

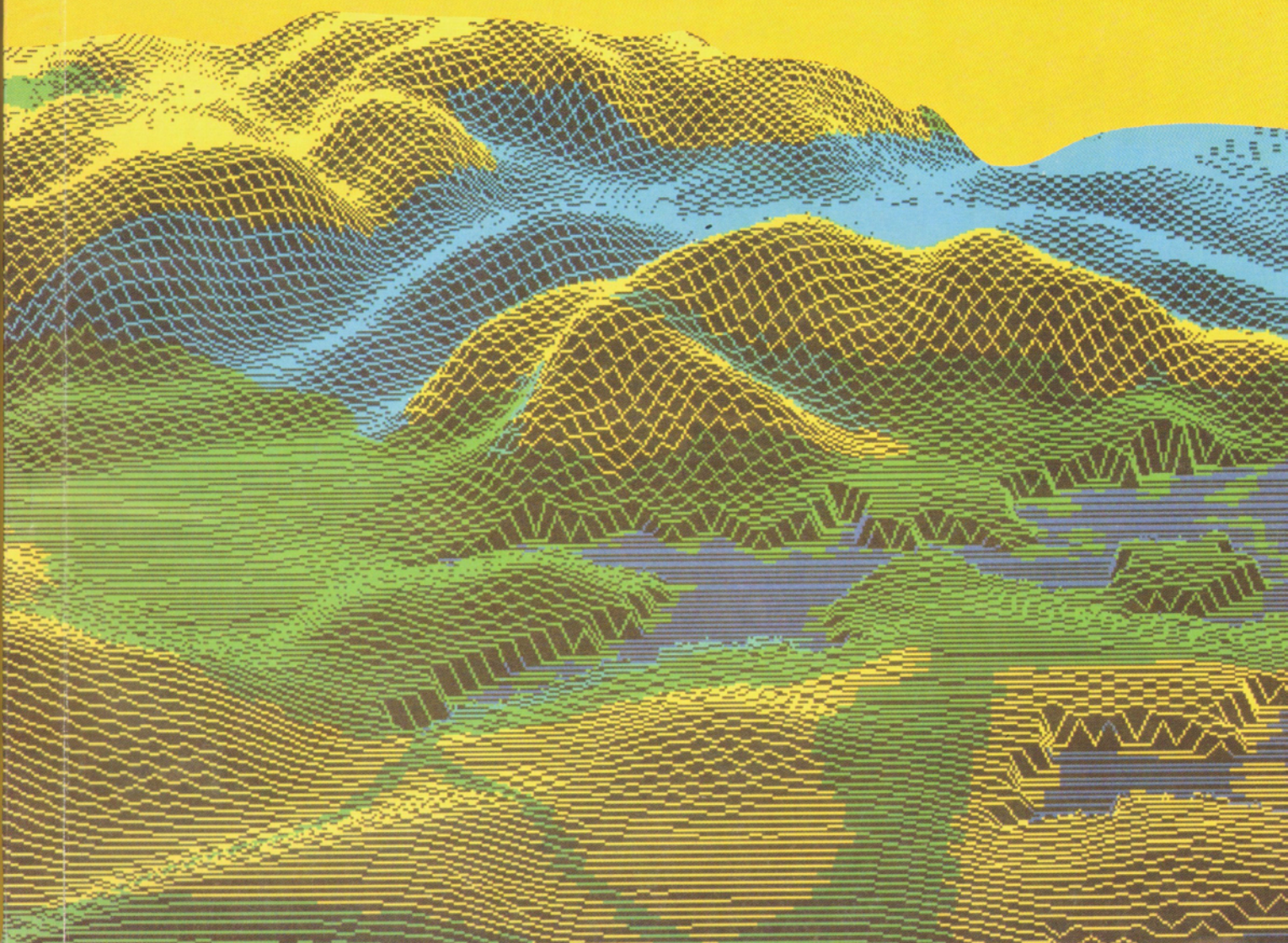
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CASE STUDY: BUDAPEST

TRAFFIC POLICY AND URBAN SUSTAINABILITY IN BUDAPEST

Tibor TINER

Abstract

During the decades of urban transport development of Budapest, different types of conceptions and policies were made. The constant element of these policies was to give priority to public transport over the private means of transport in the development supported by the state. As a result Budapest managed to reach a relative high level of public transport in Europe in the mid 1970s. Later, the increasing volume of private car traffic in Budapest marked a new challenge for urban transport policy. At the same time, the economic difficulties started to appear which slowed down public transport development of the Hungarian capital. During the 1980s, these problems became more serious and led to such a negative phenomenon as traffic jam, environmental pollution, decline in the quality of public transport et cetera. After the regime change, the matter of urban transport development became a more important political issue where different type of interests are versus each other on different level of decision-making. Meanwhile the transport problems of Budapest accumulated and there is an urgent need to resolve the most important ones for avoiding a chaos situation in the traffic. Short and long term plans as means of suitable urban development contain what is to be done now and in the future to achieve a harmonic urban transport development in Budapest.

Shrnutí

Pro rozvoj městské dopravy v Budapešti byla za desetiletí její existence zpracována řada variant. Základní myšlenkou těchto návrhů byla státem podporovaná preference hromadné dopravy před dopravou individuální. V sedmdesátých letech bylo výsledkem této politiky relativně vysoké zastoupení veřejné dopravy v porovnání s ostatními evropskými městy. Pozdější nárůst individuální dopravy v Budapešti vyvolal požadavek na zpracování nové koncepce městské dopravy. V témže období zapříčinily ekonomické potíže v zemi i pokles rozvoje hromadné dopravy v maďarské metropoli. V 80tých letech tyto potíže ještě zesílily a vedly k takovým negativním jevům jako jsou dopravní zácpy, znečištění životního prostředí, pokles kvality hromadné dopravy atd. Po změně režimu se městská doprava stala vážnou politickou otázkou; stojí zde proti sobě různé zájmy a to na různých rozhodovacích úrovních. Zatím se dopravní problémy v Budapešti znásobily. Aby se město zbavilo chaosu v dopravě, je nutno nejzávažnější z nich urychleně řešit. Proto byly pro dosažení harmonického rozvoje městské dopravy v Budapešti vypracovány krátkodobé a dlouhodobé plány jejího rozvoje jako jeden z prostředků setrvalého rozvoje města.

Key words: traffic policy, transformation, Budapest

Introduction

The level of urban transport available in the Hungarian capital Budapest - as in other world cities - is a key factor in operating the city functions and is also a basic element of urban life. In a large city like Budapest the concentration of industrial, commercial and tertiary activities have been accompanied by the growth of both vehicle and pedestrian traffic. By the early 1990s, demands made by both freight and passenger traffic on transport infrastructures of Budapest became much greater than the available capacity producing a situation in which Budapest requires projects for urban transport improvement. But transport planners must face reali-

ties: the big volume of journey-to-work movements, jam, parking difficulties, financial problems of public transport maintenance, environmental pollution by traffic, negative effects of investments missed during the 1980s et cetera.

