

Transport policies in Hungary - historical background and current practice for national and regional level

Vilmos Oszter¹

Received: 28 October 2016 / Accepted: 21 March 2017 / Published online: 5 April 2017
© The Author(s) 2017. This article is published with open access at SpringerLink.com

Abstract

Introduction This paper presents an overview of the current and past evolution of the Hungarian Transport Policies and investigates how and what kind of results could be used in the future transport concepts and strategies. It also examines the practice of coordination between the different territorial and administrative levels of transport planning. It aims to identify the applied policy instruments and the monitoring processes installed.

Methods By using literature and legal background review from the past and current plans and policies the paper will also share the author's own empirical work experience while participating in the elaboration of the New National Transport Strategy (NKS) as well as an insight from the Transport Policy for Budapest (Balázs Mór Plan). It gives an overview about the recent changes in the Transport Policy of Hungary and its implication for the project priority lists.

Results The expected results are the clear identification of synergies and gaps among the ongoing policies together with the divulgation of good and bad practices for the wider professional audience.

Conclusions The need for a sustainable transport system, which assumes a sustainable economy as well is a huge challenge for policy makers. In order to avoid parallel policy making (especially when making policies for different areas) and minimize the economic and social cost of transport, we need a coordinated, multimodal approach, which includes the

necessary organizations and public private bodies (with secure and sustainable financial background) with exact tasks and responsibility on all territorial levels.

Keywords Transport policy · Governance · Transport Planning, Transport strategy · Hungary

1 Introduction

Transport policy has always been a powerful tool to influence the social-economic development of a given country, region. From the beginning of the time people and goods needed to be transported from their origin to their destination. By the technical development of different transport means, the level of mobility, thus the standard of living has been increasing constantly. In order to ensure the most efficient system, a wide range of factors (e.g. local interests, company's interest and public budget) should be harmonized. This is a very challenging process due to the many variables it includes. This paper endeavors to give an overview by using literature and legal background review from the past and current plans and policies. The author's own empirical research in the elaboration of the New National Transport Strategy (NKS) [1] will also be shared as well as insight from the Transport Policy for Budapest (Balázs Mór Plan) [2]. It also gives an overview of the recent changes in the Transport Policy of Hungary and its implications for the project priority lists.

2 Historical background

In this part a general overview is given about the main characteristics of the geographic location and about the past 170 years of transport policy making process in Hungary.

This article is part of Topical Collection on The development of National Transport Policy

✉ Vilmos Oszter
oszter.vilmos@kti.hu

¹ KTI Institute for Transport Sciences Non Profit Ltd, Than K. u. 3-5, Budapest 1119, Hungary

The main factors of influencing transport policies are presented with gradually more details till nowadays.

2.1 General conditions

Hungary is a land-locked country situated in the Carpathian Basin in Central Europe. It is at the crossroads of East–West (from Southeastern Europe/Asia towards Western Europe) and North–South (“Amber road” Baltic-Adriatic) Corridor where transit flows from the beginning of history. Therefore the role of transport has always played a crucial role in the economic life of the country.

Due to geographic conditions, the central places of the Carpathian Basin situated at the border of different terrains (mountains vs. plains) plus at the crossing points of the region’s main river Danube (with strategic fortresses), pre-determined the actual location of Budapest, the capital city of Hungary. The regional sub-centers, which had been under the political control of the central area were connected with radial road networks of the period. The transversal connections were generally weak.

The first modern age country level transport network development concept was created and made official by the Act XXX of 1848 [3]. Besides improving the conditions of the most important inland waterways (Danube, Tisza, Dráva rivers), it contained the fundamental directives for the radial road and railway network. It designated the important river crossings, and also proposed the points where the first permanent bridges were to be built. Furthermore, it also declared that the important inter-regional connecting railways or roads should not contain any detours as some local lobbyist wished [4].

2.2 Transport developments during the continuous industrialization

In the late nineteenth century, within the Austro-Hungarian Empire, the evolution of the railway network developed according to former directives, its main transversal elements were built just several decades later than the radial ones. Besides the directives of the first transport concept, the tariff system regulation also played a key-role in strengthening the capital centered network. In 1889 a new so-called “zone-tariff” system was implemented by the transport minister Gábor Baross in order to replace the previous traditional, ineffective and loss-making tariff system [5]. The basic idea was to lower the tariff rates by 20–50% (!) and to create an equal, affordable price in the most frequent travelling distance of under 25 km (where people did not use the train before) and to have a single fare for journey above 225 km. The “under 25 km” single fare had a huge impact on the early evolution of the commuting traffic in the suburban areas and it also made the change of land use possible around larger cities and especially in the functional metropolitan area of Budapest. The

bigger distances were especially favorable for increasing the journeys of 600–700 km to the eastern provinces of that time Hungary before the WWI [6]. The impact on commerce was huge and the “zone tariff” had to be re-started in the case of transfer journeys via the capital city, Budapest, which was disadvantageous (but favorable to Budapest) for journeys to and from Vienna, the main rival of Budapest in the Austro-Hungarian Monarchy [7]. By 1914 the length of the country-wide normal railway network reached its maximum extension. Only some smaller branch lines were added later.

After the WWI, which brought the disintegration of the dualist Austro-Hungarian Monarchy, the country was facing completely new challenges in the field of the transport too, since many important lines and cities lied outside the new state borders.

After the WW2 Hungary became part of the “Eastern Block” (communist countries of Eastern Europe), which raised new expectations for the outdated post-war transport infrastructure.

From 1968 the “New Economic Mechanism” (model) was introduced in order to increase the efficiency of the former highly-centralized socialist economy. It gradually allowed the emergence of privately owned businesses while at the same time implemented market-style reforms, which required a more rationalized management for the (almost always) state-owned companies. Nearly 50 years later it can be considered as a generally successfully step forward for the economy of Hungary, which paved the way to the change of system to capitalism two decades later. Along with general economic changes for the transport sector, a new “Transport Policy Concept” was accepted by the Government.

2.3 Impacts of the transport policy concept of 1968

Although it is 49 years old, it is still the concept with the deepest impact on transport issues in Hungary. At the time of its creation the main reason was the chronic shortage of working force and rolling stock, and as consequence the inefficiency of the state railways, which transported almost 80% of all goods and passengers at that time. The economic policy of the era, the “New Economic Mechanism”) also changed the transport demand on both the passenger and the cargo side. Contrary to the needs of the previously concentrated heavy industry, new forms of industrialization took place together with geographic de-concentration of the production sites to small and middle sized towns and cities.

The main aims of the 1968 Transport Policy Concept can be summarized as follows: classification of the secondary railway lines and the closure of those, where the potential transport demand is weak and/or its operation is below the economic efficiency limit. At the same time road infrastructure investments were realized in the affected areas. In the remaining lines some smaller railway stations were also closed in

order to centralize the rail freight traffic at a nearby better equipped “micro-area” station where road feeder transport was supposed to be upgraded.

Besides branch line closures, important investments were made on the main lines (second tracks, electrifications, new signaling systems, higher speed tracks, new rolling stocks) and the first motorway sections were also built this time along with a comprehensive secondary road paving program.

After the oil crisis of 1973, the economic viability of the program was not as favorable for the road transport as it was before and as a consequence of economic recession, the realization of the Transport Policy Concept was slowed down.

