

LOCAL RAILWAY CONNECTIONS IN THE NATIONAL TRANSPORTATION SYSTEM – PROPOSED SOLUTIONS TO MAKE THEM SIGNIFICANT FOR PASSENGER AND FREIGHT TRANSPORT

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ABSTRACT In the article, the author discusses the issue of the importance of local railway lines, which still form a significant part of the Polish rail network. The socio-economic problems of the transformation years led to the closure of many local railway lines after 1990. This deformed the transportation system of the country and in consequence the road transport are becoming dominant. The author presents the arguments for and against the liquidation of local railway lines and proposes new methodological solutions for the assessment of the importance and functioning of local railways in Poland.

Introduction

Local railway connections are still a significant part of the Polish railway network. Historically, they are inherited from the period where the railways were totally dominants (at the beginning they were even monopolistic) in land transport. The degree of economic development was mostly measured taking into account the density of the network and the transport railway points.

The concentrated railway network had positive part for economical development of the regions and the country. The creation of the railway network in Poland was flourishing from 1884 to 1914. At that time the construction of the main connections was terminated and the network was densified (Lijewski, Koziarski, 1995, p. 18). The process wasn't equal in all partitions. The political and economical factors were decisive.

From the 50's of the XX century, the railway services were being closed due to the decrease of that transport and its unprofitability. The intensive development of the road transport (particularly in the Western Europe) was observed at that time.

This phenomenon took place also in Poland. Its rate of progress was much slower though. It begun due to the existent economical system (central division of transport tasks between the transport branches) and the insufficient road transport. From the 70's of the XX century, the tendency to close the railway transport and the physical liquidation of the local railway services in Poland was observed. It was heightened particularly after the socio-political changes. The strong individual motorization development and the one of the road transport companies from one side and the deepening financial problems of the PKP (Polish State Railways) from the other side were crucial for the accelerated suspension of the railways and in many cases of physical liquidation of one part of the local services. Moreover, the closing of those services in accelerated mode in our country was parallel to the promotion of the policy of equilibrated development in the western European countries (facing the negative experience related to domination of road transport). This policy concentrated the idea of revitalization which meant the restauration of the local railway services.

The sudden closure of the local railways after the year 1990 deformed the transportation system of the country and in consequence the road transport became dominant.

The financing of the exploitation, particularly the development of local railways has never been satisfactory in our country. The major railways lines have always been modernized and invested in first place. It should be admitted that in the period of the centrally planned economics, the railways with lesser transport frequency had counted and their infrastructure was in a good state. There had been also lines, especially, in the west part of the country where neither significant renovation nor modernization had been done since the second world war.

Liquidation of local railway lines — arguments for and against

The majority of the local railways lines is inherited from the period when with no alternative of road transport, new lines had been created to cover the country with railway network and facilitate the trade exchange and develop the local communities. Together with the development of road transport, the importance of the local railways was diminishing and they gave in to the growing passenger transport. Moreover, the individual motorization progress pushed them back as well. From the beginning of 50's of the XX century, in Western Europe, the progressing closure of the freight and then passenger transport for local lines was observed. In 90's of the XX century the revitalization of local lines took place based on the UE policy of equilibrated transport development.

The situation in Poland was different. During the communism, the economics had an extensive character where the railways were dominants over the road transport in particular the individual motorization. From the 70's of the XX century till the changes of 1989, the process of closing local railways had been taking place. The phenomenon was smooth than in the countries well developed. For local lines, it was opposite after the year 1990, the period of the political and economical changes. Briefly, once the revitalization of the local railways was spreading in the Western Europe, in Poland, the process of sudden physical liquidation was occurring. The main cause is on one

side the decrease of the passenger and freight transport and on the other the development of road transport and the individual motorization on large scale. The ceasing lines were touched by that decrease significantly. PKP was bearing financial problems and it was suspending the transport for those lines gaining in that way the low maintenance costs. The thesis together with the governmental factors stayed ambiguous. From one side, there were voices and official documents about the necessity of supporting the transport policy of equilibrated transport development and from the other the necessity of cutting the railway network in Poland together with liquidation of local railways. It was considered as kind of dogma and every person opposing it, was treated as close-minded.