In Budapest the pattern of regular personal movements is dominated by commuting and a considerable part of daily travel-to-work trips tends to the city centre (workplaces) and back to the peripheries (residences). The personal transport model of the Hungarian capital differs from western urban centres where the journey-to-work patterns are complicated with the expansion of employment centres on the urban periphery.

The growing share of car availability makes this problem in Budapest more serious: The city centre became a real bottleneck in traffic flow while its new functions (e.g. business, shopping, entertainment, leisure et cetera) are growing. These processes concentrate walking trips into the centre but this area is nearly inaccessible for cars not to speak about the missing parking sites and public garages. To understand the latest situation we have to draw a picture about the history of urban transport policy for Budapest.

A Historical Review

The story of Budapest urban transport development started in the last decades of the 19th century. At the turn of the century, the Hungarian capital was one of the fastest developing cities of Europe. By 1910, its population was 1 million, compared to 400 thousand in 1880. The population growth and increasing needs for mobility were the basis of the first concepts for traffic policy in Budapest, which aimed to allocate large investments in transport development. Newly built tram lines, building of the first deep-level tube line in the Continent in 1896, new railway stations which were connected to each other and to the city centre by paved roads and by tram lines and a complete network of urban transport - all these facts mark well that those decades were the time of real prosperity in the history of urban transport development in Budapest.

After establishing the city-owned Budapest Transport Company (BTC) as a holding company, Budapest had an urban passenger transport system on the European level. During this time, freight traffic of the capital was based on railways. More than 60 factories and industrial plants had own sidings and yards for loading raw materials and commodities. The critical situation of the First World War and negative effects of the Trianon Treaty on Hungary and on the Hungarian economy caused serious problems for the capital. In the mid-1920s, the budget of the city allowed only modest transport development (e.g. extension of existing suburban railway lines, modest road reconstruction). The period between 1930 and 1944 was more favourable for urban transport (bus network development, further road and bridge constructions, extension of more tram lines, et cetera), but the preparation of the economy for military purposes in the late 1930s slowed down this positive process. In the 1930s, the main feature of transport policy was dominance of public traffic against the increasing importance of private car traffic in the capital.

After the devastation of the Second World War, one of the most important tasks in Budapest was to reconstruct the public transport network: to restore the destroyed railroads and roads, to rebuild the Danube bridges that were destroyed, to repair the seriously damaged vehicle fleet and - after reorganising the control system of the BTC, to start to operate the public

transport again. In the early 1950s, there were considerable changes in the traffic policy of Budapest, which focused on serving economic interests. During the first years of socialism the capital became an exclusive centre for political and economic activity in Hungary and to maintain its public transport at an acceptable level became a "political question". In this period, the road freight transport of Budapest started to play a more important role in serving industrial and commercial needs of the city.

In public transport BTC became a state-owned company supervised by the City Council of Budapest. Its monopoly status in operating the public passenger transport was declared and strengthened by law. The costs of operation were covered by the state budget through the city council. As for ticket fares an over-subsidised system was introduced in the early 1950s as a means of new social policy. In this new system the conceptions for urban transport development in Budapest were subordinated to the interest of industrial production. The main task of the BTC was to serve the daily journey-to-work movements of blue-collar workers, thus the company had enough power to enforce its urban transport conceptions. The number of employees at the BTC reached 24,000 and BTC representatives in the city council had the necessary political power to get enough money to operate the public transport system according to their interests.

In 1953, neighbouring settlements to Budapest were connected to the capital administratively. Parallel to this event more than 200,000 commuters became citizens using four suburban railway lines, local trams, and buses in their journey-to-work. After creating Greater Budapest with its 1.7 million inhabitants, the tasks of urban public transport increased considerably and big difficulties appeared for BTC in keeping its services at a desired level. It was a really serious problem to carry 1.5 million active earners a day because in the 50s the public passenger transport was not considered as a productive sphere of the economy in general and BTC - against its relative good position in Budapest - did not manage to get enough plus money from the state budget to meet this additional requirements. The increasing negligence of urban transport led to other problems. The over-centralised and radial structure of the main road network of Budapest - which was the result of a normal development process at the end of the last century - did not notably change during the 1960s and did not meet the growing traffic needs at all.

Traffic connections between Pest and Buda could be realised only by crossing the city centre. This radial structure of traffic flow led to heavy concentration of road freight traffic on main roads and Danube bridges of the city and in passenger traffic along the main public transport lines. This situation contributed to creating jam in the vehicles of BTC also (e.g. 7.5 passengers per m² in trams during peak hours).

All these problems required a modified traffic policy based on a new principle of rapid transit and which were manifested in a new concept for urban transport development in the early 1960s. This concept was supported by BTC which was also interested in the development of a rapid transit network for Budapest by constructing underground lines connecting the four main railway stations, the suburban railway lines, the old deep-level tube line (the so-called M1 line) and at last the main exchange stations of tram, bus and trolley-bus services. A new project was worked out on the basis of this conception in which BTC reserved the right to operate the new metro lines exclusively. The first restrictions for freight traffic in the city centre were made also in context with this conception.

According to the project this new rapid transit network would have to be completed during a year period to serve as a basic network of public passenger transport in Budapest (Fig 1.). Financing of this large project belonged to the state budget. From the mid-1960s to the mid-1970s, the construction process carried on dynamically, but the increasing deficit in the state budget from the late 1970s to early 1980s resulted in a slowed down construction process. Because of this, the first metro line (M2) was opened in 1970 but we had to wait 20 years for the second one (M3) to be finished. The third transversal line (M4) is still a plan. Connection of the metro lines to the elements of surface public transport has been realised only in part.