Due to lack of funds, the road infrastructure was only partly built and in some cases the investment costs of cargo lines of some factories were not refunded [8]. Some lines remained not just because of the lack of funds for replacing them but also because of their strategic or military importance or because of the strong local political lobby. By 1980 the closing process stopped and finally about 1600 km of normal gauge lines were closed (instead of the originally planned 2600 km). On the other hand, taking the closed narrow gauge networks into account about 30% of the Hungarian railway network was closed in this period, which was roughly the double of the average of other European countries [9].

The changes in the network meant less use of railways for both passengers and freight transport, which had an impact on the environment, but in the 1970's in Eastern Europe this effect had nearly no importance at all nor for the general public and nor for the decision makers. At the beginning the emission level didn't not changed drastically as relatively modern buses replaced the mostly steam powered regional trains and the role of passenger cars was still marginal till the end of the 1980's (up from 95 in 1980 but with only 166 private cars per 1000 inhabitants in 1989).

2.4 Recent plans and their realization

Due to societal change in East-European countries by 1989, the transport sector faced radical shrinking, especially the rail freight. This was partly due to the collapse of the in-effective heavy industry and also the decreased demand from the main export markets of the former Eastern European communist countries (e.g. Poland, Czechoslovakia). At the same time new forms of production started to work in Hungary: smaller production centers with flexible needs for transport (small quantity, ‘just in time’), which could only be satisfied by road transport involving fresh private capital. As a reaction of lawmaker's in 1988 - at the beginning of the political and economic changes - a new act was passed dealing with the regulation of road transport. Due to ongoing motorization and democratic changes more and more people could use private cars and more mini-vans became available for the needs of new entrepreneurs and small private companies [10]. The

modal split changed dramatically to the road transport in the case of the freight traffic, but also public transport lost ground, although not as much as rail freight (Fig. 1).

During the 1990's new national transport development plan was designed for road transportation (in 1991), and the first Railway Act (1993) [11] was declared. The common issue in these plans was the development of highways and main railway lines in the traditional radial direction - but instead of the former 40 years of eastern orientation - towards the Austrian border and to Western Europe. Two large PPP contracts were signed in order to finance new motorway sections, which were later renegotiated to achieve better conditions for the state.

By 1996 Hungary was on the way to her accession to the European Union (EU). The first pre-accession EU funds mostly related to infrastructure development and renewal (PHARE – Poland and Hungary: Assistance for Restructuring their Economies and after year 2000, ISPA – Instrument for Structural Policies for Pre-Accession) provided financial source for many important projects. This meant that all the regulations and laws were to be made “EU-compatible”. On the field of transport the directives of the ‘so called’ White Paper [12] were implemented in Hungarian policies and laws. The most important keywords included ‘integration to the EU’ (priority for cross-border and TEN-T – Trans-European Transport Network – developments) with special focus on the growing regional disparities, environmental issues and market oriented, competitive regulations for transport providers. A new long-term perspective (till 2034) for the national motorway, a trunk network development plan was created and served as a basis for many later plans and concepts (not just transport plans, for example, the national Master Plan of 2003).

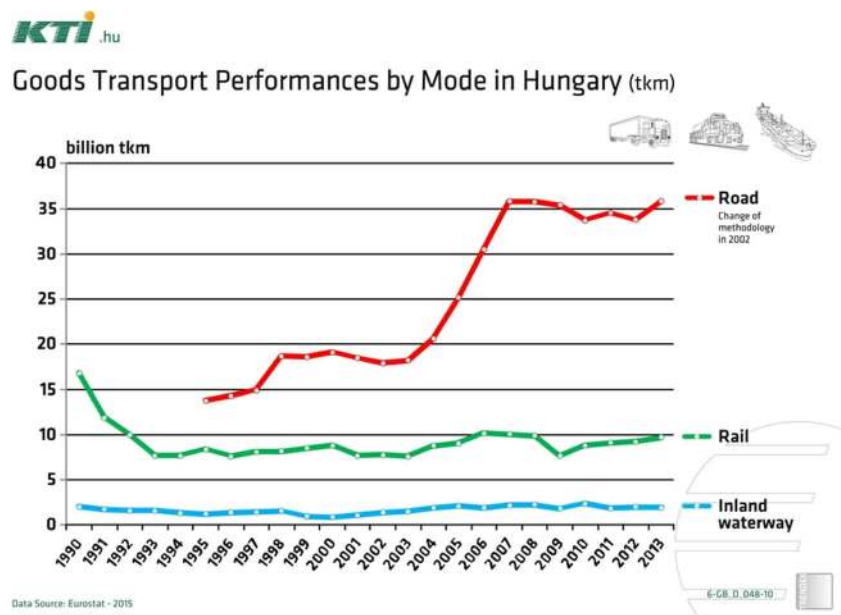
The Transport Concept of 1996 was the first one in Hungary, which included an environmental aspect together with the “pollutant pay principle” that recognizes the externalities. It designated five strategic directions, of which one represented environmental considerations:

1. Facilitate the integration into the European Union
2. Improve the conditions for cooperation with neighboring countries
3. Facilitate the balanced regional development of Hungary
4. Protect the human lives and environment
5. Create an efficient, market-compatible transport regulation

These strategic directions were proven by the coming years and they can be considered still valid today as well.

In the autumn of 1998 the economic crisis of the Russian Federation (still an important export market that time) hit Hungary hard and it delayed some important already ongoing or “just to be started” transport developments (e.g. M3 highway Eastern extension, line 4 of Budapest Metro) due to the shortage of capital.

Fig. 1 Freight modal split in Hungary between 1970 and 2013 (Source: Eurostat, KTI)



After a change in the central government in 2002 a new “Hungarian Transport Policy” document was created with a planning period from the year 2003 till 2015 [13]. The Transport Policy of 2003 did not bring fundamental changes in the focus of the future developments, but it was created by paying attention to the new White Paper of the EU from 2001 [14]. Its main results were time-based vignette-pricing on the national motorway network according to vehicle categories. It also accelerated motorway constructions (from 5 to 10 to 25–30 km per year) by involving PPP contracts. Furthermore, the EU-conform separation of the railway incumbent company to a network Railway Company and the separation of passenger and cargo provider companies were also a result besides the privatization of the inland waterway shipping company (MAHART), Budapest Airport, and finally the national flag carrier airline company, MALÉV.

2.5 Transport policy as an EU member state

Hungary became full-right EU member on 1st May 2004. In this new situation not just the main policy objectives have changed (harmonization to the EU), but also a completely new form of funding created the challenge for the public administration sector and also for private enterprises, who take part in the creation of plans and/or their realization. In order to have specific “Operational Programs” (later co-financed by the EU), valid, EU-conform and coherent strategies were to be presented. For the first full EU financed period (2007–2013) in Hungary two main financial sources were available for transport infrastructure development projects: Transport Operational Program (KÖZOP) and seven Regional Operational Programs (financed by the Cohesion Fund and the European Regional Development Fund). The special

objectives of the Transport Operational Program include the upgrading of the TEN-T elements in Hungary both for rail and also for road transport, the fostering of intra-regional connections and intermodal hub developments together with eco-friendly and public transport developments. In all seven NUTS 2 level Hungarian statistical-development regions the different regional operative programs usually had existing infrastructure element rehabilitation (e.g. regional roads, railways, bridges) and local scale developments for instance some new passenger information systems (new, real-time information system for Budapest public transport). In early 2007 the European Commission asked for a more detailed explication (by better project indicators and exact numbers) of the specific aims of the Transport Operational Program. After several rounds of consultation it turned out that a new transport strategy had to be carried out. The new strategy (EKFS) included the recommendations from half-time revision of the EU’s White Book. It contained four main pillars passenger transport development, freight transport development, infrastructure development and horizontal topic with a focus on sustainability (see Table 1). The new strategy was the first in Hungary to include a Strategic Environmental Impact Assessment document based on the requirements of Directive 2001/42/EC [16].

