

The impact of European Freight Transport Strategy on the Slovak Republic in the Context of Logistics

P. Ceniga and V. Sukalova

Abstract—Paper deals with actual topic concerning connection between the freight transportation, which is very important part of complex international supply chains and its impact on the Slovak transport policy in future. However, today with growing challenges in our European transportation system, we must avoid that transportation becomes the weakest link in the chain, and threatens the efficiency of conception, production, and distribution of our products. This is the reason why people responsible for logistics and supply chains have a keen interest in understanding today's transportation challenges. As the final user of freight transport, they want to participate in the debate and in new ideas on the future of the European transport system. The aim of the paper is to assess the impact of European Freight Transport Strategy and Policy on the development of Logistics in the Slovak Republic in context of integration for intermodal transport. Partial aims are to present European Freight Transport Policy in Future and to analyze new forms of organizing intermodal freight transport and in this context we focused on the situation of logistics centers development in Slovakia. In research we used methods of analysis, synthesis, induction, deduction, description, explanation. The result is an assessment of the state of development of logistic centres in the Slovak conditions as a prerequisite for modern logistics solutions and identification of the causes of major shortcomings in this field.

Index Terms—Transport strategy, logistics, logistics center, intermodal transport.

I. INTRODUCTION

The operation of transportation determines the efficiency of moving products. The progress in techniques and management principles improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving. Transportation takes a crucial part in the manipulation of logistics.

The European freight transport system needs to adapt to the challenges of the 21st century. Growing congestion, environmental concerns and dependence on imported fossil fuel threaten European freight transport which is heavily dependent on road freight and fossil fuels. The use of road freight transport will grow rapidly in the next years. However as there are limits to the growth of road transport we need to make better use of alternative modes of transport (rail, short

sea shipping and inland waterway) that have safety, efficiency, cost, energy and environmental benefits. The Commission White Paper on European Transport Policy¹ defines as central part of this policy the need to take all necessary measures to facilitate this modal shift.

Much has already been done to improve the supply of transport services, particularly the alternative modes by opening markets, laying down common technical rules and applying the competition rules to the transport service sector. Issues of transport infrastructure need to be tackled. These issues are not the subject of the current initiative. Rather, this initiative aims at making full use of the potential - sometimes hidden, sometimes still to be developed - of intermodal solutions. For this, Europe needs to develop the skills and tools of intermodal freight transport managers - "freight integrators". They organize door-to-door freight transport by combining different modes of transport to build high quality, efficient and sustainable intermodal transport solutions.

In terms of human resource management and education is an essential element to ensure long-term growth and competitiveness; human capital skills lead to increased business activity, job performance and innovation. Effective tool of managerial work is nowadays the competence approach to managing human resources. EU's strategic objectives are to develop core competencies in the knowledge society. Key competencies we can define as those competencies which are portable and universally applicable set of knowledge, skills and attitudes needed by each individual for their personal fulfilment and development and successful employment. Under these circumstances, the ability of companies to effectively carry out competency-based human resources management is becoming more and more crucial for their survival. Implementation of competence approach to the management of the human resources is important also in logistics [1]. The paper deals with European freight transport in 21th century, organizing of the intermodal freight transport and situation in the field of logistics centers in Slovak conditions.

II. EUROPEAN FREIGHT TRANSPORT POLICY IN FUTURE

Europe needs an efficient freight transport system. However, the current system, with its rising costs and delays, is not capable of handling the expected growth in freight transport without a substantial increase in costs. The combined challenges of economic growth, sustainable development, rapidly changing logistics trends and enlargement of the European Union requires shippers and operators to develop a more co-operative and planned approach to freight transport in order to make better use of all

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transport modes. The demand for freight transport is growing.

A. Logistics Trends and the Opportunity for Intermodal Transport

In assessing the opportunities for the alternatives modes to provide road-competitive transport services, we must also look at the logistics trends in Europe. Logistics processes translate the demand for goods and services into freight transport demand. The form of the demand number size, frequency and routing of deliveries is determined by the requirements of production, distribution and consumption patterns. Only by understanding the characteristics of this demand is it possible to identify where intermodal transport is a viable alternative. In general regular flows, high volumes and long distances favor intermodal transport. Some logistics trends, such as the increasing number and reducing size of deliveries, do not favor intermodal freight transport. Others do provide an opportunity:

- 1) European companies are increasingly consolidating their operations in order to serve the enlarged market from a reduced number of distribution centers. This leads to a concentration of flows to and from these large hubs and offers opportunities for intermodal transport.
- 2) Manufacturers are simultaneously reducing the number of their suppliers and hence increasing transport volumes from the remaining suppliers. Congestion around manufacturing sites and high costs related to dealing with a large number of suppliers lead to pressure to reduce the number (and increase the size) of deliveries and the trend towards less suppliers.