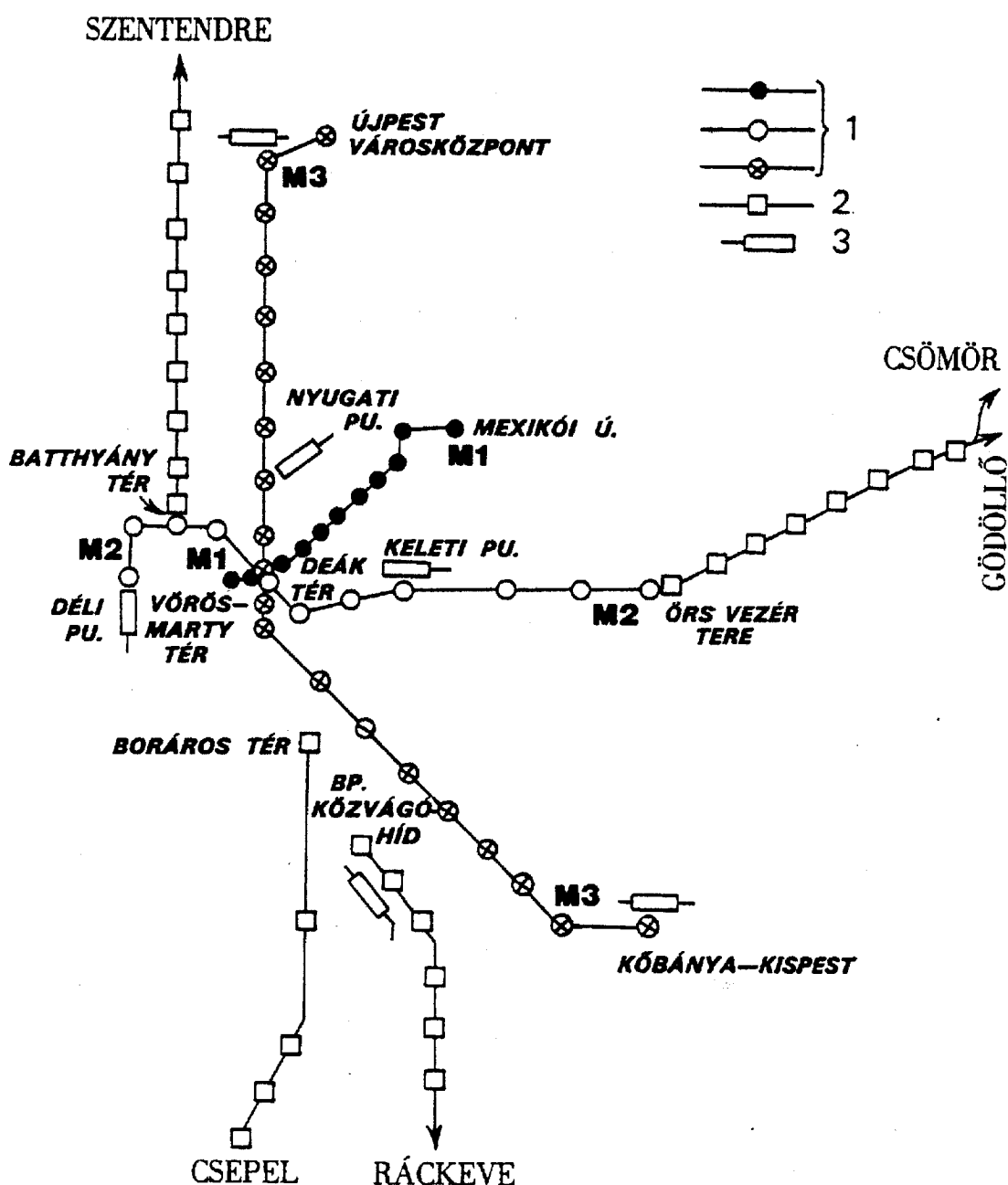


Fig. 1. Rapid transit network in Budapest. - 1 = underground (metro), 2 = local suburban railway (HÉV), 3 = railway station for passenger traffic

In spite of these missing elements of development, the results of the project were considerable. As for the level of public transport, Budapest managed to reach a good position in the rankings of European cities in the mid 1970s. From the early 1970s, new tendencies appeared in Hungary and mainly in Budapest: higher living standard resulted in an administratively controlled increase in the number of private cars. The annual average growth in the number of personal cars fluctuated between 17,000 and 21,000 vehicles in Budapest which marked the growth of new type of transport need in the city. This phenomenon led to the appearance of a transformed traffic policy in which the interests of new lobbies in the Ministry of Transport - and of course in the city council - were articulated to promote more rapid development processes in the field of private transport also (e.g. build wider roads, more places to park, service facilities etc.). During this time, international road freight traffic started to grow and many more long vehicles crossed Budapest than before.

The struggle between the old (BTC) and new (private transport) lobbies started early and went on with different results but - like nowadays also - a priority was given to public transport in the distribution of funds serving transport maintenance and development as the level of private motorisation lagged far behind the public transport needs in Budapest during the late 1970s and still in the early 1980s. Furthermore, the number of problems derived from increasing private traffic did not reach a critical point during the 1970s, so a continual priority was given to public transport interests in development processes. Additional development problems of public transport appeared in connection with the new housing estates. Large state dwelling structures were concentrated on the fringe areas of the capital (outer housing estate ring), but the majority of workplaces stayed in the city core and in the intermediate industrial belt. To meet the increased traffic needs, BTC had to be developed extensively, i.e. it was necessary to buy additional vehicles, to lengthen routes of existing services, to connect the new housing estates to the nearest rapid transit network node or station, et cetera.

The consequences in surface public transport were following:

- a relative rapid development in bus traffic,
- maintenance of the trolley-bus services on the same level,
- a considerable decrease in the length of the tram network, a process which was stopped during the early 1980s.

The 1980s was the period of increasing problems, in both the field of private and public transport. In connection with the increasing energy prices, fuel costs, and costs of maintenance of vehicles, the network expanded dramatically, although this growth was not compensated by higher ticket prices. The state budget covered only the increasing costs of operation but did not give

any help for technical improvements and network reconstruction. The city council urged a more economical mode of operation and more flexible organisational structure at BTC. These suggestions were accepted by BTC only in part: there were some structural changes in the organisational pattern of the company and two per cent of employees were given early retirement or fired during a five year period. Even with these efforts, BTC remained in a negative position at the end of the decade.

The permanently increasing number of private cars in the capital and the increasing volume of long vehicles and trucks running across Budapest led to serious difficulties in the city traffic during the 1980s, as this situation was not followed by a modern road construction programme. Main symptoms of the traffic crisis appeared soon: traffic jams in the city centre and along arterial roads, inadequate parking places in the inner districts (city centre: 8000 places for cars, the real need is 17,000!), increasing air pollution and traffic noise, a growing number of traffic accidents even with bypasses and traffic regulation efforts, et cetera.

Consequently, it was clear that a new traffic policy had to be shaped in the 1980s, in which the main goals would concentrate on traffic restraint from the inner area of Budapest. According to this policy, the city council made several efforts to start to resolve the most acute problems. The first results were: a growing number of pedestrian zones (Duna korzó) in the city centre, restrictions on parking in the city core and on the major roads, traffic calming near the shopping centres, applying different vehicle restraint schemes, et cetera (Fig 2.). Despite all of these efforts, the main problems mentioned were reduced only at a small scale. Arriving at the 1990s, it was obvious that there was a general need for a more effective traffic policy and a new development conception of urban transport for Budapest.

