Building up a railway-based integrated public transport system in Hungary

Laszlo Kormanyos

Abstract: In order to create the competitiveness of public transport the system must be shaped that uses reasonable division of labour, absolutely considers passenger claims and so gives a viable alternative that it can be financed by the supporter of the public service. European examples show that the foundation-stone of a transport system can be the regular interval timetable based on the cooperation of other means of public transport, and optimised for the railway network. In order to assure sustainable mobility and taken its explosive growth into account it is necessary to shape a modern public transport system in Hungary.

This paper presents the main steps and measures necessary to modernise the public transport system. Its primary content however is the necessity of extending the existing complex railway timetable development, the integration of other means of public transport, and finding the optimal division of labour between them. The gradual system integration presented in the article will make it possible that public transport maintained as a public service can be attractive in Hungary.

Keywords: public transport system, regular interval timetable, sustainable mobility

1. Introduction

In Western European countries public transport has again been giving an attractive alternative in recent decades even for those using individual transport methods. In every country concerned sustainable mobility is insured by effective public transport systems exploiting on the synergies of certain different public transport means and working characteristically as public services. In public transport the different means cooperate effectively and reasonably so that costs to be spent on the transport system can be minimal and social utility can be maximal.

It means that the modernisation of the transport system, the improvement of effectiveness and the joint development of services are inevitable in Hungary too. In founding this, railway transport has a determinative role – mainly in suburban and long-distance traffic.

2. Competitive conditions of the public transport

By the end of the 20th century, individual transport has become available all around Europe but at the same time sustainable mobility has become threatened by the penetration of motorisation.

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To outline modern public transport systems that give viable alternative to individual transport and are financed as a public state service there are several conditions to fulfill:

- effective division of labour among other means of public transport
- contractor-performer relations according to public service agreement
- state takes decisive role in infrastructural development.

Beside fulfilling these necessary but not satisfactory conditions, public transport suppliers must shape an innovative and cost-efficient transport system – considering the resources available – that gives adequate service to passengers, makes this alternative more and more attractive and, finally, relieves budget resources. [1]

3. Outlining aligned public transport systems

Modern public transport systems are constructed by the following logic, with passenger claims, requests and supplier effectiveness in view (table no.1).

Table no. 1: Foundings of an aligned public transport system

| regular timetable | Unlike flexible individual transport, the user of public transport is bound to a set timetable. It helps immensely if the timetable is easily remembered, meaning the trains leave in identical periods (every 10-20-30-60-120 minutes), in the same time every hour. This schedule is the foundation of the regular interval timetable. |
| compulsive transfer | When using public transport, it will be quickly clear that scheduling direct lines everywhere is simply not possible, so there are relations where transfer is necessary. |
| Optimal transfer | To reach the optimum transfer traffic should be shaped at junctions so that transfer can be performed to the most possible direction at the same time. |
| Regular interval timetable | The public transport network can be structured as lines connecting these traffic junctions working according to regular timetables. In this way an optimal system can be shaped that helps to get from anywhere to anywhere by several transfers. This is the Regular Interval Timetable, which is also suitable to create a good modality-mix among other means of public transport (railway, bus, ships etc.). |

Western European transport systems use reasonable labour division based on rail transport. In Switzerland – for the first time on the European continent – regular interval timetable (Integrierter Taktfahrplan – ITF) got introduced in 1982. ITF is an innovative public transport system offering considerable improvement in supply and complex connection opportunities based on railway transport. [2]

4. Public transport system development possibilities in Hungary

With the operating Swiss and other European models in view, we can surely say that an ITF-based transport system using effective resource allocation and planable service levels would be a sufficient solution for Hungary too. This system will become effective with aligning the different means of public transport, integrating firstly railway then gradually other methods too. Hungary could devote its medium-term EU sources (vehicle purchase, infrastructural development) on creating an effectively working transport system. Table no. 2. shows the advantages of ITF concerning the actors of the transport sector. [3]

Table no. 2: Advantages of ITF for the actors of the transport sector

<table>
<thead>
<tr>
<th>Proprietor - State</th>
<th>Passengers</th>
<th>Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>providing quality public service</td>
<td>greater mobility</td>
<td>improving competitiveness</td>
</tr>
<tr>
<td>state takes less role (passenger numbers increasing)</td>
<td>accountability, flexibility</td>
<td>improved performance</td>
</tr>
<tr>
<td>effective use of state property</td>
<td>decrease in time of reach</td>
<td>effective resource allocation</td>
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</tbody>
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5. Steps to be taken: shaping a modern transport system

5.1 The Hungarian example in operation

In 2004, ITF was introduced for two Budapest suburban railway lines as a pilot project. Their position also made timetable integration and complex transfer system possible. Traffic has grown extensively, by 14% recently. The development has clearly shown the appealing effect of the system and pointed out that public transport definitely can be more competitive. Figure 1 shows the lines of the project including traffic junctions. [4], [5]

5.2 One step forward – extending railway integration

Based on the positive results of the pilot project, ITF needs to be extended to the whole network to optimise the Hungarian public transport system. The first step shall be the alignment of railway timetables on the railway network. From 10th December 2006 the system has been introduced on more than one-third of the Hungarian railway network.

For the lines concerned the new system has created a base rhythm, which can be supplemented by additional trains in rush hours (peak time rhythm). In addition, a complex transfer system has been put into service based on the effort that fast trains and Intercity trains should „meet” at a junction nearly at the same time so that the connecting regional trains arrive shortly before them (to minimise waiting time), and after the primary trains’ leaving, the connecting regional trains can start off too. This way transfer can be realised from anywhere to anywhere at the same time, providing the passengers the greatest mobility possible. Figure 2 presents the planned ITF network with the transfer junctions. Lines marked with dark colors already have the new timetable structure in effect.

After evaluating experiences and fine tuning the system should be extended to the full network. This will make further public transport harmonisation efforts possible. [6]
5.3 Conditions of the total integration

After the basic railway structure has been established, integrating every public transport actor in the passenger transport chain will be needed to ensure complexity. Concerning Hungary, this means the integration of the regional and long-distance bus transport. While coordinating the different transportation methods, decisions will be needed to be made concerning the issue of which method to prefer in certain cases. Working examples show that railway transport is decisive in long distance transport, while coach transport is determinative in regional scale. Naturally geographical, economical, social and other factors will decide locally the necessary modality mix. When shaping the system, primary regards included providing mobility and cost-efficiency. Total integration and competitive transport system can be realized by fulfilling the following conditions:

- reasonable labour division (excluding parallel lines),
- outlining the auxiliary structure, timetable coordination,
- standardizing tariffs, discounts,
- decision upon intermodal junctions (railway-bus).

6. Summary

In the period of the experienced transport boom in Hungary the key to keep public transport competitive and providing sustainable mobility can be the integrated public transport system. This can ensure the optimal division of labour among public transport actors, leaves room for the contractors to improve efficiency and increase quality experienced by passengers. The integration necessitates the network extension of the railway timetable structure followed by timetable-wise, later on infrastructural integration of other means of public transport.

7. References

[1] Laszlo Kormanyos, Prof. Dr. Katalin Tanczos: Conditions of a quality public railway service in Hungary, Periodica Politechnica, in progress
[4] Laszlo Kormanyos, Prof. Dr. Katalin Tanczos: Customer oriented service development methods in suburban railway traffic, focused on the Budapest Suburban Railway Development Project, Periodica Politechnica, 2006