These concentrations again provide an opportunity for intermodal transport:

- To take advantage of more favorable manufacturing and labor conditions factories are moving further away from suppliers and markets increasing transport distances. The increased transport costs related to these developments may increase the attractiveness of long-haul modes capable of high consolidation, such as shipping and rail transport, and thus open up new markets for alternatives to road transport.
- “Just in time” production strategies minimize the costs of carrying stock (less goods in storage, less warehouses) but increase reliance on transport, lower interest rates reduce these benefits because of the lower cost of keeping stock. Larger stocks can act as a buffer, allowing less frequent but larger shipments.
- The increasing use of information and communication technologies (ICT) provides a significant opportunity for intermodal transport as it can allow accurate real time information to be shared between actors and has the potential to improve the quality of intermodal transport and integrate it with other systems (traffic management, supply chain management, emergency response etc. etc.)
- Finally individual companies are suffering from similar problems on the same routes. Alone it is difficult to solve these problems however by co-operating they can have sufficient, regular volumes to be able to support intermodal solutions on these routes, reducing costs for all partners [2].

B. Integration for Intermodal Transport

Summing up, there are significant market opportunities for intermodal transport. For many shipments on certain routes, intermodal transport is a viable alternative.

Integrating the different transport modes

Freight integrators with the objective to optimize the whole chain, and without a pecuniary or proprietary interest in any specific mode or shipment, can play a constructive role in developing intermodal transport and tackling bottlenecks. Europe already has some excellent logistics companies who act as freight integrators, providing sustainable transport solutions in partnership with shippers and operators. However the reality is that best practices are few and far between. Few seem to have the skills, neutrality or geographic coverage necessary to meet the needs of European industry.

Freight integrators should have:

- 1) The ability to devise intermodal transport solutions suitable for sophisticated supply chains,
- 2) Neutrality in order to advise, build co-operation and mediate in the case of disputes,
- 3) Knowledge and experience of all transport modes, as well as the storage and handling of goods,
- 4) Long term relationships with shippers and operators,
- 5) Access to information about transport services, operators and shipments,
- 6) Access to a broad network of contacts and partners.

Integrating different interests

Freight integrators need to integrate the differing interests of shippers and transport operators [3].

Shipper interests

Shippers do not normally favor any particular mode, their interest is to find suitable transport solutions at the right price, coupled with quality. They focus on reducing their total logistics costs, of which transport is only a part. They are prepared to accept increases in transport costs if there are compensating reductions of other costs, for example, warehousing costs, insurance, packaging etc. They often have multiple logistic service providers and have different arrangements in place for different products, routes and services. They are looking for long-term relationships with logistics companies that understand their supply chains and have pan-European coverage. They are prepared to co-operate, even with their competitors, on certain logistics issues because this is not their core business.

The interests of operators.

Transport operators are essentially concerned with the supply of transport services. Some operators offer integrated intermodal services but these are normally offered as complementary services to support their main mode. Their high investment in physical assets means that they are focused on asset utilization rather than reducing supply chain costs. For them more transport means more business. Many transport markets witness today ferocious competition, largely focused on price. This is due to the structure of some markets, which are characterized by many small enterprises. Many of them may not be in a position, on their own, to offer more value-added services besides the pure physical transport operation, so they compete on price. Some markets suffer from over-capacity, but for various reasons, market

exit of companies does not happen at the rate, which would allow a more healthy relationship between supply and demand. Last, consolidation and concentration processes are often more far advanced on the side of transport users than on the side of transport suppliers. This puts transport users in a powerful position vis-à-vis their suppliers. All this exacerbates the competitive behavior of transport operators. They are hence often reluctant to explore possibilities for co-operation (combining loads, sharing spare capacity etc.) which are possible under current competition rules, even when there are savings to be made. Transport operators tend to overemphasize their competitive position vis-à-vis other transport operators. They work hard to improve the quality and competitiveness of their mode but are not well placed to construct complex intermodal transport chains if they do not control, or have an interest in, the whole chain.