Traffic policy in Budapest in the 1990s

Nowadays, as at previous time, urban transport as a part of urban services has to meet two important requirements: 1. to ensure adequate conditions for private traffic and road freight transport, 2. to maintain and operate a public transport system at a desired level. In case of Budapest, only the public transport can be considered as a modern system, as the road network has many inadequacies. Detailed data about the main parameters of urban transport, considering Budapest and its structural changes, are shown in Tables 1.-4.. These data support the statements made in the previous chapter of the article showing the main problems and tendencies of the present.

The change of the political regime and economic system in 1989 offered new conditions for urban transport in the city reconstruction process of Budapest. Knowing the severity of the problems, it was obvious to both leaders of the city and transport experts that a real

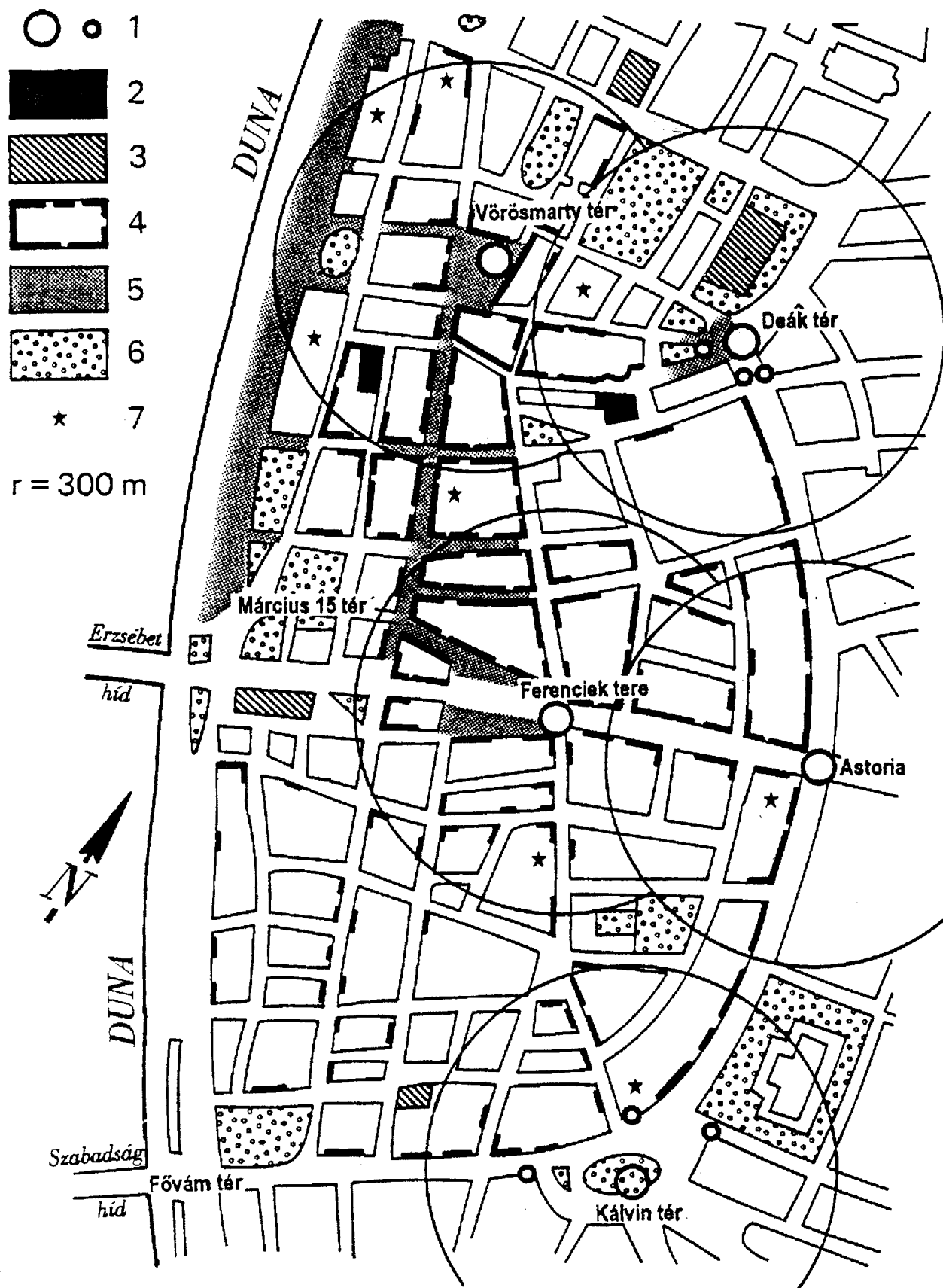


Fig. 2. A few traffic and commercial functions in the city centre of Budapest. - 1 = underground station with exits, 2 = building for car park, 3 = possible site for building for car park, 4 = shopwindows with length of more than 10 m, 5 = streets for pedestrians and for shopping (without vehicle traffic), 6 = green area, 7 = hotel

Table 1 Change in the length of public transport lines in Budapest, 1980-1993 (in km)

Year	Tram	Trolleybus	Bus	Suburban railway	Metro *	Together
1980	173	55	635	109	26	998
1985	168	67	709	109	30	1083
1990	157	68	760	109	35	1129
1991	157	68	775	109	35	1144
1992	157	69	780	109	35	1150
1993	159	69	767	109	35	1139
Shares, %						
1980	17.3	5.5	63.7	10.9	2.6	100.0
1993	14.0	5.5	67.2	9.6	3.1	100.0

* Old deep-level tube included

Table 2 Vehicle fleet of public transport (BTC) in Budapest, 1980-1993

Year	Tram	Trolleybus	Bus	Suburban railway	Metro	Together
1980	1221	247	1767	370	236	3841
1985	977	240	1836	390	332	3760
1990	929	234	1802	390	400	3755
1991	924	225	1738	371	420	3668
1992	924	225	1706	371	420	3636
1993	924	205	1685	371	420	3605
Shares, %						
1980	31.8	6.4	46.0	9.6	6.2	100.0
1993	25.6	5.7	46.7	10.3	11.7	100.0

Table 3 Capacity of vehicles in public transport (BTC) in Budapest, 1980-1993 (1000 seats)