The followers of the liquidation of a part of local railways establish arguments (Engelhardt, 1998, p. 149):

1. The impossible come back to the level of transport from the 70's or 80's of the XX century as it is confirmed by the reports.
2. A market economy system oblige the enterprises to adapt their production potential to the scale of the operated market

In general, it is possible to approve the arguments and even it's a must but in fact they are far from being arguments for the liquidation of the local railways.

According to the author, the come back to the railways as it was in the past, with the strongly developing road transport and individual motorization today is unreal. It's particularly in relation to the freight transport. For the passenger transport, the development of those local lines mostly depends on the priorities of the transport policy. Disposing of appropriate tools like the ticket price, it's manageable to create demands for those services.

Taking into consideration the second argument, it should be pointed out that we need to be vigilant in relation to the liquidation of the railway infrastructure. In majority, it's about the irreversible process. Moreover, regarding the local railways, the argument about the high costs of infrastructure maintenance is exaggerated. The major part of the infrastructure costs for those lines is historical which means that they were borne at the same time when they were created. The technical and trade velocity for those lines and rather simple machines controlling the railways traffic, the cost of exploitation are considerably lower than analogical costs for the line basic system with major railway transport. Potential physical liquidation of the given line is practically the cause of irreversible abandon of the railways services for regions. The social and economic costs related to the liquidation of a line are higher than the advantages linked to the decrease of costs of railway enterprise. From microeconomic point of view, it's obvious that an enterprise is not influenced by the social or economic criteria and according to the market economy it cannot be forced to it. The role of a country should be considered in first place in relation to those branches which functioning is essential for economy and society. It was proved that a railway enterprise which is not controlled by a country while constructing its railway network, will be tending to limit it. The liquidation concerns a line with low transport frequency, mainly the local lines. A part from the costs directly related to the liquidated lines, the additional advantage for the enterprise is a decrease of maintenance facilities costs linked to the maintenance of dense railway network. The liquidation of the railway line causes changes in transportation system of the region operated by it. The control of a country over the process of closing and liquidation of railways lines with low transport frequency is indispensable. In this context, the macro and micro economic estimation of functioning of the line with low transport frequency is essential.

New solutions for the operation of local railway lines in Poland

According to the author, the above considerations about the functioning of the local railway lines in Poland come up with results :

- a) the present way of functioning of the railway lines as an element of country railway network governed by national infrastructure manager doesn't provide stable conditions for their functioning and development;
- b) without new system solutions in this area, the suspension of the transport and the local liquidation of local railway lines in Poland will take place.

New solutions should be elaborated to make the local railway lines function in Poland. The basic idea of their development is regionalization. It gives the right to decide about their functioning to the self-governmental authorities which means restauration of those lines for the local communities. The local lines are complementary to the major lines. They provide a better access to the network and transport points to ensure good regional transport service. They realize the local transport necessities. However, it's not that crucial because of the development of road transport.

The creation of suitable law and organizational requirements to make the self-governmental authorities take care of the case and constitute a condition for restoration of those lines to serve the local communities. In that way, the premises of the policy of equilibrated development will be realized. It doesn't necessarily mean that the railway lines will become a property of self- governmental authorities. The question is that they should decide about the maintenance of the railway lines for the local communities. It's important to define the role for every local line. It doesn't mean that the functions will be the same as they were in XIX and at the beginning of XX century. They used to serve as freight railway transport. The passenger railway transport was only a side-effect of the existence of the first one. The development of the road transport made the freight railway transport related to local railway lines loose its importance. The functions and the aims of the local railway lines should be redefined.

It should be underlined that there is no transparent solution to make the local railway lines function. The regional conditions are important. In every case, the start point is defining the optimal functioning of a local line and formulating the detailed conditions. For every single line the solutions can differ.