By May 2008 the “Unified Transport Development Strategy” (Egységes Közlekedésfejlesztési Stratégia, EKFS) was prepared with focus on the specific objectives of the Transport Operational Program taking into account the timing of investments in accordance with the amount of the available funds of 7.3 billion EUR. Its time horizon covered the next EU period as well from 2014 till 2020. The importance of this huge amount for transport development is increasing continuously because since the EU accession the national financed

Table 1 Objectives the “Unified Transport Development Strategy (EKFS)” [15]

1. Development of Passenger Transport	2. Development of Freight Transport	3. Development of Transport Infrastructure	4. Horizontal Topic
1.1. Optimize the modal-split by maintaining the better than EU average share of public transport modes	2.1. Maintain the better than EU average share of the environmental friendly transport modes	3.1. Improve the trunk network in order to increase economic competitiveness	4.1. Decrease the number of road fatalities to under 500 persons per year
1.2. Improve the efficiency of public transport means by ensuring co-modality	2.2. Improve the economic conditions of the environmental friendly transport modes and increase their ability for maintaining their infrastructure	3.2. Improve regional accessibility on different territorial levels	4.2. Create environmental friendly and energy efficient transport networks
1.3. Increase the level of mobility by providing better accessibility for anyone	2.3. Increase the share of combined freight transport	3.3. Development of the urban and suburban public passenger transport infrastructure	4.3. Ensuring long term sustainability by conscious infrastructure development
1.4. Ensure economic sustainability of passenger transport by rational planning	2.4. Increase the efficiency of multimodal logistic centers	3.4. Prevent from deteriorating of road conditions caused by heavy vehicles	4.4. Increase the spread of ITS applications

development started to shrink, and due to the global financial crisis by 2009, it became virtually nonexistent. The total share of state financed developments decreased to only 3%, by far the lowest in the EU. The rest (97%) was co-financed by the EU, of which only 15–25% was provided by Hungary’s ‘own resources’.

EKFS consisted of two main volumes, of which the first one described the objectives and their tools for implementation, while the second one defined the different development projects of the different modes together with their proposed financial resources. The project list slightly changed compared to the previous policy’s list (2003) as the Strategic Environmental Impact Assessment pointed out of the sustainability risks of several projects.

By today (2017) it is clear that the previous two ambitious transport policy documents targeted highly ambitious goals, of which numerous are just becoming realistic to build due to financial reasons or due to traffic development, which was hit hard by the global financial crisis of 2008–2009.

3 Overview of the recent developments current situation and outlook for the future

Following the general elections of year 2010 a new government came into power. The challenges of the financial crisis forced the new government to re-think the most important aspects of the different economic sectors. Changes in taxation, legal and structural reforms were introduced, which had an impact on the transport sector.

3.1 Transport policy in the past years

In 2011 the EU has released its latest White Paper about transport, which is based partly on the Europe 2020 ten-year

growth strategy. Europe 2020 has among its priorities the development of “low-carbon economy” and “innovation”. Within these priorities the de-carbonization (less greenhouse gas emission) of the transport sector is a key element, so the White Paper has ambitious objectives about alternative fuel usage to be achieved by 2030 and by 2050. These two recent EU policy changes required their implementation into Hungarian National policies.

The national development policy is formulated in the form of a document called “Új Széchenyi Terv” (New Széchenyi Plan) [17]. It expresses its objectives by establishing the following desired modal shift from 2010 to 2020 (see Table 2).

In order to realize these ambitious goals different plans have been updated and created.

In 2011 Hungary updated its long-term motorway and main road development program, which takes the experience of former plans into account and also concentrates on new challenges caused by the global financial crisis. Since the highways along the main transit corridors have been built, the pressure for the need of motorways has decreased significantly (Fig. 2). Between 2000 and 2016 the total length of

Table 2 Modal split (ton km % and passenger km %) in Hungary in 2010 and in 2020 [17]

Transport mode	2010	2020
Freight road	71	67
Freight rail	16	20
Freight pipeline	9	5
Freight inland waterway	4	8
Passenger private car	60	65
Passenger bus	22	15
Passenger train	15	15
Passenger air (international only)	3	5

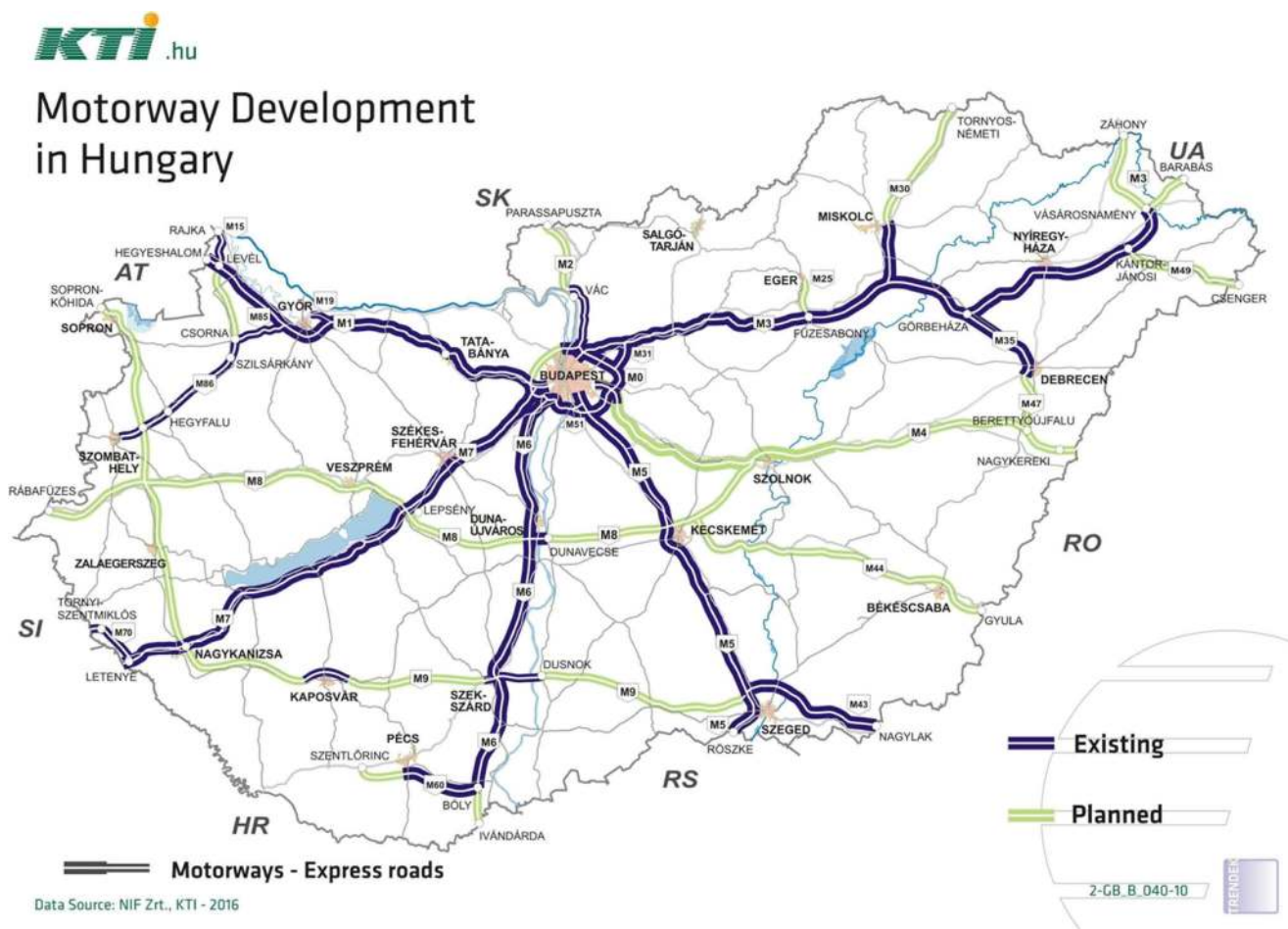


Fig. 2 The Motorway development and plans in Hungary (Source: NIF, KTI)

