała, Jelenia Góra and Wałbrzych (there were such the lines to 1971, 1969 and 1966 respectively). The development of the MTS in those cities would be reasonable due to the considerable NS stretching of them, and in the case of Wałbrzych - the great distance from new housing estates to the city-centre. But the mountain relief of those three cities can be an obstacle.

Two possible scenario of the MTS development in Poland are not alternatives, but rather extreme proposals. The future solutions can be placed in the middle between. They can differ in the given cities, as the decisive opinion is that of the self-government bodies. In one city the MTS line can be shut. In other- opened. But the role of the State policy will be important, last but not least- inhabitants attitudes and views.

Conclusions

Answering the question formulated in the beginning of his paper, the author corroborates that the MTS networks are the opportunity of improvement of the poor transport situation of cities in Poland – but they are also a residuum of the industrial stage of the urbanization. Those network need the general modernization and development, and the transport policy should be orientated to the interest of the public transport. If only the policy will be changed, the lack of modernization will cause the development of other public transport means (i.e. the bus) and will retard the liquidation of most of the MTS system. The modernization without the policy change will not stop the MTS efficiency fall and will be only the loss public funds.

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Dotychczasowy rozwój sieci miejskiego transportu szynowego w Polsce a jego perspektywy

Streszczenie

Miejski Transport Szynowy składa się w Polsce z 14 sieci tramwajowych, jednej linii metra oraz dwóch niewielkich sieci Szybkiej Kolei Miejskiej. Systemy te obsługują 41 miast, a w dalszych 18 ten środek transportu został zlikwidowany.

W okresie transformacji społeczno-ekonomicznej znacząco spadło wykorzystanie komunikacji szynowej. Z drugiej strony w czasach gwałtownego rozwoju motoryzacji często podnosi się jej pozytywne walory takie jak np.: niskie skażenie środowiska czy niewielkie zapotrzebowanie na przestrzeń. Głównym celem artykułu jest podjęcie próby odpowiedzi na pytanie czy sieci MTS mogą być szansą na poprawę sytuacji transportowej w miastach Polski.

W pierwszej części artykułu zarysowano kierunki rozwoju miejskiego transportu szynowego w miastach Polski od końca XIX w. do czasów współczesnych. Najważniejsze etapy tego rozwoju (okresy: przed I wojną światową, międzywojenny, II wojny światowej oraz powojenny) omówiono w oparciu o przykłady Wrocławia, Poznania, Warszawy i Krakowa. Naszkiecowano także najważniejsze planowane obecnie inwestycje.

W drugiej części artykułu autor analizuje możliwości dalszego rozwoju transportu szynowego w miastach Polski na tle rozwiązań europejskich. Krytycznie odnosi się także do realizacji w miastach polityk transportowych.

W końcowej części artykułu autor kreśli dwa scenariusze dalszego rozwoju MTS w Polsce. Pierwszy zakłada kontynuację dotychczasowych trendów m.in. postępujący spadek efektywności MTS, degradację techniczną tego systemu transportu a także ograniczenie dopływu środków finansowych. W perspektywie 10-15 lat może wówczas dojść do likwidacji mniejszych systemów MTS oraz znacznego ograniczenia w miastach dużych. Będzie to (w uproszczeniu) powtórzeniem sytuacji z lat 50. i 60. XX w.

Możliwy jest jednak także inny scenariusz, w którym nastąpią zmiany dotychczasowej polityki transportowej w polskich miastach, w kierunku rzeczywistej realizacji jej założeń. W takiej sytuacji istniejące obecnie sieci tramwajowe byłyby zachowane, a w większości miast – rozbudowane, możliwe byłyby nawet nowe inwestycje.

Odpowiadając na pytanie postawione na początku artykułu, można stwierdzić, że sieci MTS mogą być szansą na poprawę sytuacji transportowej w miastach Polski, lecz jednocześnie są one przeżytkiem industrialnej fazy urbanizacji. Konieczna jest zatem głęboka modernizacja i rozbudowa istniejących sieci a także zmiana polityki transportowej, w kierunku rzeczywistego popierania transportu publicznego, w tym MTS. Sama zmiana owej polityki, przy braku modernizacji, spowoduje rozwój konkurencyjnych środków transportu publicznego (głównie autobusowego) i opóźni jedynie likwidację większości transportu szynowego. Z kolei podejmowanie modernizacji bez wprowadzenia innych zmian (a często tak dzieje się obecnie) nie powstrzyma spadku efektywności MTS, a jedynie doprowadzi do zmarnowania publicznych funduszy.

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