The entry point for considerations about the solutions concerning the exploitation of local railway lines is the estimation of profitability of all railways lines with low transport frequency. It is important for the railway enterprise (today the infrastructure manager) to see if the railway line maintenance and exploitation costs won't be higher than the revenues. This problem has already been known in the past. From the 60's of the XX century, there were discussions about the economic effectiveness of the lines with low transport frequency to replace them by the road transport.¹ The situation is clear for the railway enterprise (the infrastructure manager). If the total revenues related to exploitation of railway lines are higher than the total costs of their exploitation, it should be maintained if reverse it should be suspended. The good practice of costs and revenues estimation should take place. It needs to be underlined that both revenues and costs shouldn't be restrained only for the estimated line but it should englobe the whole process transport (Engelhardt, Wardacki, Zalewski, 1995, p. 260). In case of suspending of the railway transport and the liquidation of a local railway line, the whole transportation system of the region and the country is impacted in consequence. In this case, beside the microeconomic point of view for railway enterprise (infrastructure manager), the economic balance should be done by central government responsible for the transportation system

¹ The professor Czesław Michalski studied the case. See Michalski (1966).

of the country. The total costs of the railway transport should be compared together with total costs of road transport after the line closing.² The comparison of those parameters would give an answer if the maintenance of the railway transport lines (Engelhardt, 2014, p. 151) is still profitable from macroeconomic point of view (society and national economics). As it has already been mentioned above, the key of success is the appropriate practice applied to estimate the profitability of the railway lines with low transport frequency.

In the 90's of the XX century, many decisions taken about the suspension of railway lines with low transport frequency were doubtful from the factual point of view.³ The entry point to make the local railway lines work is the appropriate practice of profitability estimation of railway lines with low transport frequency first from microeconomic point of view and then from macroeconomic one. The group of experts of railway transport economics should accept the already existing practice or create a new one and apply it to use by infrastructure manager (PKP PLK Inc – Polish Railway Lines).⁴ The applied practice would constitute the basis of the profitability estimation for all railway transport lines used by the national infrastructure manager. For major lines of national importance, the estimation isn't practically important.

Would it be possible to impose the defined solutions about the system of economic balance from microeconomic point of view to the enterprise being a commercial law company with guaranteed activity independence? The answer is affirmative. As it has already been presented, the infrastructure of the railway transport is one of the key elements of the transportation system and at the same time the functioning of the economy and society. The government wouldn't control every activity of the enterprise⁵ but only the situations where the decisions of the company management influence on the transportation system like (Engelhardt, 2014, p. 251):

- closing of the railway lines and their physical liquidation,
- closing of the stations and magazines,
- stopping the railway siding operations,
- the price amount of transport service.⁶

In those situations, the country control of the railway company activities is indispensable. It could be done by elaboration of the appropriate practice of the profitability estimation of the railway lines with low transport frequency and its application by the infrastructure manager.

In the case of PLK (Polish Railway Lines) the situation is simpler as there is no privatization plans of that company and it will remain the property of the State Treasury. The country as the owner has the full right to manage it. The application of the practice of profitability estimation for PLK would influence the decisions according

² Taking into consideration the costs borne by the road transporters, secondary costs, external costs and additional ones related to the maintenance of the roads.

³ Among others it was P. Siedlecki who studied the case. In his PhD, he proved that the practices of profitability estimation of railway lines are economically inappropriate and the results of calculations obtained cannot serve for rational decisions from microeconomic point of view concerning the target of exploitation of railway lines with low transport frequency. At the same time, the author presented the proposition of rentability estimation practice of the railway lines with low transport frequency which meet the correct factual conditions. The regularity of the practice hasn't been contested from factual point of view. See Siedlecki (2002).

⁴ Undoubtedly, the division of integrated railway enterprise makes the evaluation of the profitability estimation of the railway lines as a whole process of railway transport difficult but from point of view of infrastructure manager with elaboration of factual appropriate practice it's possible.

⁵ There in no come back to the system of planned economy.

⁶ Above all in passenger transport.

to the principles of economic balance taking into consideration the particular character of railway company. The infrastructure manager will be obliged to make the calculations based on defined practice and not his own methods.

The practice of profitability estimation of the railway lines with low transport frequency from macroeconomic point of view is a case apart. To ensure the objective and correct balance, it should be done by different institution than the infrastructure manager. The last one as the commercial subject will be always influenced by the microeconomic effectiveness. The author considers that the Railway Transport Department is the best subject for macroeconomic estimation. This institution is, amongst other functions, a regulator of railway market in Poland. It has an influence on the form of railway market in order to follow the principles of regulated competition and development desired by the economy and the society. According to the accepted practice, the estimation of profitability of railway lines from macroeconomic point of view would be done by the department itself or by the scientific institutions related (OBET – Institute of Transport Economics, IK – Railway Institute, academies and others). The results would be discussed by a chosen department if the further exploitation of the railway lines is effective from economic and social point of view.