Involving small and medium sized enterprises.

It is neither desirable nor feasible for international freight transport to be dominated by a few large actors providing all modes and pan-European door to door coverage. In fact, 85% of transport is provided by small or medium-sized enterprises. It is simply not possible for the smaller enterprises to invest heavily in long term planning or strategies. Nor do they have the geographic coverage to provide door to door services, but they do have an important contribution to make. Intermodal freight transport should be organized in such a way that allows these SME's to play a full role in international transport chains. The freight integrators, by taking responsibility for through organizing the whole chain, will allow these smaller service providers to play a full part in quality intermodal transport chains [4].

III. NEW FORMS OF ORGANISING INTERMODAL FREIGHT TRANSPORT

Intermodal transport has an important and valuable part to play in moving freight in EU. However a number of factors combine to make the organization and execution of international freight transport complicated. The transport modes involved in intermodal transport have developed over very long periods of time according to their modal and national requirements, and not with a view of the optimization their contribution to the intermodal transport chain. The number of actors and different attitudes involved in intermodal transport makes the organization of intermodal transport particularly complex.

A. Lack of Awareness and Understanding

Shippers are often unaware of the potential of intermodal transport and lack the information and skills to take advantage of it. For example, efficient intermodal transport requires the use of Intermodal Loading Units (ILU) e.g. containers or swap bodies. So the form, volume and routing of shipments must be suitable for such units. These factors need to be considered during the design of the supply chain. Supply chains managers are often not aware of the transport implications of their decisions. Packaging design, production schedules and distribution arrangements all have a direct impact on the suitability of intermodal transport. However these considerations are often not part of the planning process.

The national scope and modal attitudes of transport operators undermine their ability to shape high quality, international, door to door intermodal transport chains.

B. No Commitment and Little Co-operation

Intermodal transport services require a greater initial investment than road-only transport. Thus, service providers need guaranteed volumes, often in both directions, before the planning and startup of an intermodal service becomes economically viable. Due to its complexity (number of actors, number of processes) intermodal transport requires careful planning and net longer lead-in times. In order to develop intermodal transport, shippers need to develop long term co-operations with, and commitment to, their transport service providers. By co-operating shippers (and consignees) can guarantee operators certain cargo volumes on key routes making intermodal solutions more viable and bringing benefits to all concerned.

C. Differing Responsibilities and Liabilities

The transportation of goods by different modes of transport is governed by different national and international regulations and conventions, which have evolved differently over time. These conventions set out the responsibilities and arrangements in the event of problems (delays, damage etc.). During an intermodal journey the regulations covering a shipment can change raise doubts about liability in the event of problems. Some have argued that this lack of clear rules in liability and responsibility poses an additional challenge to organizing intermodal transport chains. With intermodal transport, shippers and freight forwarders have to rely on actors they do not know, and over who they have no direct control, to deliver their goods to the right place, at the right time and in the right condition. Each transfer of information, responsibility or the goods themselves increases the possibility of misunderstanding, error or dispute. All actors need to be confident in the capabilities and performance of the other actors and be able to recover their losses in the event of problems. For this, there must be clear and transparent rules about the scope and substance of responsibilities of each actor in the transport chain [5].

D. Lack of Standardization

1) Equipment

The equipment used in transportation needs to be as interoperable as possible so that greater use can be made of vehicle capacity and transshipment equipment. Each company designing and constructing their own container, optimized for their use, undermines the efficiency of the whole transport network. The "boutique approach" followed widely in the transport sector may allow operators high flexibility to serve specific clients. At the same time, this individualization forecloses enormous possibilities for large-scale and cheap production of equipment and enlarged market opportunities brought about by standardization. More harmonized features of containers, swap bodies, semi-trailers, chassis and pallets would facilitate co-operation and improve efficiency.

2) Information

The format and medium for the transfer of information

along supply chains is far from standardized, and again varies between modes and countries. Documents are often carried in paper form alongside the goods themselves, as they were in the nineteenth century. Different transport documentation is required for insurance, customs or commercial purposes. Due largely to historical reasons, the format of the documentation is also different according to the mode used. However, very often, one discovers that the information required for the various purposes is very similar, irrespective of the administrative or commercial purpose, and irrespective of the mode used. Traditional verification of documentation and equipment, often still done manually, increases costs, delays and is prone to error.

