A REVIEW OF PUBLIC MEASURES FOR SUPPORTING THE DEVELOPMENT OF RAIL-ROAD INTERMODAL FREIGHT TRANSPORT IN ROMANIA

Alexandra TUDORICA [a*], Cristian Silviu BANACU [b]

[a] The Bucharest University of Economic Studies, Romania
[b] The Bucharest University of Economic Studies, Romania

ABSTRACT
The promotion of intermodal freight transport represents one of the key objectives of European transport (infrastructure) policies, as an answer to the unprecedented social, economic and environmental challenges, which must be mitigated. The advantages and the use of capacity reserves of each mode involved in the chain compose the benefits of intermodal freight transport (Floden, 2007 in Mathisen & Hanssen, 2014).
This paper aims at identifying the public measures for supporting the development of rail-road intermodal freight transport, and in particular of intermodal rail-road terminals, and their application in Romania.

KEYWORDS: *intermodal, policy, rail-road terminal, Romania, transport.*

1. INTRODUCTION

In the globalization context, the high demand for freight transport resulted in an increased use of road as a mode of transport due to some of its particular advantages, such as (among others) flexibility, speed, relatively low costs for building the road transport infrastructure. Moreover, a particularity of the road sector is the fact that the share of the overall cost of transport in the price of the goods is lower when compared with other modes of transport. This situation has occurred especially because the road operations do not include the external costs with the accidents, accident prevention, pollution, GHG, noise etc. (Behrends, 2012; Mortimer & Robinson, 2004 in Kordnejad, 2014). On the other hand, the intensive use of road transport for freight distribution led to a higher level of pollution, traffic congestion, accidents. In order to mitigate these negative effects, the necessity of focusing on the development of more environmental-friendly modes of transport, such as rail/maritime/inland waterways came into light. In the White Paper (2011) the goals of (i) a 60% reduction by 2050 of the carbon emissions generated by the transport sector (when compared with the levels measured in 1990) and (ii) of a modal shift from road to rail or waterborne transport for freight transport over 300 km, with 30% by 2030, and more than 50% by 2050, are promoted. Moreover, the intermodal connection of rail transport with other modes of transport is desired (White Paper 2011).

2. THE PARTICULARITIES OF INTERMODAL TRANSPORT SYSTEM

Being considered as a particular case of the multimodal transport, the intermodal transport has become a priority especially promoted by the European transport (infrastructure) policies, due to its advantages. The intermodal transport is defined as "the combination of at least two modes of transport in a single transport chain, without a change of container for goods, with most of the route

* Corresponding author. E-mail address: alexandratudorica@yahoo.com

travelled by rail, inland waterway and ocean-going vessel and with the shortest possible initial and final journeys by road" (Macharis & Bontekoning, 2004). The benefits resulting from the promotion of intermodal freight transport are derived both from the synergy of advantages, as well as from the utilization of the capacities reserves of each mode of transport involved, achieving so a more efficient transport system (Dragu, 2009; Floden, 2007 in Mathisen & Hanssen, 2014). Moreover, the intermodal transport presents economic advantages, obtain through the large quantities of goods which can be loaded in the same transport, through the cost reduction with the packaging (Dragu, 2009; Jennings & Holcomb, 1996 in Demir et al., 2016). This is the result of cargo containerization. From environmental perspective, the intermodal transport is less pollutant and less energy-intensive when compared with road transport, and when assessing it from social perspective, it represents a safer transport mode (low(er) number of accidents) (Dragu, 2009; Mihailescu, 2011; Woodburn et al., 2007 in Hanssen et al., 2012).

In spite of all these positive effects, the peace of its development was not at the expected speed/intensity promoted in the transport policies (Hanssen et al., 2012). Along the time, a series of obstacles such as the lack of a well-established transport infrastructure, on all modes, the lack of interconnection among these transport systems, the lack of the interoperability and different legislations intervened (COM, 1997).