For now, there is no legal law about the liquidation of railway line. The decision belongs to the infrastructure manager. The situation is worse than in the past. In the previous law about the railway transport (Ustawa..., 2003), there was the article 9 which outlined the principles and procedures of the liquidation of a railway line. The council of ministers or a minister of transport took the final decision about it. In the process of novelization, the article 9 was revoked. According to the author, the infrastructure manager has presently too big influence on the liquidation of a railway line because he decides about the physical system of railway network. With this license, a company slowly tends to limitation of the network at the expense of the local railway lines. From one side, it results from the objective causes⁷ but also from the intentional actions of the infrastructure manager who is not interested in maintaining the dense railway network because it's generating costs related to employment of groups of employees taking care of the railway transport maintenance and controlling the railway traffic (exploitation sections). The liquidation of a part of local lines permits automatically to decrease the number of sections which means the jobs losses. It is explained by the lower maintenance costs of the lines. The loss of a part of local lines on the major railway lines would be compensated by the lower maintenance costs. The best solution established for the infrastructure manager would be the possession of major railway lines with high frequency transport. However, this solution excludes the favorable functioning of the transportation system of the country. It's indispensable then to reduce the influence of the infrastructure manager on the functioning of the railway network by novelization of the legal law about the railway transport. The information about the governmental control over the process should be inserted.

The maintenance and exploitation costs of the railway lines with low transport frequency are fundamentals. Even if the cost balance presents the real maintenance costs, they are still high enough for the part of the railway lines (the ones with very low transport). The technical standards should be met :

- the machines controlling the railway traffic and communication,
- principles of train traffic operation,
- specifications of railway track,
- technical specifications of a rolling stock in use.

⁷ The suspension of the railway transport of a part of local lines was related to their deplorable technical condition. No funds disposable for their renovation was crucial to decide about the liquidation of the local lines for security.

As part of policy of equilibrated transport development, the simplification of principles of train traffic operation on the lines with low transport frequency was proposed in European railways at the end of 80's together with the ideas of revitalization of local railway lines where the transport was suspended. With the reduction of the costs related to train traffic operation, the new solutions are needed. In Poland, there were also attempts of applying the train traffic operation systems for the lines with low transport frequency. However, the reduction of costs was primordial as the financial situation of PKP was poor in the 90's of the XX century. In that period, remote control lines were opened – Korzybie–Szczecinek and Ulikowo–Kalisz Pomorski. The accepted technical solutions were different. They both used the radio train traffic operation (Dyduch, Kornaszewski, 2003, p. 315).

In the railway sector, the LC-TCS⁸ project was launched together with ECTS system as part of UIC. It's the traffic operation system for the lines with low transport frequency compatible with ECTS. It has been only a project till now. There are voices about issuing directives concerning the railway lines interoperation. On the basis of the project, the European Union intends to deliver documents and a directive related to the lines with low transport frequency. For now, only the assumptions could be done what regulations that directive will contain. There would be, above all, the simplifications of principles concerning the railway traffic control machines and radio related to the train traffic operation. The exigences about the technical specifications of railway track (for that category of railway lines) and of rolling stock (in use also for major railway lines) wouldn't drag down. The directive would aim rather at the reduction of the part of the costs of the local railway lines and at the same time preserving them as an integral part of the national railway network (railway system) (Dyduch, Kornaszewski, 2003, p. 326).

The above considerations englobe another question. It would be possible to drop the maintenance costs of local lines. The part of the local railway lines could be put aside the railway system. It would give the possibility to lower the technical specifications and at the same time the costs of exploitation of a local line.⁹ The railway transport would be still achievable on the given line. The particular lines would be attached to defined categories. It would explicitly indicate the specifications. The register of those lines could be done for example by UTK (Department of Railway Transport). The above proposition is only outlined by the author and constitute the starting point for further discussion.