motorways increased from 569 km to 1480 km. By today the actual network density surpasses both the current EU's average (EU-28) and also the "old" member states' (EU-15) average projected to a million inhabitants. Nevertheless the motorization level (around 300 cars per thousand inhabitants) is still among the lowest rates in the EU, where the average is nearly 500 cars per thousand inhabitants.

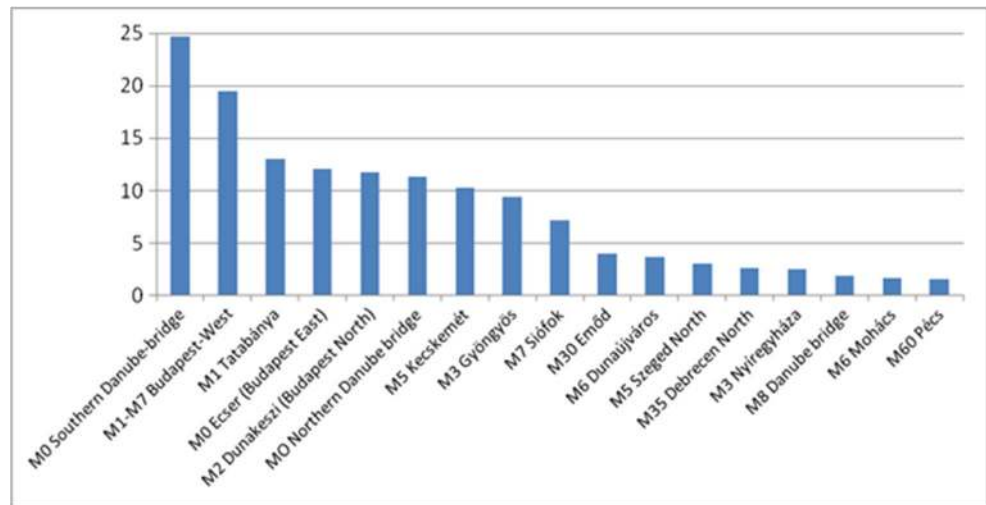
However, if we take a look at Fig. 3, it is obvious that not all of the sections were necessary to build as 2×2 lane complete motorways with a design speed of 130 km per hour because of poor traffic demand. Unfortunately the sections with weakest traffic load were built through PPP contracts, which oblige the Hungarian State to refund ca. 100 billion HUF (370 million EUR) annually for a 30 year period in the form of an "availability payment", while the income generated by usage fees is less than 15 billion HUF (55 million EUR) even with the newly imposed distance-based charge for freight vehicles above 3.5 tons of weight.

The case of the motorway M6-M60 linking Budapest with the Southern Hungarian regional center city of Pécs illustrates best, how local political pressure – due to the "Cultural Capital of Europe" status of the city in 2010 – can achieve the

construction of a complete motorway with insufficient traffic demand and low regional development potential (Figs. 3 and 4). This is especially true if we take into account the fact that the river Danube flows parallel just a few kilometres east of the M6 motorway, and there are few bridges to access the bank on the opposite side.

As a consequence, more attention and funds are allocated to maintain and upgrade the underfinanced ca. 31 thousand km of national main road network nowadays. Some smaller-scale investments such as bypass roads at some settlements with high transit traffic (more than 6 thousand unit vehicle per day) – which increase the quality of life of the local residents and also improves transport safety – became the main area of intervention in the recent years [19]. On the one hand, the relative economic development of the country and its traffic intensity/vehicle number compared to the density of motorway network do not require immediate investments to build more cross-country motorways. On the other hand, there is certain political pressure (and expectations from potential voters) to build new motorways instead of not so "spectacular" investments such as the upgrading of existing network. Due to shortage of capital and the need to upgrade

Fig. 3 Traffic intensity per lane in different cross-sections on the motorway network of Hungary in 2010 (data in thousand unit vehicles (~PCUs) per lane per day). Source of data: Hungarian Roads (Magyar Közút Nonprofit Zrt.) [18]

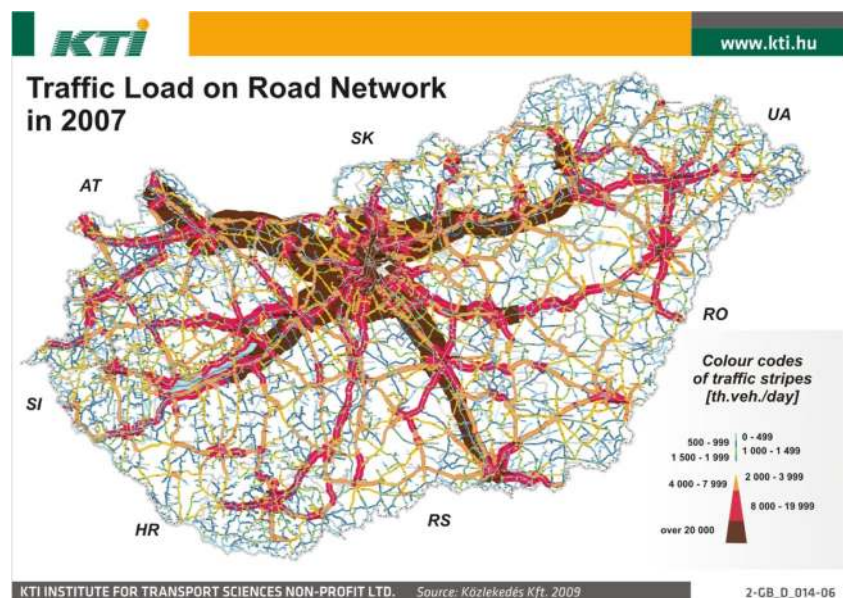


the current network in the present 7 years of the EU programming period (2014–2020), a new kind of approach is necessary for finding the economically most efficient investments. The early signs of this new approach are detectable in some political messages at the time of writing this article, although the amount available for transport investments is not yet decided. From technical point of view, the most realistic compromise today is to build some “low cost” motorways (without service lane and some level crossings) on certain sections. The “Modern Cities” national development programme among many other urban development projects includes “low cost” motorway connections to all county right cities, which currently do not have a direct motorway connection (9 of 23). Since in most cases there is no sufficient traffic volume, these investments will be fully financed by the government in order to decrease regional disparities.

As far as means other than private cars are concerned, Hungary still has a good modal split share in the European Union. As Table 2 shows only 60% of the total passenger kilometers are produced by the use of private cars unlike in several other developed countries where this share is between 80 and 90%. This better than average value can be explained by two important factors:

- The different historical background caused lower motorization rate, (which is still low) due to economic conditions.
- Unlike in many other post-communist countries in Eastern Europe, the public transport network coverage and timetable offer is still good and reliable in Hungary (99,9% of the settlements has public transport connection with at least three services daily).