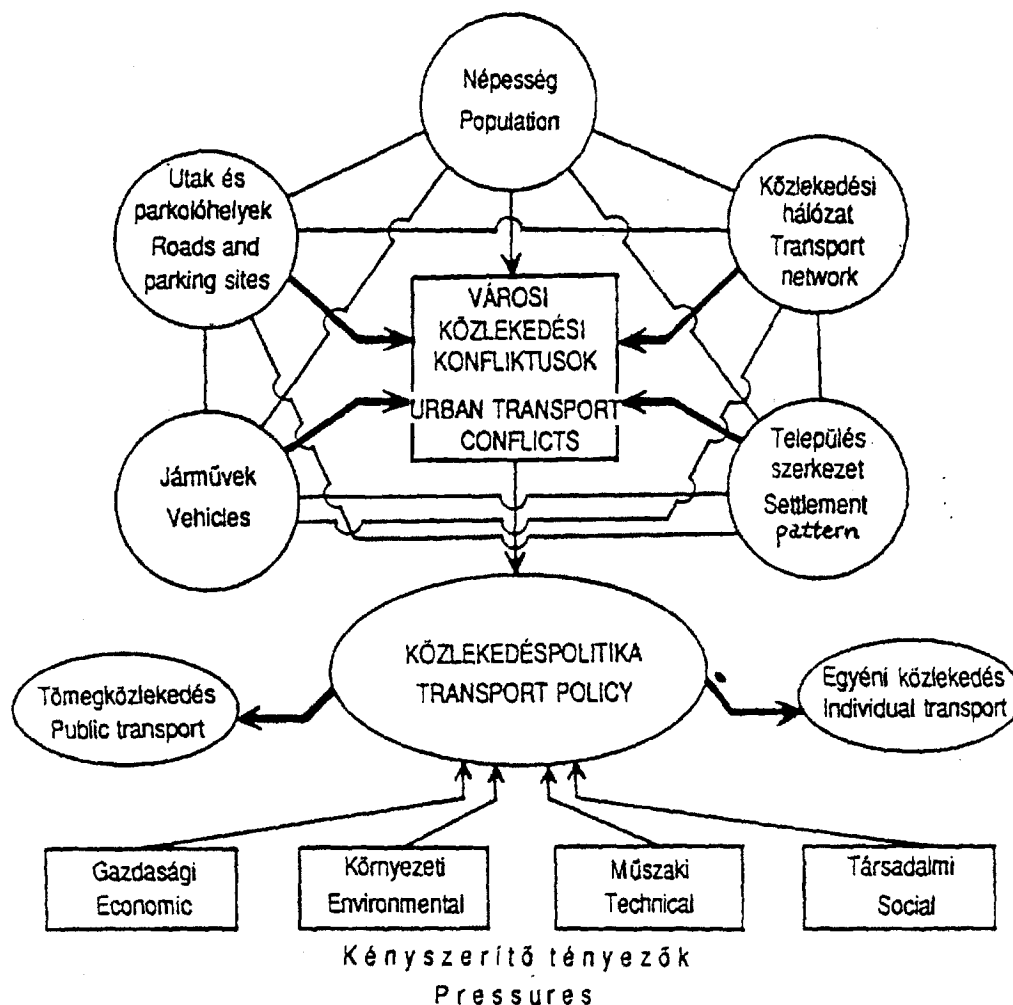
Year	Tram	Trolleybus	Bus	Suburban railway	Metro	Together
1980	131	24	162	52	42	411
1985	110	23	172	56	60	421
1990	107	25	176	56	72	436
1991	106	22	160	54	74	416
1992	106	22	161	54	74	417
1993	106	19	155	54	74	408
Shares, %						
1980	31.9	5.8	39.4	12.7	10.2	100.0
1993	26.0	4.7	38.0	13.2	18.1	100.0

Table 4 Change in the number of passengers in public transport of Budapest, 1980-1993 (millions passengers)

Year	Tram and Trolleybus	Bus	Suburban railway	Metro	Together	Change in %
1980	626	860	101	328	1915	100.0
1985	594	880	109	350	1927	100.0
1990	517	779	86	302	1684	87.9
1991	493	729	82	313	1617	84.4
1992	451	671	74	284	1450	75.7
1993	436	682	71	280	1469	76.7
Shares, %						
1980	32.7	44.9	5.3	17.1		100.0
1993	29.7	46.5	4.8	19.0		100.0

and effective transport policy had to be worked out which would serve the long term development of the city. Starting from the realities of the late 1980s, a new transport development program has been worked out. To understand the essence of the conception of the latest policy, it is necessary to first review all the fields of urban transport (its structure, operational features,

financing, the mechanism of decision making, existing conflicts, et cetera.) not to forget about the transport policy-transport conflicts relations (Fig 3.). After finishing this, we have to turn to long and short term projects and to their future effects on the urban development of Budapest.

**Fig. 3.** A simple model scheme about the context between transport policy and urban transport conflicts (ed. by T. TINER)

a.) Organisational structure of urban transport, planning and decision making

The Budapest Transport Company, which became city-owned again in 1992, has a monopoly status in operating public transport system in Budapest, carrying more than 96% of public passengers. Additional passengers are carried by private taxis, the city-owned Főtaxi, airport minibus services, et cetera. The organisational structure of BTC is relatively simple. The centre of control and decision making is the headquarters of the company. It has four management groups (Bus, Tram and Trolley-bus, Metro, and Suburban Railway) which are responsible for functioning and co-ordinating of their own branch of public transport. Each management group has more branch offices (e.g. technical, operational, track controlling, et cetera.) which are responsible for controlling the everyday activities of public transport: to start and maintain the circulation of vehicles, to supervise the lines. Parallel to this vertical organisational structure, there exists a more horizontally organised management system (e.g. economic, personnel, network planning, traffic safety management) which belongs to the headquarters to complete the functions of branch management.

Different versions of plans for public transport development are prepared in three different planning offices in the capital: 1. in the BUVÁTI (Institute for City Planning of Budapest), 2. in the Planning Bureau of Public Road Management of Budapest which belongs to and is supervised by the City Council of Budapest, and 3. in the Department for Planning of BTC. The plans worked out are first sent to the Department for Transport and Public Road Development of the city council for an official expert's report. This department co-ordinates different types of plans, makes the first evaluations about and comments upon their positive and negative effects in the existing structure of public traffic, on the city structure, on environment, et cetera., and prepares a final version for general assembly of the city council, the top forum of final decision making. But the real procedure of decision making is not so simple and undemocratic. Before the final decision is made, nearly every social group of the capital impacted by the effects of a transport development project in the future (e.g. representatives of political parties in the city council, external transport experts, members of different committees of the city council, BTC leaders and planners, the traffic police and last, but not least, residents of the city quarter or district or their representatives) may take part in final discussions, arguing for or against the projects or details of the projects. In these discussions political, professional, environmental and other local interests often fight against one another, but according to experiences, financial arguments will have priority in the end as the lack of money is the real bottleneck to achieving results acceptable for everybody.

Following from this mechanism, the real needs for transport development may be articulated a) on the district level (district council), b) on the capital level (city council) and c) on the company level (BTC). So there is a hierarchy in decision-making according to the following model:

- It is the mayor of a district who has the right to allow any type of transport development inside the district if its effects stay only on district level.
- It is the mayor of Budapest who has the right to authorise transport development activities or reconstruction on capital level - after getting authorisation for it from general assembly of the city council.
- It is the Minister of Transport or the Deputy Minister responsible for urban transport who can exclusively authorise any type of transport development in the agglomeration zone of Budapest or in the larger region.