Next to the advancement and increase of the intermodal transport network per-se, the development of intermodal terminals is equally important, as the transfer of freight load from one mode of transport to another is operated in the intermodal terminals, which can be maritime ports, inland waterways ports, dry ports, rail-road terminals. This affirmation holds ground based on the provisions of the (EU) Regulation no. 1315/2013 aiming at the development of Trans-European Transport Network (TEN-T), on all modes of transport (therefore, having a multimodal approach), including the (rail-road) intermodal terminals /multimodal transport chains (Art. 50 of (EU) Regulation no. 1315/2013).

Even though there are multiple intermodal transport systems, according to the transport modes integrated in the intermodal node, the focus of the present article is on the *rail-road intermodal freight transport, including the rail-road intermodal terminal development*. This selection was based on the following reasons:

- The high use of road transport and therefore the increased potential of achieving the goal of the policies focusing on the modal shift to more environmental-friendly transport modes, in this case – the rail mode;
- As noted emphasized by Santos et al. (2015), "the lack of space and congestion at seaport areas increases the relevance of inland intermodal terminals in the freight transport system in providing reliable connections and stimulating competition for distant hinterlands";
- Taking into account that rail and barge services are considered as the "backbone of intermodal freight transport chains" (de Langen et al., 2017), being capable of accommodating higher freight volumes over long distances, with lower societal and environmental costs, rail was selected.

Moreover, for the purpose of the present article, the *containerized* freight transport is of interest.

3. RESEARCH METHODOLOGY

The present paper aims at identifying the public measures for supporting the development of rail-road intermodal freight transport, and in particular of intermodal rail-road terminals, and their application in Romania. Therefore, two research questions were formulated:

(a) "Which are the public measures to support the development of rail-road intermodal freight transport?", and
(b) "Which of these measures are applied/can be found in Romania?".

In order to determine the public measures promoting the development of rail-road intermodal freight transport, a desk research was conducted. Keywords such as "intermodal rail-road", "terminal", "policy", "transport" were used when searching relevant literature in Science Direct database. It was important to draw the focus on the characteristics of both the railway and the road transport sectors, as well. In what concerns the analysis regarding the application of these measures in Romania, the approach was based on the desk research and on certifying the findings, via interviews with representatives of the National Railway Company "CFR"-S.A. (CFR).

4. A REVIEW OF THE PUBLIC MEASURES FOR SUPPORTING THE RAIL-ROAD INTERMODAL FREIGHT TRANSPORT

If it were to be summarized, the main elements promoted in the EU policies and adopted/transposed in the legislation of the EU Member States) focusing on the development of rail-road intermodal containerized freight transport are:

- The realization of Trans-European Transport Network (TEN-T), including a multimodal and terminals networks creation, of reference being the (EU) Regulation no. 1315/2013;
- The achievement of open transport market and its liberalization, "facilitation of border crossing operations of railway undertakings, interoperability of the railway systems, access based on equitable conditions to the infrastructure in Member States" (Palsaitis, 2006); for the railway sector, the adoption of the 4th Railway Package plays an important role in this sense;
- Specific support, such as financing instruments for intermodal terminals or handling equipment development/upgrading, research projects (focused even on wagon design);
- Internalizing the external costs via a pricing policy aiming at covering the infrastructure, social and environmental costs to increase transport demand, integrating the" user pays" or "polluter pays" principle (Macharis & Pekin, 2009; Palsaitis, 2006; Tsamboulas et al., 2007).

On national levels, some other strategies for supporting the advancement of rail-road intermodal freight transport has been identified:

- Subventions for the intermodal operators, such it is the case of Belgium, or the overall operations;
- "Adopting a system perspective when optimizing the location of inland terminals" (Santos et al., 2015);
- "time-windows" to be used by the freight transport companies for movement, via e-logistics solutions;
- Increasing the commercial speed of intermodal trains, by giving them the same statute as the passenger trains (Crisalli et al., 2013; Macharis & Pekin, 2009; Mészáros, 2012; Santos et al., 2015).

However, as stated by Macharis et al. (2009), all these initiatives would be "meaningless in the absence of infrastructure".