Fig. 4 Traffic Load on Road Network of Hungary in 2007 (Source: KTI)



Nevertheless the public transport system needs to be upgraded in quality terms as the average age of buses and trains are still too high, and there are several unresolved issues in the solid financing of operator companies. The non-efficient overlapping PSO (Public Service Obligation) services of the trains and buses should be harmonized by securing fast, comfortable and reliable connections and common integrated ticketing. Part of the measures are taking place now in forms of new intermodal transport hub buildings at certain bigger cities around Hungary, but the economic interests of the different (curiously nearly always state-owned) projects largely slow down the realization of a transparent, electronic integrated ticketing system, which would be favorable for the taxpayers.

3.2 Potentially usable travel surveys for policy makers

The above mentioned problems need careful analysis and planning, which should be supported by better data for the decision makers. For finding the areas, which locally and/or temporarily has bottlenecks in traffic or are underserved by certain means of transport (e.g. buses and trains), a comprehensive analysis and the creation of a new all-transport plan covering traffic model is needed [20]. For the input of this analysis and the consequent model, the biggest underused database would be the nationwide Origin-Destination (O-D) Survey made in Autumn 2008 (just before the crisis). This database was partially used for the long term motorway and main road development program in 2011, but there are many specific details (vehicle type, travel behavior data, etc.), which should be analyzed carefully. Of course, for local level interventions new additional surveys would be needed depending on the scale of the planned new investment.

As far as public transport (regional buses and trains) is concerned, many new pieces of information about the traffic could be gained from the ticket statistics, which are (surprisingly) not used currently for O-D passenger demand analyzing purposes. According to the current legal provisions in Hungary – based on a sensitive political decision - elderly citizens of the EU above the age of 65 and the infants under 6 years old are not obliged to have a ticket or pass to travel by public transport. This situation creates continuous discussions about the fare compensation between the service providers – bus and train companies – and the central government, who finance. Consequently, there is no exact mobility data about passengers. After the completion of the nationwide e-ticketing system (in 5–7 years), the obligatory use of a personalized chipcard could provide exact real-time information about travelers.

The Hungarian Central Statistics Office (Központi Statisztikai Hivatal, KSH) has also made a country level representative household survey about the mobility patterns of the society in 2009 and later in 2012. It included approximately 15 thousand

households, which is a relatively high number in a survey of this kind. Unfortunately the data from this survey is just partially published; there are also many unknown facts, which should be useful to create synergies with the available data sources.

In the long-term motorway and main road development program (updated in 2011), the results of the 2008 nationwide O-D survey were used as weights in the calculation of different accessibility scenarios belonging to different future road networks. The time accessibility from each settlement was weighted by the intensity of travel between them (more exactly with the data available between traffic zones).

The efficient use of data is still to be resolved in order to support good decision making, but frequently the different transport provider companies cannot find financial incentives for using domestic travel data as there is no solid financial background, which would include all public transport mode unlike several other tariff associations in developed countries. According to the valid EU regulations, the operator companies are facing more international competition already on their international routes (both bus and train operators), which makes them more cautious thus they will not share important O-D data for business reasons.

On the other hand, several local or regional level statistical data or indicators of different socio-economic sectors are becoming every year more accessible not just to the decision-makers, but to any interested parties who help create appropriate local development plans outside the scope of the transport sector.

3.3 Recent transport policy – Making the National Transport Strategy (Nemzeti Közlekedési Stratégia, NKS)

Based on the author's own work experience, this section endeavors to give an insight into the practice of the elaboration of the latest transport strategy in Hungary.

Learning from the previous EU expectations about transport strategies, the government decided to launch the preparation of the new strategic document already in 2011. The main aim was to create an EU conform, firm basis for the future developments, which are mostly co-financed from different EU funds [15]. Three different time horizons were defined: 2020 (according to the EU 2014–2020 programming period), 2030 and 2050. The “as is” situation analysis was carried out by the Technical University of Budapest (BME) during year 2012. Later on the Ministry for National Development (NFM) – the Ministry responsible for Transport Issues – has launched an EU co-financed tender (funded by Priority 6 Technical Assistance of Transport Operational Program) for the elaboration of the National Transport Strategy (NKS). The tender was won by a consortium composed of main Hungarian planning and consultancy companies. Different workgroups have been organized from the experts according to certain areas of transport (road, rail, air, transport economy, modeling).

“NKS” had to give answers for the new priorities in the EU’s TEN-T policy, and it also had to deal with the interactions of the already updated plans of the different transport modes. The elaboration of “NKS” was also divided into two main parts:

- Methodology & thesis and
- Elaboration of all transport mode covering strategy.

Two separate target groups were identified (Fig. 5):

- Social & economic targets
- Main transport sector targets

During the elaboration of the “NKS” all important parties of the transport system and the civil sector (passenger right and environmental associations) were involved, and there were regular consultations to ensure the highest consensus achievable. During the full elaboration process, regular consultations were held with EU experts from the Joint Assistance to Support Projects in European Regions (JASPERS), which made it possible to influence the way of policy making. A nominated consulting committee (representatives of all major involved parties) was present at these consultations in order to ensure the quality. The work started in January 2013 and the first milestone was delivered at the end of March 2013, while the second and third milestones were delivered at the end of May and August 2013.

For instance by reaching the third milestone in the rail workgroup nine pre-feasibility studies for future developments were elaborated [21] in the framework of National Railway Development Concept (Országos Vasútfejlesztési Koncepció, OVK). All studies were based on previous work carried in the field of functional regional analysis (many times crossing EU member state borders) and also with timetable based infrastructure development approach. An extensive network multi modeling analysis was carried out together with some rail based functional analysis of certain railway lines. The work was shared among the different experts of the workgroup and weekly meetings were held to review the elaboration process and share the

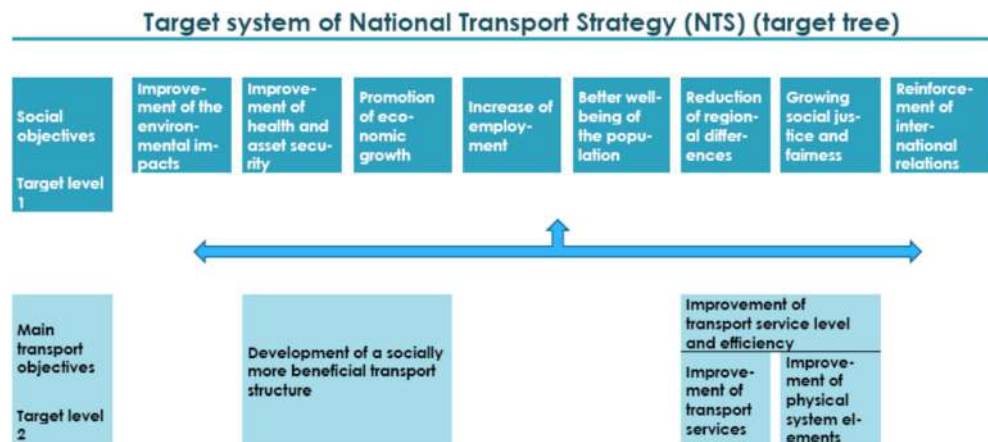
next phase’s tasks. Apart from the project maps, the most obvious and easily understandable way to show the results was a detailed problem- and solution tree had been defined together with a matrix ranking of the different intervention tools according to their feasibility and social utility (Table 3).