The bigger the volume of investment the higher the level of decision-making. The top level is the Parliament (e.g. for decisions on reconstruction of a motorway ring around Budapest, extension of metro lines et cetera), the lower level is the Ministry of Transport (the place of decisions for transit road reconstruction through the agglomeration zone of the capital), then the City Council of Budapest (for reconstruction of main road sections, buying of new buses for BTC), and at last the District Council (e.g. pavement constructions). Of course all types of the developments need a previous for financing as a part of yearly budget of the city which plan must be accepted by the Ministry of Finance (except the district level decisions) giving a credit or a guarantee to establish these projects accepted on the different level of decision-making.

So in the case of a very big project, the decisions are wandering upstairs through the municipal and governmental bureaucracy and political interests can modify the latest versions on each step particularly as for the cost of realisation. Additionally, the face of Hungarian political life is very changeable. It means that many politicians of different parties change their minds or directions of their activities according to the latest political situations. So the decision-making procedure in urban transport development is affected by contradictory political effects from month to month and more political parties can make permanent pressure on the direction of urban transport development with more or less success. (It happens very often that a party which was lobbying for public transport development in one year changes its mind suddenly and after a short time, the same party will fight for the investment into private transport or try to hinder any form of transport development in the territory of Budapest).

Consequently, the time frame of a plan or a suggestion for any changes in urban transport or for better transport conditions is very long. It can take several months (or years!) to develop a consensus and this is

not taking into account the fundamental problem of financing. If - in the case of Budapest - general assembly at last accepts an urban transport project (with the majority of votes) and financial sources are available, the project will be quickly realised. If not, a second (third, fourth) circle of changes, modifications of the project, will be started again and the mechanism described above will be repeated. Financing of the city transport system - which is a very expensive thing in all big cities of the world - is also a constant problem in the case of Budapest. Funds for maintenance and for the development of public transport and road networks in Budapest come from three different sources: the state budget, the city budget and foreign sources (mainly in the form of credits for environment-friendly transport development). While the slim budget of the city council can assist only maintenance of public transport, the state has more money to finance smaller developments. But for the larger and much more expensive transport reconstruction projects, money from abroad (from foreign countries, consortia, private banks, et cetera) is required and conditions are generally more strict than in other cases.

It is important to mention that the last word for realisation of a project is said by the investors (e.g. Ministry of Finance, banks, consortia, private investors). And these investors will give money for those purposes which are absolutely serving their financial or profit concerns.

b.) Traffic policy and urban development

The priority of public over private transport is a long term and essential conception of the development processes in Budapest. Consequently, the main problems of public transport were resolved much earlier and more effectively than those of private transport. This process was helped for decades by a low level of motorisation in Hungary compared to western countries (e.g. 1993: 270 cars per 1000 inhabitants in Budapest, compared to 390 for Vienna), and was served by the greater need for public transport by the population that was without cars for longer period. The public transport system had a considerable state support from the mid-1960s until the mid-1970s. During this time, the quality of services increased and Budapest had a relatively modern public transport system on the European level. During its existence, the urban transport system of Budapest followed structural changes of the city (which became a real metropolis with its 2 million residents), mainly in the field of public transport, so serious mobility problems for inhabitants of the Hungarian capital did not exist.

The increasing level of motorisation soon showed hidden problems which derived from public transport - private transport conflicts, from many cars - small road surfaces - inadequate parking places, et cetera. We may say that the majority of residents are still satisfied with the level of public transport services, but every year more people complain about the dirty and neglected

vehicles, of more infrequent service on certain lines, of increasing ticket prices, et cetera. As for drivers, the situation is completely different: the majority of them are unsatisfied with narrow streets, the lack of parking places, and they complain of permanent jams in the inner city.

These conflicts mentioned are articulated regularly at different levels, such as meetings of the district councils, and are also forwarded to the city council. If an important problem is not quickly resolved - because it is generally the task of the city and not of the districts - a conflict situation will occur between the city council and the district councils. Nature of these conflicts is changeable: some of them may be resolved in the form of co-operation and the co-ordination of tasks relating to public transport (e.g. changing times of service, where to place the bus stops, what streets must be reconstructed, et cetera.), others are the question of money (e.g. where and when to construct underground passages, bypasses, ramps for traffic calming, et cetera) which can not be solved in a short time period. To resolve the different types of transport problems in Budapest is always an important activity of the city council. The general assembly of the council deals with some type of transport development question and suggestion regularly (nearly every month).

In the 1990s, importance of transport in the budget became considerable as the lack of development during the previous decade articulated itself. This means that more than 30% of the total budget of the city was used for transport purposes (mainly for development). In 1993, this sum was 13.5 billion HUF (135 million USD). This large proportion marks a new era in transport policy development even though many problems remained that will only be resolved in the coming decades.

c.) Problems of the urban transport system in the 1990s

The most serious problems in the field of urban transport in Budapest are as follows:

- Development of transport infrastructure of the city was unable to follow the rapid increase of motorisation in the 1980s and 1990s. There was more than 500,000 private cars in Budapest in 1993. Because of this large volume, the traffic intensity on main roads and bridges of the capital is much more than normal.
- Missing transversal main roads on the fringe areas, and the lack of additional Danube bridges contribute to the unacceptable large volume of domestic and international road freight traffic running across the inner city bridges and arteries. The existing parts of the MO ring motorway serve only the transit traffic bypassing the capital.
- The condition and capacity of existing underpasses and bypasses is rather inadequate, thus urgent repairs are necessary.

- In the fifth district (city centre), 40 per cent of street surfaces are covered with parked cars, hindering public transport and pedestrian movements.
- The problem of negative environmental effects caused by vehicle traffic is still unresolved. Against positive tendencies is the unfavourable situation of the capital's vehicle fleet: the average age of a car is 9.2 years and 27% are Trabants and Wartburgs. These cars, the most polluting types, are responsible for more than 45% of total air pollution. Although 3,200 were removed from the traffic in 1992 and 1993, their negative effects on the quality of atmosphere are still remarkable. Because of the permanent traffic jam, 50% of the total polluting material (emissions) concentrate in the inner districts of the city.