5. THE STATUS OF RAIL-ROAD INTERMODAL FREIGHT TRANSPORT IN ROMANIA.

5.1 A brief overview of the rail-road intermodal freight trasnport context in Romania

It is acknowledged the fact that before 1989, the rail-road intermodal freight transport was very well developed, no matter if referring to a network of intermodal terminals or to the ownership of containers for internal traffic flows (CFR, 2018). The decline of intermodal transport started after the year 1989, when the restrictions imposed for the road transport became more relaxed and therefore, an important share of freight transport moved to the road sector, and even more after

1998, when the railway sector reform took place. The migration of goods' transport from rail to road resulted in a lower demand for the freight transport by rail. This smaller share had to be further devised among the national rail freight transport operator "CFR Marfă" and the private operators, which were more competitive, were offering more dynamic freight transport services and which did not have access to these public intermodal terminals. This situation left CFR Marfă, the owner of the rail-road terminals after 1998's railway reform, in the impossibility to keep these terminals in a good condition, leading eventually to the inactivity of even closure of many of them. The same causes are valid for the fact that nowadays there is no publicly owned park of containers for the intermodal transport. In addition, the lack/ low level of funds for railway infrastructure maintenance contributed to a degradation of the technical parameters of railway infrastructure. Nowadays, the intermodal freight transport represents 1% from the total freight transported by rail (CFR, 2018).
However, joining the European Union represented for Romania an impulse for the development of transport infrastructure. A top-down approach could be identified in the adoption of policies to support the achievement of a sustainable, multimodal transport system. For assuring the successful implementation of these policies, financing instruments were made available. Romania benefitted from the allocation of such European budget as well. Despite the focus on the development of road infrastructure, the development of intermodal transport system was a preoccupation for Romania as well. In 2011, the Intermodal Transport Strategy in Romania 2020 was elaborated. Some of the main objectives promoted in this strategy was the building/upgrading the intermodal terminals and their adjacent infrastructure, providing good quality intermodal transport services, or the promotion of national intermodal transport system (Intermodal transport strategy in Romania 2020, 2011).
The interest of developing the rail-road intermodal transport is increased by the strategic geographical position of Romania, the presence of Constanta Port and the large railway infrastructure rehabilitation projects taking place in Romania aiming at assuring a suitable connection between the national railway network and the European network. Moreover, even though it does not involve a great share form the total freight transport, the rail-road intermodal transport was sustained through the activity of privately owned terminals, such as Railport Arad handling the goods transported mainly on the routes from Arad to other countries. On the internal routes, the goods are mainly transported on road (CFR, 2018).

5.2 Public measures to support the development of rail-road intermodal freight transport in Romania

Having as a starting point the public measures presented in the previous chapter, a desk research was performed in order to identify and analyze the public measures (including policies, strategies, financial or administrative instruments, research projects) dedicated to the development of rail-road intermodal freight transport in Romania. The spectrum of the analysis included the public measures to support the rail transport and infrastructure development and the rail-road intermodal terminals. In order to verify some aspects, some interviews were carried out with representatives from the National Railway Company "CFR"-S.A.
As mentioned in the previous chapter of the present article, in Romania, the "revival" of intermodal transport is linked with the status of Member State of the European Union. The development of the transport infrastructure was characterized by an European dimension, aside from the national one, an in this way, European programs, associated with dedicated financial instruments were made available. National transport policies emerged, being revised to integrate the European policy objectives as well.

5.2.1 Policies and strategies

In Romania, the recent transport (infrastructure) policies and strategies are influenced by the European policies, regulation and strategies, including Europe Strategy 2020.
One of the first steps in promoting the intermodal transport in Romania, in connection with the targets included in the reference framework – Europe Strategy 2020, was the adoption of the

Intermodal Transport Strategy in Romania 2020, in 2011. In this strategy, it has been acknowledge the importance of developing the intermodal freight transport system at national level, including the intermodal terminals, in achieving the sustainability objective of the policies and desired modal shift from road to less pollutant modes of transport. The locations mentioned in the Strategy for intermodal terminals are Timisoara, Bucuresti, Constanta, Giurgiu/Calarasi (Oltenita), Brasov and Suceava, with the medium and long-term view of identifying other locations after carrying out feasibility studies.