The above figures feature not just the social and economic risks of a given intervention but also the potential environmental risks and impacts as well. The future development projects in the different EU operative programs and the growing national financed developments can be classified and later prioritized more easily within this framework.

Compared to previous transport strategies, a wider professional audience was involved and also the nearly exact budget for the next planning period was known much better than previously. While the transport strategy of 2003 had too many professional wishes without realistic funds the EKFS transport strategy made in 2008 was quite well fitted to the operational program funds, which meant that much more projects could be completed and the same is expected from NKS. One of the greatest expectations from the NKS was the preparation of a multimodal model instead of a sectorial one. Although the model exist and the many facts were described, but the database is not usable for the audience at the moment as there is no updated data storage background for helping the future monitoring process. All in all, the over 5 thousand pages of Transport Policy background documents made a firm basis for the future projects. After the elaboration of the documents, a 3 month long public discussion period was held with the interested local authorities (local governments, municipalities) and commercial, civil associations and virtually any interested citizen could download the public documents and make remarks on it, which had to be answered properly. In total more than 1700 remarks and comments had to be answered by the NKS Consortium members. In certain cases the respective parts of the NKS was modified accordingly.

Following the public consultation, a revised version, under the name of National Infrastructure Development Strategy, was approved by the Government Decree No 1486/2014 [22] and

Fig. 5 Target system of the National Transport Strategy [1] pp. 42



submitted to the European Commission, which was finally approved on 15th February 2015. This extremely important step made it possible to prepare projects with EU co-finance for the current EU programming period (2014–2020) within the framework of the Integrated Transport Development Operative Program (Intergrált Közlekedésfejlesztési Operatív Program, IKOP) within the “Széchenyi 2020” Development Plan framework.

IKOP’s main focus is on the railway related developments on the TEN-T network in accordance with the EU requirement to provide equal access option by providing GSM-R and ETCS 2 systems for efficient train operation on the renewed and electrified main lines without bottlenecks. The missing sections of the motorway system to some border points are also financed from the Connecting Europe Facility (CEF) funds. The barrier-free accessibility provision is a must for any new developments taking into account the respective Technical Specifications for Interoperability (TSI) according to the EU rules. In many important regional centers of Hungary till 2020 a number of intermodal hubs are being developed with EU co-finance in order to ensure a seamless multimodal travel experience. In accordance with the outcomes of Table 3, new wheelchair accessible electric multiple train sets (EMUs) are being tendered for the renewed suburban lines in order to improve passenger service quality.

4 Coordination between different levels of plans

Since 2011 counties (NUTS 3) became main areas of regional development in Hungary instead of regions (NUTS 2) [23]. The new National Development and Regional Development Concept (in Hungarian: Országos Területfejlesztési Konceptió, OTFK) [24] has been approved by the Parliamentary Resolution 1/2014. It identifies the short and mid-term development aim of spatial planning in Hungary. Besides the national scale plans, many other more detailed transport plans were created on different levels, like the county (NUTS 3) level, the micro region (NUTS 4) level and of course on the settlement (NUTS 5) level. The cities had to prepare their Integrated City Development Strategies in order to ensure the proper use of financial resources. In addition to the country level “Master Plan” there are other special areas “Master Plans” (Budapest Metropolitan Area, lake Balaton recreation and tourism area), which include not only the exact location of the motorways and main roads/railways but also the location of secondary roads. Besides the main aims (increase connectivity, helping economic growth, reducing regional disparities, etc.) defined by Road Transport Act (Act I of 1988) [25] there are no specific planning guidance to the network planner. Planning is based on previous network planning work phases and experiences [26]. Frequently there are some locally decided land areas, which might overlap with later added new infrastructure elements, which can generate conflicts between local and

higher level interest. However, besides some locally developed, usually Municipality operated websites, since 1996 a new spatial planning online platform (TeIR) is being continuously developed with more functions. Some of these are available for the average internet user in order to provide information for the citizens, which can be extremely helpful when buying a flat or house, e.g. Of course the main users are professional planners from different administrative levels and institutions. In 2007 the Government released a new “Handbook for creating strategies” in order to ensure the similar structure in the different areas of governance, of which the transport sector is one segment only.

The most important steps towards a sustainable transport policy in Hungary (like in many other countries) would require the recognition of the important connection between the land-use planning and the sector approached transport policy. In the recent transport policy document (NKS), the interaction between land-use planning and transport development it is just still partly based on different land use scenarios, unlike in Sweden [27] where they have a long tradition in this area. For the time being, Strategic Environmental Impact Assessment (Directive 2001/42/EC) [16] is forming part of the recent (after 2007) plans only. However, in the past plans of Budapest transport development (S-Bahn Concept, 2007; Budapest Transport System Development Plan – BKRFT, 2009), only one version of the future concentration of living and working zones was examined as a base for different network proposals. Traffic load estimations for the future face a huge risk of over-estimating the future transport demand due to the experience of significant traffic variations in the past years. These traffic demands, however, have decreased in the recent years of economic crisis and high fuel prices. Hence there is modest traffic and GDP growth expectation assumed for the next periods with better fitting scenarios.

4.1 The new transport policy paradigm of Budapest

In larger metropolitan areas, more exactly in the Budapest Metropolitan Area the need for a new paradigm in transport planning and policy has met with political support from 2010. The implementation of the new city management model with a specialized state owned company, BKK Centre for Budapest Transport has brought a new kind of approach for the metropolitan transport policy [28]. BKK has similar role and tasks like Transport for London (TfL). It is the public body that coordinates and manages all transport related activities. Before 2010 a fragmented structure existed: several different public companies were dealing with these tasks under the supervision of metropolitan government and the district (local) governments. By 2011 BKK became the full-right body, which is responsible for all kinds of transport related issues. BKK has three main service providers. Its main organizational structure can be seen in the table below (Fig. 6).

Table 3 Evaluation of the interventions according to social utility and feasibility [1] pp. 57

	Feasible with high risk	Limited feasibility	Feasible	Safely feasible
Outstanding utility	Increase of the number reliably navigable days	Liquidation of bottlenecks on railway TEN-T corridor; Development of railway transit capacity in Budapest; Construction of the missing comprehensive TEN-T public road network elements;	Demand-based planning of public transport services; Low cost development of railway services in the urban and suburban traffic; Development of mode changing (P&R, B&R) systems; Development of urban freight transport; Traffic safety interventions in Budapest; Traffic safety developments of the railway network; Railway hub and station development; Traffic safety developments on existing road junctions; Building of missing public road TEN-T network elements; Development of bypass roads;	Implementation of management tools with special regard to renovation of existing infrastructure; Improvement of travel conditions by facilitating connections in suburban traffic; Reasonable development of bus transport in suburban areas without railway connection; Traffic safety interventions in big cities; Program for replacement railway passenger transport vehicles and buses;
High utility	Building missing sections of M0 ring road (around Budapest)	Liquidation of bottlenecks on national railway network; Development of the existing motorway and main road network; Railway development of suburban traffic of big cities; Development of intermodal infrastructure; Integrated development of rail-guided systems; Building of missing motorway links to country capitals; Completion of missing transversal public road elements; Development of the missing links of the comprehensive European, national Cycling network; Development of ports in and outside the IWW's TEN-T network in order to establish the missing supporting infrastructure; TSI-based development of the core TEN-T network railway elements;	Liquidation of bottlenecks on the regional railway network; Modernization of main railway lines; Providing the expected parameters for the TEN-T IWW, river Danube; Development of passenger ports infrastructure and provision of better access from their neighboring area, development of passenger transport ships; Development of aerial TEN-T core network; Significant development of low traffic railway lines Preparation can be supported	
Medium utility			TSI-based development of TEN-T railway trunk network elements; Development of international railways in high traffic relations;	
Low utility	Development of competitive regional airports Future possibilities			Elimination of bottlenecks of low traffic railway lines, development of services; Implementation can be supported
Legend				To be implemented primarily