Conclusions

According to the author, the general model of the profitability estimation of the railway lines with low transport frequency is outlined as below:

1. The infrastructure manager would control the level of profitability of the qualified railway lines with low profitability as per the elaborated practice of profitability estimation.
2. From macroeconomic point of view, a line for which the revenues wouldn't cover the maintenance costs, would be reported to the Department of Railway Transport. After the first analysis of the correctness of the calculations previously done by the manager, the department (itself or transferred to the scientific institute) would make their own calculations related to the profitability estimation of the given line within the macroeconomics.

⁸ LC-TCS – Low Cost-Train Control System.

⁹ For the local railway lines with technical low – velocity, the reduction of standards isn't linked to the reduction of the security level and it should be ensured.

3. In the situation when further exploitation of the line is approved within macroeconomics, the difference between the costs and the revenues would be covered by the manager from the State Treasury, self-government, Railway Funds or any specially created Funds. The profitability of the given railway line should be periodically estimated and the manager would be encouraged to put up the profitability by proposing different activities.
4. The case where the balance done from macroeconomic point of view shows that further exploitation of the line is unprofitable, it wouldn't be liquidated automatically. At first, the attempts of reduction of the technical specifications will be done. Then the research of a subject, which would use a railway transport line, would take place (exclusion from the railway system).
5. After the analysis of all the possible ways to make the line operated, first for occasional railway transport (during the vacation, touristic purpose) or other way (as museum object or as hobby – the trolley ride),¹⁰ if it's still not operating, the decision of liquidation would be taken.

The proposed principles are understood as suppositions and the author treat them as starting point to further consideration about the project. The liquidation of the estate is always easier than its future reconstruction. This attitude should be taken into consideration by every institution facing any decision about the local railway transport. If it's only possible and legitimized (from macroeconomic point of view), the right of functioning should be granted to a single local railway line. It would be advantageous for the regional economy and community and for the whole country.

References

- Dyduch, J., Kornaszewski, M. (2003). *Systemy sterowania ruchem kolejowym*. Radom: Wydawnictwo Politechniki Radomskiej.
- Engelhardt, J. (1998). *Transport kolejowy w Polsce w warunkach transformacji gospodarki*. Warszawa: Kolejowa Oficyna Wydawnicza.
- Engelhardt, J. (2014). *Zasady analizy i oceny działalności gospodarczej przedsiębiorstw kolejowych*. Warszawa: CeDeWu.
- Engelhardt, J., Wardacki, W., Zalewski, P. (1995). *Transport kolejowy – organizacja, gospodarowanie, zarządzanie*. Warszawa: Kolejowa Oficyna Wydawnicza.
- Lijewski, T., Koziarski, S. (1995). *Rozwój sieci kolejowej w Polsce*. Warszawa: Kolejowa Oficyna Wydawnicza.
- Michalski, C. (1966). *Rachunek ekonomiczny w koordynacji przewozów*. Warszawa: Wydawnictwo Komunikacji i Łączności.
- Propozycje zmian legislacyjnych w zakresie transportu kolejowego w celu bardziej optymalnego zagospodarowania istniejącej infrastruktury szynowej na cele transportowe, rekreacyjne, turystyczne i muzealne* (2005). Kwidzyn–Bydgoszcz–Piaseczno: Ogólnopolskie Stowarzyszenie na rzecz Kolei Lokalnych w Bydgoszczy, Ogólnopolskie Stowarzyszenie Operatorów Kolei Wąskotorowych w Piasecznie, KOLPIO.
- Siedlecki, P. (2002). *Metodyka oceny rentowności linii o małym natężeniu przewozów*. Praca doktorska, maszynopis. Szczecin: Wydział Zarządzania i Ekonomiki Usług, Uniwersytet Szczeciński.
- Ustawa z 28 marca 2003 r. o transporcie kolejowym. Dz.U. of 2003, no. 86, item 786 z późn. zm.

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¹⁰ The propositions of law changes that would give the possibility to simplify the procedures to make the already closed railway lines operated for transportation purposes and others. They are contained in the project prepared by the Polish Association for Local Railways in Bydgoszcz, Polish Association of narrow-gauge operators in Piaseczno and KOLPIO. See *Propozycje...* (2005).