Another important transport infrastructure policy, with a high impact in Romania, as well as in all other EU Member States and neighboring countries, is the (EU) Regulation no. 1315/2013 in which the Trans-European Transport Network (TEN-T) and the measures or its successful implementation are defined. The focus is on the infrastructure development on all transport modes, including multimodal. In Annex II Part 2 of this regulation, a number of 7 rail-road terminals (Brasov, Bucuresti, Cluj-Napoca, Craiova, Suceava, Timisoara, Turda) are listed as eligible to receive financial support from the a program created especially for the implementation of TEN-T network, respectively Connecting Europe Facility.

In 2016, the Government adopted the General Master Plan for Transport of Romania. This national strategic document has a focus on the development of multimodal transport as well, listing as priority for development the rail-road terminals located in Bucuresti, Timisoara, Cluj-Napoca, Bacau, Oradea, Suceava, Iasi, Craiova, Turda, Giurgiu, Brasov.

In CFR's Railway infrastructure development strategy 2018-2020, a chapter is dedicated to the analysis of intermodal containerized freight transport and to the identification and proposals of measures, such as business models, the development of a network of intermodal terminals, increasing the commercial speed of the intermodal freight trains etc.

5.2.2 The creation of open rail transport market

For the achievement of a seamless rail-road intermodal freight transport system it is important to establish and implement the premises for a fully interoperable railway system among the Member States, efficient cross-border operations for railway undertakings and road carriers. In Romania, multiple railway infrastructure upgrading projects are in progress, taking into consideration all the interoperability parameters. Moreover, the Law no. 202/2016 regarding the integration of the Romanian railway system into the Single European railway area entered into force.

The road network is intensively used in Romania, as the goods are internally mainly transported on road (CFR, 2018). Multiple road projects focusing on building the necessary infrastructure of upgrading it are undergoing as well and efforts are made to improve the customs procedure at the border for freight transport.

5.2.3 Financial instruments

In what concerns the funding of dedicated rail-road intermodal containerized freight transport projects, the EU programs and instruments are of particular importance. Taking into account the fact that intermodal transport cannot happen in the absence of a well-developed transport infrastructure, it is no surprise that the biggest share of the funded actions were dedicated to transport infrastructure development, on all modes, giving a multimodal dimension of the transport infrastructure network. The programs supporting such actions were the Instrument for Structural Policies for Pre-Accession (2000-2006) Sectoral Operational Programme for Transport (SOPT) (2007-2013), and even the nowadays Large Infrastructure Operational Programme (LIOP) (2014-2020) or Connecting Europe Facility (CEF) (2014-2020).

However, it must be emphasized that starting with SOP-T, the development of rail-road terminals was a separate goal of the program, even though it was not actually achieved, as no rail-road terminal received any funding. The successor of SOPT, LIOP has as well a dedicated Priority Axis 2. Developing a quality, sustainable and efficient multimodal transport system – Specific Objective 2.4. Increase in the volume of goods transited through intermodal terminals and ports for the

development of intermodal transport terminals, in terms of technical assistance, studies or works (LIOP, 2014).

When referring to CEF, it must be noted that in Romania, The National Railway Company "CFR"-S.A. is the beneficiary of the largest allocated CEF budget, receiving grants to develop the railway infrastructure. Multimodal transport projects, involving the integration of other than rail and road transport modes, were CEF funded such as "Galati Multimodal Platforms - Stage I – Upgrading of the waterside infrastructure" under the inland waterways transport mode (https://ec.europa.eu/inea/en/connecting-europe-facility/cef-transport/2015-ro-tm-0275-w).

However, even though funds were available, no Romanian transport project was CEF funded under the multimodal transport mode axis.

On the other hand, Marco Polo II Program can be considered as an impulse in the development of intermodal transport (http://www.ampost.ro/pagini/programul-marco-polo). In this way, budgets were allocated for the commercial support of freight transport operations and Romania was part of at least one project, being represented by CFR Marfa (Marco Polo funded projects, 2008).