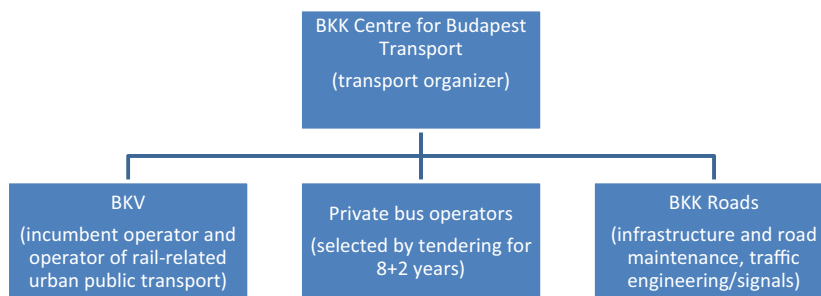


Fig. 6 Organizational structure of BKK Centre for Budapest Transport

Above all of this chart the Municipality of Budapest has contracted its own public body for public service and service ordering tasks for a period of 15 years. According to the basic concept, all of the transport related incomes (e.g. public transport ticket revenues, parking fees) and expenditures (public transport service & road and all kind of infrastructure development and finance), should be collected and re-distributed by BKK. Due to the current local political structure in Budapest there are 23 different local districts with 23 (local district) mayors and with its elected local representatives. The distribution of different public service tasks is a continuous political battlefield. In the case of the transport sector, the income generated by parking in local streets (contrary to the original concept) remains the income of the district and only the fees collected from parking on the main roads go to the budget of Metropolitan Municipality and towards BKK. Apart from this important weakness, the planning and the activities of the general transport authority can be regarded as a good practice. Also the unified all-inclusive transport planning approach is a big advantage for this new system. However, there is still a big unresolved question regarding the lack of a coordinated metropolitan area planning issue. There are no formal urban-

suburban coordination forums or committees. The local municipalities (LAU 2 – Local Administrative Unit level 2, formerly NUTS level 5) have too much right (without the need of coordination) when deciding about the categorisation of different areas. Hence, there was a big chance for urban sprawl from the end of communism (1989). About 300 thousand people (15% of the population of 1990) moved out of Budapest and an additional 200 thousand residents arrived from the rest of the country to the suburban areas. Many new greenfield settlement parts have been built without the sufficient provision of the transport infrastructure. The congested narrow roads and later the congested motorways (where available) have become an everyday problem. Due to the saturation point of the road traffic and the high petrol prices, together with the beginning of the global financial crises, the suburbanisation process has reversed by 2008. At the same time city rehabilitation projects have started together with the pedestrianisation of some run down inner areas together with the enhancing of cyclist infrastructure as well as the priority for public transport vehicles at intersections and designated lanes. The role of BKK in these current developments is crucial as it works together with relevant authorities



Fig. 7 Correlation between the future vision and key strategic objectives. Source: [2] BMT, 2014. pp. 24

within Budapest, it offers opinion on new plans (also for the suburban area with an integrated metropolitan approach) and prepares its own plans (by ordering a new metropolitan travel survey) and projects for the next EU financial period. Nevertheless, recent changes in BKK's structure at the end of 2014 have taken out the control over managing development projects and only the preparation tasks and traffic organization tasks remained in their area of responsibility. In the long run, it would certainly be desirable to somehow find the way for the cooperation in the metropolitan area, which would be exceptionally important for offering efficient transport services for existing travel demand.

4.2 Insight for the first sustainable urban mobility plan (SUMP) in Hungary

The capital city of Hungary, Budapest with over 1.75 million inhabitants and with nearly 2.6 million including the direct suburban commuting area has recently elaborated the first SUMP in Hungary in order to review the former development plans taking into account the effects of the crisis and its implications on other plans. Since this sub-section is not about city transport policy only the most important facts are presented here.

The elaboration of the new SUMP, called Balázs Mór Plan (BMT – named after a famous Hungarian transport engineer of the nineteenth Century) [2] took place with the involvement of the experts from BKK Centre for Budapest Transport, particularly from the transport strategy division. The 'state of the art' approach relied on the best national and international experiences. Based on the problem tree and solution tree as well as SWOT analysis 9 operational goals were identified complying with the SMART (Specific, Measurable, Achievable, Realistic, Timely Based) criteria as follows [2]:

- implementation of livable public spaces,
- integrated network development,
- interoperable systems and intermodal connections,
- environmentally friendly technologies,
- comfortable, passenger friendly vehicles,
- active and conscious awareness raising,
- improved service quality,
- consistent regulation, and
- regional cooperation.

There are 56 measures to serve operational purposes [29]. One of the main aims with BMT is to help applications for EU funds, therefore it was prepared in line with EU requirements, and thus it includes a communication plan with public discussion events and online answer options as well as strategic environment review and an ex-ante evaluation.

BMT's future vision and general goals are the same of Budapest 2030 Urban Development Concept, which are supported by the transport development and operation tools (see Fig. 7).

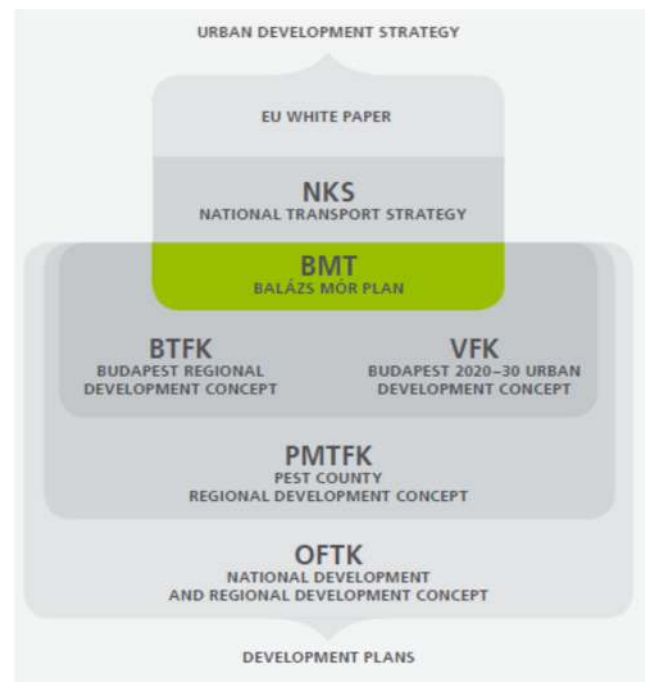


Fig. 8 Connections of BMT to other strategic development plans [2] pp. 23

In Fig. 8 can be clearly seen its connection to the other development plans, concepts and strategies.