E. Delays and Costs

Inherent in intermodal transport are the additional delays and costs associated with the transfer and storage of goods between modes. In order to be competitive the benefits of intermodal transport must outweigh these additional costs. In addition to improvements in technology and the management of terminals the most effective way to reduce these marginal costs is to increase the volume of traffic and the frequency of services. The potential for intermodal transport can only be fulfilled if the organization of intermodal transport is simplified and support is given to the organizers of intermodal transport. This requires action from all actors but particularly shippers and transport operators as well as the European Community [6].

F. Standardization of Intermodal Transport

Intermodal transport needs to be standardized wherever possible to facilitate the exchange of shipments, information and equipment. Intermodal transport needs to become more industrialized and be as professional as the clients they serve. Standardization also reduces barriers to market entry opening the door to new entrants and small players.

1) Standardization of documentation

Different actors require different transport documents, often with similar information in varying formats and the transport documents are often transported with the goods themselves. For historical reasons these documents vary for each mode but today there is no good reason for these differences. The manual transfer and translation of information causes errors and delays, the absence of remotely available information hinders planning, risk management and emergency response. Data handling should be harmonized across all surface transport modes and wherever possible the electronic exchange of information should be encouraged. The result would be to simplify the organization of intermodal freight transport, by removing administrative barriers, and increase efficiency by reducing errors and delays.

2) Standardization of information systems

Information systems used for the management of freight transport are currently closed, modal systems often provided by the carriers themselves as a value added service to their customers. These do not facilitate the transfer between modes (or even competing operators) or the participation of small actors in quality intermodal transport chains. The availability and declining cost of information and communication

technologies presents an opportunity to build integrated transport chains capable with a high degree of quality, flexibility and transparency. The latest developments in information technology should be used to support the development of open access, multi modal information systems to assist in the planning, organizing and execution of freight transport. Such systems would have a range of applications (planning, booking, tracing, tracking, emergency response) and integrate with other systems (traffic management, inventory management and customs systems) would be of use to both public and private actors, and should be standardized. Developments in this field should be carefully coordinated with the revision of the Customs Code and new security requirements. One possibility would be to require the electronic provision of data for all international shipments prior to departure.

3) Standardization of equipment

There is further potential to standardize equipment used in intermodal transport within the no existing international standards to lower market barriers and increase efficiency. Pallets size and height, loading units, chassis and semi-trailers offer considerable potential to further facilitate the functioning of a true intermodal transport network.

4) Standardization of quality

Intermodal transport requires co-operation between a large numbers of actors, providing different services across a large geographic area. Many of whom are not known to each other.

A Community wide voluntary certification scheme could ensure the quality, reliability and (in the case of problems) financial recoverability of transport service providers. Such a system will allow actors to quickly identify quality partners and select a "certified" operator [7].

IV. THE SITUATION OF LOGISTICS CENTERS IN SLOVAKIA

The current status of logistic centers in Slovakia can be characterized mainly by the fact that there is no uniform approach to the state level or higher territorial units, which would support the creation of logistics centers with public access so that they support economic and regional economic growth, national economy and the efficient sharing of the transmission works. So far, Slovakia has been built on different logistics facilities, none of them satisfies the conditions of public logistic center by definition.

Public Logistics Centre (PLC) is a multi-modal nature center operated by at least two modes, constituted by a single concept on a regional principle, in which many providers offer a wide range of logistics services to all interested parties in the region, including small and medium businesses, and which was supported by the public budgets under the contract. It allows providing all interested persons without discrimination. To implement this concept into the Slovak legislation should be amended by the existence of an intermodal transport terminal, such that the center complies with the usual parameters for public logistic centers in developed countries of Europe, and especially in order to best perform its functions. In this sense, defines the organization DG GmbH (Deutsche Gesellschaft mbH Güterverkehrszentrum) key features of PLC as follows:

- 1) Holding company is focused on the transport of goods, logistics service providers and companies uniting production and logistics;
- 2) Access to at least two types of transport, especially for road and rail transport (intermodal transport terminal);
- 3) Owner or operator of a local logistic center initiates cooperative activities to achieve synergies in the operation of logistics centers.

PLC task is to ensure the operator of the specified region. Since this center was supported by government budgets, must be public, so the whole society benefits. Efficient transport service eliminates the negative impacts of increasing road traffic on the environment.