Special difficulties of public transport:

- There is a permanent and continuous slow-down in public surface transport (bus and trolley-bus traffic) because of traffic jams.
- The condition of the BTC vehicles is worsening from year to year. Old vehicles become air polluters while their cost of repair is growing. More than 40% of buses, trams and trolley-buses should be immediately replaced, but with the lack of money they are still in operation.
- The ratio of public and private traffic has changed from 80-20% to 70-30% during the last decade. This change has had a negative effect on the power of BTC to influence the city transport policy as its share in total urban transport has decreased.
- Quality of the tram and suburban railway tracks is generally bad. On 45% of the network, trams must not travel more than 30 km per hour. This situation is very unfavourable for citizens using trams regularly.
- The construction of rapid transit network was not carried to an acceptable degree. The network has not been completed with transversal lines (there are more missing connections e.g. between suburban lines in South Pest and the M3 metro line).
- Operational costs of the public transport system (20 billion HUF in 1993) greatly increase every year while the income of BTC covers portion of an ever smaller maintenance costs. The structure of total income is: 50% from the city budget, 30% from fare fees, and 20% are in the form of state subsidies.

Leadership of the city first of all tries to resolve the most urgent problems (increasing air pollution in the city centre, decreasing traffic safety) which requires strict traffic restrictions and help for environment friendly modes of traffic (bicycle, trams). These efforts have appeared in city reconstruction planning and as parts of long term projects.

d.) Long term transport plans for sustainable urban development

Fundamental principles of long term transport planning in Budapest are as follows:

- to stop deterioration of urban transport conditions,
- to diminish environmental damages and traffic jams,
- to shorten travelling time in the city.

As for public transport the most important task is to maintain its ability to operate. In the case of private and freight traffic, there is a need for investments in transversal roads, underpasses, bridges, traffic junctions with high permeability in the fringe area of the city, et cetera to increase their throughput. Parallel to this it is necessary:

- to support different types of traffic-calming measures in the inner city,
- to reorganise the traffic flow in the city centre, keeping the majority of private cars out of the city core,
- to reorganise the P+R system which now operates very ineffectively as only few parking places are available at metro stations and terminals of the public transport network,
- to give priority to environment friendly vehicles (e.g. the so-called green buses, bicycles, trams and trolley-buses) in traffic.

The most important points of the long term plans of urban transport development in Budapest are following (Fig 4. and 5):

- Construction of the M4 metro line transversal between NE- Pest and S-Buda.
- Connection of the Csepel and Ráckeve suburban railway lines with the M3 metro line creating an under-surface transport mode at Kálvin tér.
- Full reconstruction of the Hungária Boulevard together with the further extension of the fast tram No 1. line.
- Free-flowing construction of the MO motorway ring with junctions around the capital connecting it to the main radial transversal roads of the city. This will give better accessibility for drivers to reach arterial roads of the capital and radial motorways such as M1, M7, M3 and M5 and will help to keep the road freight traffic out of the city centre and from the intermediate zones of the capital.
- Building of a new bridge in Lágymányos to help functioning of the future transversal road network.
- Constructing special roads for bicycle traffic in the 13th, 1st, 2nd and 3rd districts.
- Full reconstruction of deep-level tube line under Andrássy út to increase quality of under-surface public traffic in the inner part of the city.
- Reconstruction of 400 km of tram tracks in the next 10 years to better serve public transport possibilities.
- Buying more than 200 new environment-friendly new buses and 35 trams to replace old fleet. This investment will be accomplished with the help of EBRD credit.
- Further administrative regulations must be carried out to calm car traffic in the inner city zones (e.g. different vehicle restraint schemes like filter system, closing areas for cars, new order for parking, et cetera).

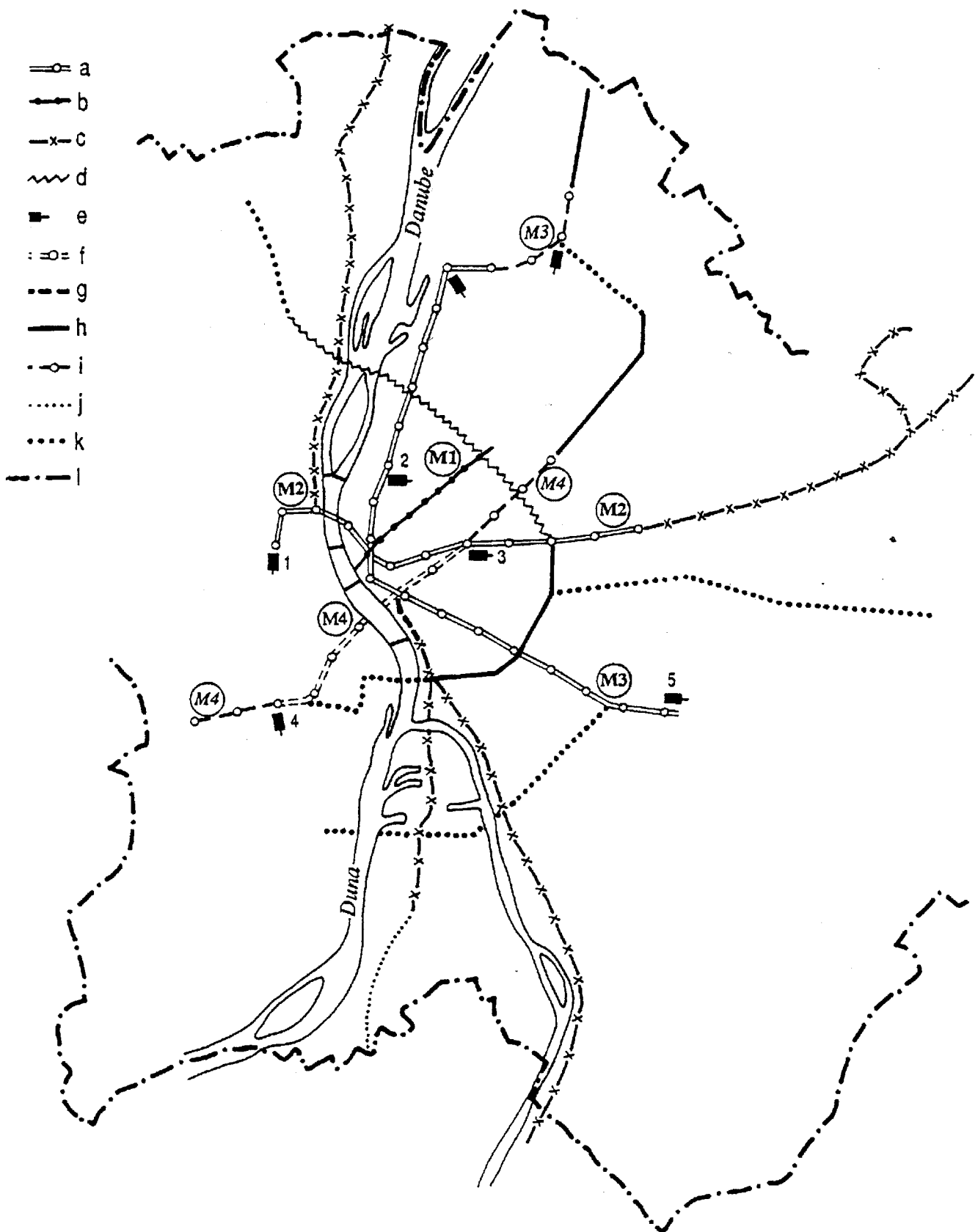


Fig. 4. Development project for rapid transit system in Budapest. - Existing: a = metro line, b = deep-level tube line, c = suburban railway line, d = fast tram service, e = railway station. New constructions planned to finish before the year 2000: f = metro line, g = fast suburban train service, h = fast tram service No. 1. New constructions after the year 2000: i = metro line, j = fast suburban train service, k = fast tram service, l = administrative boundary of Budapest, K = Kálvin Square