5 Conclusions

As we could see, transport policy is a quite complex issue with many connections to different areas like politics, economics, engineering, land use planning, regional and urban development, environmental issues and even sociology among many others. Most of the available transport network is a consequence of historical developments of the given area and there are limited funds to change it rapidly. Due to the shortage of financial resources, today's planning needs new paradigm from transport policy makers from all round the world. The need for a sustainable transport system, which assumes a sustainable economy as well is a huge challenge for policy makers. As one could see the often short-term, politically motivated decisions can lead to interventions, which can have a long-term negative effect on a certain region's economic competitiveness. Like in many other cases of emerging countries, in the case of Hungary the constant pressure for stable funding requires strong lobbying activity against other economic sectors for fund raising from the Central Government's budget. In Hungary, which is a historically centralized country, this issue is even more significant when compared to other less centralized Central European countries like Czech Republic or Poland. Concerning transport system operation, the centralized role of public service obligations (PSO), the picture is not so negative as one can see the disrupted

domestic train or bus services across regional borders in the above mentioned countries. As it was mentioned in Part 3.2. Hungary offers huge social discounts for the less favorable social groups and generally to the senior citizens. This fact combined with the relative good territorial and service offer the countrywide public transport network largely contributes to a better provision of accessibility to anyone thus it reduces the growth of car ownership rate and maintains a good European modal split level, which could serve as an example to many car dependent countries.

In order to avoid parallel policy making (especially when making policies for different areas) and minimize the economic and social cost of transport, we need a coordinated, multimodal approach, which includes the necessary organizations and public private bodies (with secure and sustainable financial background) with exact tasks and responsibility on all territorial levels. The case of Hungary, a Central European country can be useful for other countries to know about the good and bad practices, but in any other cases the local characteristics must be taken into account when implementing any external examples.

Open Access This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

References

- National Transport Strategy (NTS/NKS) (2013) KKK (Hungarian transport administration), Budapest
- Balázs Mór Plan - Budapest Transport Development Strategy 2014–2030 (2014) BKK Centre for Budapest Transport, Budapest, p 104. http://www.eltis.org/sites/eltis/files/case-studies/documents/bmt_en.pdf
- First Transport Act (Act XXX of 1848). <https://1000ev.hu/index.php?a=3&id=5298>
- Erdősi F (1986) The role of the local interests in construction of the regional railway lines of the great Hungarian plain [a területi érdek szerepe az Alföld vasúti mellékvonal-hálózatának kialakításában]. In *Alföldi tanulmányok, Békéscsaba* 10:187–208 (in Hungarian)
- Erdősi F (2001) Transport of Europe and the regional development [Európa közlekedése és a regionális fejlődés] 640 p. Dialog Campus, Budapest-Pécs (in Hungarian)
- Udvarhelyi D (1995) Railway Transport, Economy and Society Policy of Hungary from 1876 till 1900 [Magyarország gazdaság – társadalom – vasútpolitikája 1876-tól a századfordulóig]. In *Magyar Vasúttörténet* (Kovács, L. ed.) pp. 7–41. Vol. 2. Közlekedési Dokumentációs Vállalat, Budapest. (in Hungarian).
- Majdan J (2001) Modernisation – railway – society – studies about the impacts of railway constructions in the 19th and 20th centuries [Modernizáció – Vasút – Társadalom, Tanulmányok a vasútépítések hatásáról a XIX.-XX. században], ISZE – Integrál Egyetemi Kiadó, Pécs, 2001. (in Hungarian).
- Osztér V (2012) Railway, economy and society – in interaction. [Vasút, gazdaság és társadalom – Kölcsönhatásban]. *Indóház Extra*, 2012/1, pp. 46–49. (in Hungarian).
- Nagy T (2012) Normal gauge railway line closures in the 1970's [Normál nyomtávú vasútmegszüntetések az 1970-es években], *Indóház Extra*, 2012/1, pp. 35–41 (in Hungarian).
- Vörös A, Bocz P (2003) Calculation of the new traffic induced by the development of the road network (I.part) [A közúthálózat fejlesztése által generált, új forgalom meghatározása 1. rész], *Közlekedéstudományi Szemle*, Vol. 53, No. 8, pp. 292–304. (in Hungarian).
- Railway Acts (Act XCV of 1993, Act CLXXXIII of 2005)
- White Paper: A Strategy for Revitalising the Community's Railways (1996). COM(96)421
- Transport Policy of Hungary 2003–2015 (Parliamentary Resolution 19/2004) [19/2004. (III. 26.) OGY határozat a 2003–2015-ig szóló magyar közlekedéspolitikáról]
- White Paper: European transport policy for 2010: Time to decide (2001). COM(2001)370
- Szűcs L (2015) The past, present and future of Hungarian Transport Policies [A magyar közlekedéspolitikák múltja, jelene és jövője] – in. *Közlekedéstudományi Szemle* 2015(4):4–18 (in Hungarian)
- Directive No. 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (2001)
- New Széchenyi Plan [Új Széchenyi Terv] (2011) Hungarian Government http://www.mnvr.hu/data/cms576186/Uj_Szechenyi_Terv.pdf
- Hungarian Roads [Magyar Közút Nonprofit Zrt.] <http://www.kozut.hu>
- Sz A, Felméri B, Szőke B, Zs Z (2011) Long term plan and development program of the Hungarian National Expressway and Main Road Network [Az országos gyorsforgalmi és főúthálózat nagytávú terve és hosszú távú fejlesztési programja megalapozó vizsgálata]. *Közlekedésképzési Szemle* 61(2):1–18 (in Hungarian)
- Antal I, Gulyás A, Makula L (2003) Preparation of the new nationwide Origin-Destination Survey [Új országos közúti célforgalmi felvétel előkészítése]. *Közúti és mélyépítési szemle* 53(6):220–228 (in Hungarian)
- Köller L (2015) Hungarian National Railway Development Concept [Országos Vasútfejlesztési Konceptió], in. *Szemelvények a Közlekedésfejlesztés Magyarországon balatonföldvári konferencia előadásából* pp.:57–65 (in Hungarian)
- National Infrastructure Development Strategy (Government Decree No 1486/2014) [1486/2014. (VIII. 28.) Korm. határozat a Nemzeti Közlekedési Infrastruktúra-fejlesztési Stratégiáról]
- Szegvári P (2015) The connection between regional development and transport [Területfejlesztés, területrendezés – közlekedés kapcsolata, aktuális kérdései], in. *Szemelvények a Közlekedésfejlesztés Magyarországon balatonföldvári konferencia előadásából* pp.:17–28 (in Hungarian)
- National Development 2030 – National Development and Territorial Development Concept (NDTDC) (Parliamentary Resolution 1/2014) [1/2014. (I. 3.) OGY határozat a Nemzeti Fejlesztés 2030 – Országos Fejlesztési és Területfejlesztési Konceptióról]
- Road Transport Act (Act I of 1988)
- Rigó M (2011) Offensive centralisation in road network development [Nyomuló centralizáció a hálózatfejlesztésben]. *Közlekedésképzési Szemle* 61(4):24–41 (in Hungarian)
- Lundqvist L (2003) Land-use and travel behavior. A survey of some analysis and policy perspectives. *Special Issue Land Use and Sustainable Mobility EJTR* 3(1):299–313
- Vitézy D (2011) Transport network development strategy of Budapest [Budapest közlekedésfejlesztési stratégiája], *Európai Tükör* 2011/5, pp. 53–58. (in Hungarian).
- Fleischer T, Hajnal T, Kerényi LS (2015) Aims and coordination in transport strategy of Budapest: stories from the planning phase of Balázs Mór Plan [Célrendszer és illeszkedés Budapest közlekedésfejlesztési stratégiájában: történetek a tervezési folyamatból (a Balázs Mór-terv)], in. *Szemelvények a Közlekedésfejlesztés Magyarországon balatonföldvári konferencia előadásából* pp:44–53 (in Hungarian)