The experience of having to use PLC in Germany (called GVZ - Güterverkehrszentrum) is the economic benefit of up to 90% of the effect of traffic and transport and environmental benefits to about 10% [4]. This factor should be borne in mind especially in these times, when to expect major changes in European and global logistics and which is expected to increase the volume of freight going from Asia to Europe. The DG GmbH possible benefits of public logistics centers divided into four main areas: [8]

Logistics as an economic factor in business

Diversification of production processes and trends of outsourcing in manufacturing and trade requires the modern innovative logistics concepts that could be implemented in public logistics centres. The public logistics centres provide midsize businesses real opportunities to meet market requirements by complying with the cooperation partners. Construction of adequate infrastructure and consolidation of logistics know-how ensure proper position of the region in international competition network of logistics facilities.

Trends of the intermodality

The public logistics centres as the interface between different modes provide optimal conditions for the creation of intermodal transport chains. The possibility of using alternative modes of transport improves business flexibility and guarantees the quality of logistics services. Rail and inland waterways are benefiting from growth in the freight market by logistics service providers are linked with intermodal transportation terminals. The high dependence on road transport logistics is effectively combined with the benefits of other modes of transport.

Benefits from synergies

A typical mixture of different companies (companies focused on providing transportation, logistics and ancillary services, customs, small manufacturing companies) and range of logistics-oriented services in public logistics centers provide suitable conditions for development of new business opportunities. Governing bodies of public logistics centers promote companies that are tenants in these centers and in particular by promoting the implementation of new ideas about the services provided. Direct cost savings in public logistics centers are achieved and joint purchasing and pooling of resources (e.g. energy services, waste disposal, etc.).

Combining elements of logistics

The term "Freight Village" ("public logistics center") is not related only with a reduction in the volume (or share) of road freight transport, or a change in transport mode, but applies

also to adapt to future buildings and infrastructure requirements of the logistics market. The overall benefits of a public logistics centers can be measured only in a limited sphere, but with the rising number of other public logistic centers cooperating on various levels. Linking public logistics centers in the functional network provides transport services at reasonable economic costs, thus stabilizing the competitiveness of participating companies. The current state of intermodal transport infrastructure react different strategic documents of the Slovak Republic formulated various objectives for transport:

In the area of intermodal transport terminals are developed infrastructure essential to ensure that the cargo from one mode to another type of pass easily, reliability and cost-effective manner to increase the accessibility of European transport networks from all regions of Slovakia, increase availability, capacity and speed of communication systems in the regions.

Ensure availability of quality sites and basic transport services, reduce accidents, time delays and risks to health services. A common feature of these objectives is the focus or relate to the intermodal transport, namely the construction of terminals, such as points of transshipment [9].

In present time operate in Slovakia fifteen c, which are situated in six regions from eight Slovak regions. These centres are focused mainly on:

- 1) International transport and domestic transport of goods,
- 2) Warehousing of various types of material and goods,
- 3) Packaging activities connected with transport,
- 4) Services of warehouse,
- 5) Distribution of the goods,
- 6) Reloading of trucks, containers etc. [10].

Development of further logistics centers in Slovakia is limited by the lack of road infrastructure and complete road connection between two biggest Slovak towns - Bratislava and Košice. Slovak Transport policy planes the solving of this problem till the year 2019.

V. CONCLUSION

Logistics system has a more and more important position in our society activities. Transportation and logistics systems have interdependent relationships that logistics management needs transportation to perform its activities and meanwhile, a successful logistics system could help to improve traffic environment and transportation development. Since transportation contributes the highest cost among the related elements in logistics systems, the improvement of transport efficiency could change the overall performance of a logistics system. Transportation plays an important role in logistics system and its activities appear in various sections of logistics processes. Without the linking of transportation, a powerful logistics strategy cannot bring its capacity into full play.

Logistic centers are an important part of transport policy of the state in terms of sustainable and environmentally friendly transportation. Construction of public logistics centers (PLC) have, despite their clear benefits for the development of transport infrastructure in Slovakia requires constant promotion, which would be appropriately directed to domestic and foreign entrepreneurs and investors.

Promotions should be based primarily while the economics of the business entities associated in PLC, because for them the most important economic results achieved in the business, ensuring a desirable synergies. Since PLC is built and operated with the support of public resources should be promoting PLC focus on fulfilling the public interest explaining the use of resources. At the same time the issue is to avoid uneven, inconsistent and uncoordinated promotion, it should be subject to a single concept, all managed by an organization of PLC in Slovakia. This could reduce the unevenness of business activities in the field of logistics services in the regions of Slovakia.

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