5.2.5 A network approach for multimodal rail-road terminals

Regarding the network approach, it can be considered that in all the Romania strategies and policies mentioned before – especially in the General Master Plan for Transport in Romania (2016) as it is based on a National Transport Model, there has been an attempt to identify terminals location based on this network development approach.

6. CONCLUSIONS

The present article aims at identifying the public measures for supporting the development of rail-road intermodal freight transport, and in particular of intermodal rail-road terminals, and their application in Romania. In this respect, two research questions were formulated, respectively:

(a) "Which are the public measures to support the development of rail-road intermodal freight transport?", and
(b) "Which of these measures are applied/can be found in Romania?".

Desk research and interviews were performed to determine the public measures promoting the development of rail-road intermodal freight transport in general and in particular the application of these measures in Romania. The findings are included in chapter 5 of this article.

As a general conclusion, it can be stated that the rail-road intermodal freight transport still has a high potential to be developed in Romania, as it is still room for improvement.

The prerequisite of an efficient rail-road intermodal transport system is the provision of good infrastructure. As it was presented in this article, due to low demand for rail transport, the maintenance budgets for railway infrastructure and rail-road terminals became scarce along the years, leading to an accelerated degradation. Romania was not a singular country when it comes to an unsatisfactory quality of its railway infrastructure, but it has been the case of other European countries as well. In the article "Railways in intermodal transport in Poland", Kadłubek (2011), noted: "The main problem for its development, is too low quality of the transport infrastructure, especially the railway, which constitutes the basis for the efficiency and competitiveness of intermodal transport." In order to solve the issue concerning the lack of adequate transport infrastructure, on all modes, multiple public measures were taken such as the prioritization of the projects (as per MPGT), dedicated financial support. Currently, in Romania there is an intensive infrastructure upgrading program under-going, especially for road and railway infrastructure.

In what concerns the financial instruments for the development of rail-road intermodal freight transport development, aside from the ones dedicated to modernization of the transport infrastructure, the EU funds are playing an important role, for both the improvement of freight transport operations (the Marco Polo II program) or the building/upgrading of rail-road intermodal terminals (including handling equipment). However, even if the budget was allocated, in the past

financial exercise, no such project was financed. The SOPT (2007-2013) Guide of Applicants for the promotion of intermodal transport had multiple (revised) versions, in terms of eligible beneficiaries, terminal locations, available funds, or eligible activities and no project was funded (Tudorica & Banacu, 2017). A new chance for developing a network of rail-road terminals (in the locations specified in MPGT) is available in the current multi-annual financial framework 2014-2020 in LIOP.

As the price of goods (still) represents the one of the main criteria when selecting the transport mode, the idea promoted at European level, regarding the application of "polluter pays" principle in the road sector as well, has an important role in making the rail mode, and in this way the rail-road intermodal transport, more attractive. In relation to another important aspect when selecting the mode for freight transport, namely speed, public measures, such as prioritizing the intermodal trains schedules, could be taken. Yet, all the policies/strategies' measures should be well analyzed before being adopted, as their effects could be unforeseen. In this sense, Santos et al. (2015) noted in their article: "Our analysis suggests that subsidizing has a significant impact on the volumes transported by intermodal transport, and, to a lesser extent, that optimizing terminal location increases the competitiveness of intermodal transport. On the other hand, according to our assumptions, internalizing external costs can negatively impact the promotion of intermodality".

Aside to the measures to be tested before their application, scenario analysis could be the answer for identification of optimized business models for intermodal terminals development and operations or eligible beneficiaries.

A review of theintermodal transport strategy is maybe required so as to adress some, if not all, the shortcomings of the previous public initiatives. This ideea is in line with the process of amending Directive 92/106/EEC on the establishment of common rules for certain types of combined transport of goods between Member States, which is taking place nowadays and with the recommendation included in the CFR's Railways infrastructure development strategy 2018-2020, (CFR, 2017; Pape, 2018).

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