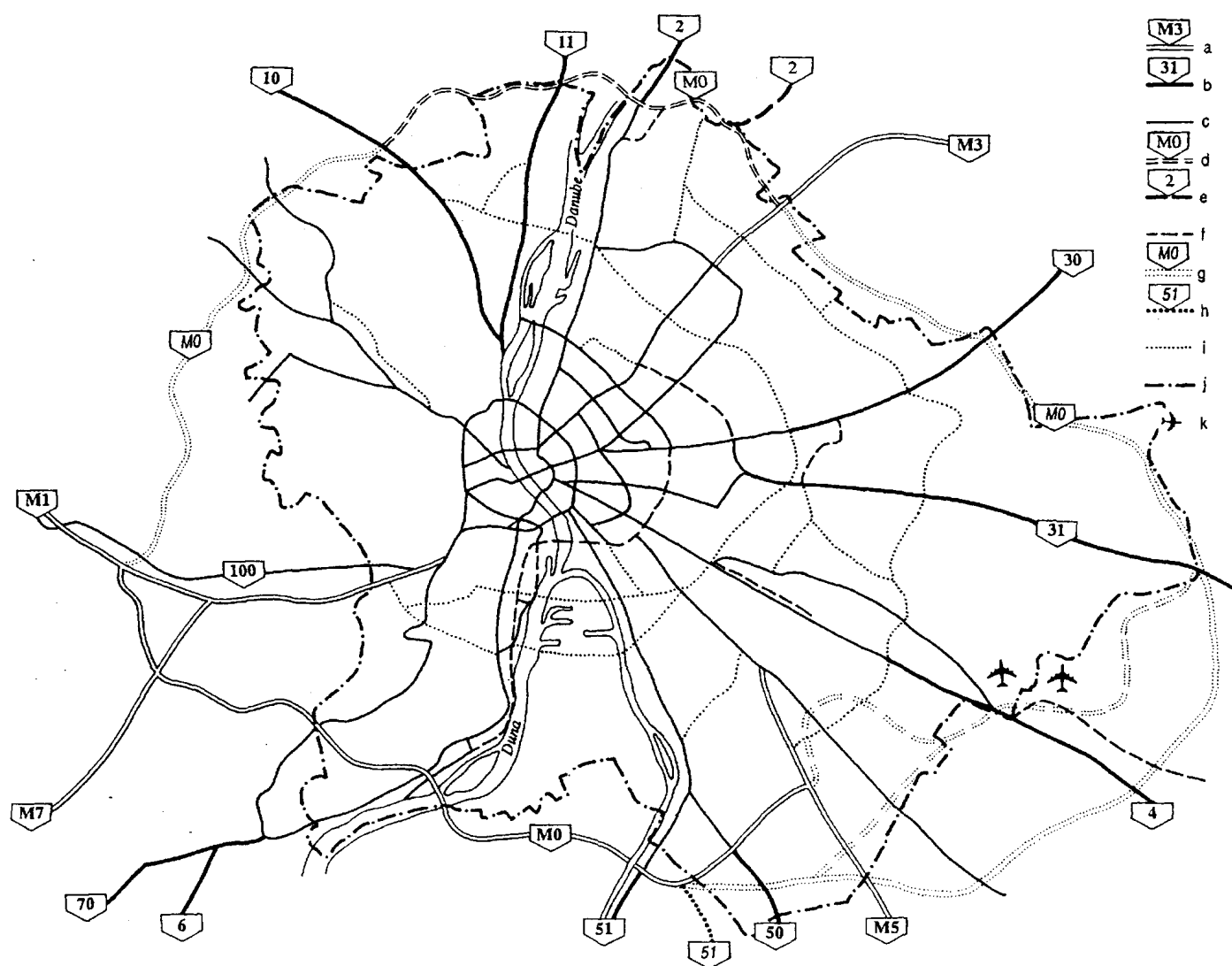


Fig. 5. Public road construction projects for Budapest. - Existing: a = motorway, b = primary and secondary main road, c = arterial urban road. New constructions planned to finish before the year 2000: d = motorway, e = secondary main road, f = reconstructed and new arterial urban road. New constructions after the year 2000: g = motorway (with alternative routings), h = secondary main road, i = arterial urban road, j = administrative boundary of Budapest, k = airport

- Inner traffic belts of the city must be more intensively protected from pollution and new strategies have to be formed for the outer zones for the same purposes (Fig. 6).

Besides all of these activities, there is also a need for urgent reform in the organisational pattern of BTC, allowing for a more effective and cheaper operation. According to the latest contract between the city council and BTC, the company will be transformed into a holding company in 1996 and will rely on revenue obtained from the city councils and ticket sales (rather than from subsidies!). This new organisational form was suggested by the EBRD in the hope of creating a more efficient and inexpensive operation. This means that the city council and residents may insist on a certain quality of services that will be declared in the contract. If BTC is unable to provide services at the level agreed upon by the contracting parties, the council may refuse to pay

fees to the company, inhabitants will have the right for cheaper services, and EBRD may refuse to give further credit for the development.

Summarising the aims of the latest long term project accepted by the city council in summer of 1993 we may say that it will serve as a means for sustainable development of Budapest, but this project have to be completed soon with additional points to make it more complex and more useful. The missing points - and suggestions - are as follows:

1. In co-operation with the Hungarian State Railways (MÁV), it would be necessary to create a multilevel rapid transit system (like in Vienna) for Budapest and for settlements of the agglomeration zone. MÁV has more than 140 km of railway line inside the administrative boundary of the capital with 38 stations and stops. Some of these lines are transversal to metro

Fundamental principles of these projects are focused on stopping the decline of urban transport, diminishing environmental pollution caused by transport mainly in the city centre and converting the radial structure of traffic flow into a more transversal structure. These principles are accepted by the public also but as for the way of execution opinions differ extremely

among experts, politicians, local authorities and the publics.

Making compromises and achieving co-operation among all urban social groups which are interested in good solutions - these are the means leading to a successful traffic policy in Budapest at serving the sustainable development of the Central European metropolis effectively.

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