

MULTIMODAL TRANSPORTATION – ECONOMIC AND LEGAL VIEWPOINT FROM CROATIA AND TURKEY

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Abstract

In today's global economy, multimodal transport systems have become the pillar of international trade. Multimodal transportation is a strategic type of transportation that includes companies' costs and many other advantages, as well as the vital importance of countries' ecological and port traffic development. Their main objective is the reduction of overall transport and handling costs within the supply chain while at the same time trying to respond to the demand for just-in-time, door-to-door cargo services.

Multimodal transportation to the EU transport policy wants to establish mobility that will be sustainable, environment-friendly, and energy-efficient. These objectives can be accomplished by multimodal transport of the people and goods that optimally blends the different methods of transport by maximizing each one's strength and diminishing the weaknesses. Various national and international bodies try to create multimodality policies and regulations for securing better incorporation of the different transport modes and creating better interoperability at all transport system levels.

The paper aims to examine legal and economic viewpoints on multimodal transportation and to identify their impact and barriers for further development in Croatia and Turkey. The first part of the paper gives a literature review about multimodal transport from the economic and legal viewpoint. The second part of the paper examines the current situation in Croatia and Turkey. Finally, in the last section, conclusions and the proposals for further research are given.

Key words: multimodal transportation, economic viewpoint, legal regulation, policies, Croatia, Turkey

1. INTRODUCTION

Business logistics today is trying to create a solution that will enable them to be more competitive in the global market. Transport of the freight is one of the critical components of the supply chain needed to guarantee the active movement and appropriate disposal of products (Crainic, 2003). Freight transportation demand outcomes from producers and consumers who are physically apart from each other. Globalization, supply chain management, speed-to-market deliveries, and agile manufacturing are generating higher demand for intermodal and multimodal transportation services and infrastructure. Due to the increased fuel prices, congestion on roads, and growing environmental problems, there is a need for a new solution for freight transportation.

One of the solutions for this is an integrated multimodal transport network (Haris et al., 2015). The multimodal transportation network is a critical element for organizations to effectively implement their supply chain practices in the domestic and international markets. But due to the very complicated type of multimodal integration, the growth of multimodality can be limited. To eliminate these obstacles, different transport policies are intended to create mobility and multimodality, which will be sustainable, environment-friendly, and energy-efficient. Making transport sustainable and environmentally friendly can be made by different methods of transport which will maximize strengths and reduce the weaknesses of different transport modes.

The main aim of the paper is to examine the economic and legal viewpoints of multimodal transportation and to identify their impact and barriers for its further development. The first part of the paper presents a literature review on multimodal transportation. The second part of the paper will provide insight into the economic and legal viewpoints of multimodal transport. In the third part, the current situation in Croatia and Turkey is reviewed together with the potential impact and barriers for further development. In the last part of the paper, the conclusion will be presented, and additional research proposals will be given.

2. MUTIMODAL TRANSPORTATION

In recent years, there have been many papers and research done to establish a better understanding of multimodal transportation both from an academic and practice standpoint. Bektas and Crainic (2007) state that multimodal transportation tends to integrate different transportation services and modes to improve efficiency, which is contrary to conventional transport in which various transportation systems function independently. During years different terms circulated in the literature and the industry: multimodal, intermodal, co-modal, and synchro-modal transportation (SteadieSeifi et al., 2014). (Table 1)

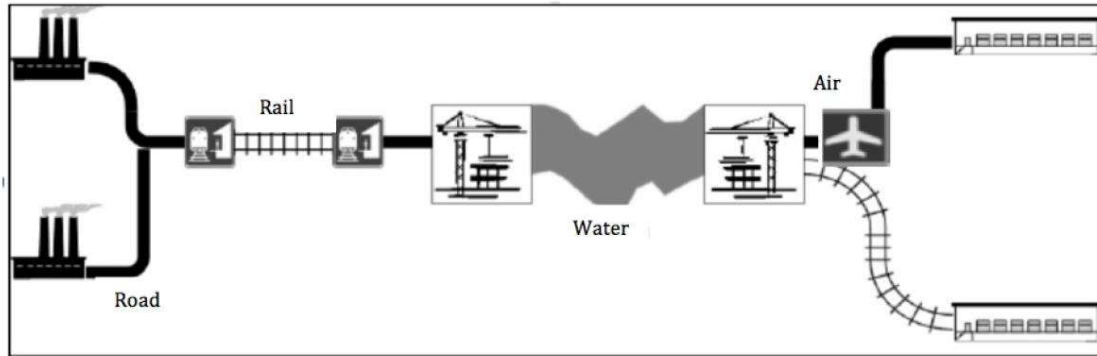
Table 1. Definitions of different terms

Term	Definition	Source
Multimodal transportation	transportation of goods by a sequence of at least two different modes of transportation	Zelenika, 2006; Beresford et al., 2006; UNECE, 2019
Intermodal transportation	type of multimodal transportation where the load is transported from an origin to a destination in the same intermodal transportation unit without handling of the goods themselves when changing modes	Crainic & Kim, 2007; Žgaljić et al., 2015; Wang & Yeo, 2016
Synchro modal transportation	the carriers or customers select independently at any time the best mode based on the operational circumstances and/or customer requirements	Verveij, 2011; Behdani et al., 2014
Term	Definition	Source
Co-modal transportation	focuses on the efficient use of different modes on their own and in combination. The use of two or more modes of transportation, but with two differences from multimodality: i) it is used by a group or consortium of shippers in the chain, and ii) transportation modes are used in a smarter way to maximize the benefits of all modes, in terms of overall sustainability	European Commission, 2006 Verweij, 2011

Source: authors

All previous definitions of different terms have one common characteristic – more than one mode of transportation. The differences are an emphasis on various transportation process features. SteadieSeifi et al. (2014) state that synchro-modal transport focuses on flexibility, intermodal on the same loading unit while co-modal improves utilization of resources. But it is essential to state that the basic multimodal transport definition does not eliminate other definitions. However, it should be noted that some authors consider the terms 'combined', 'multimodal', and 'intermodal' transport to be synonymous (Bolanča, 1992; Clarke, 2002). SteadieSeifi et al. (2014) conclude that it aims to make transportation more efficient from several perspectives (time, financial, and environmental) by transferring materials in a constant flow via the whole transport chain. (Figure 1)

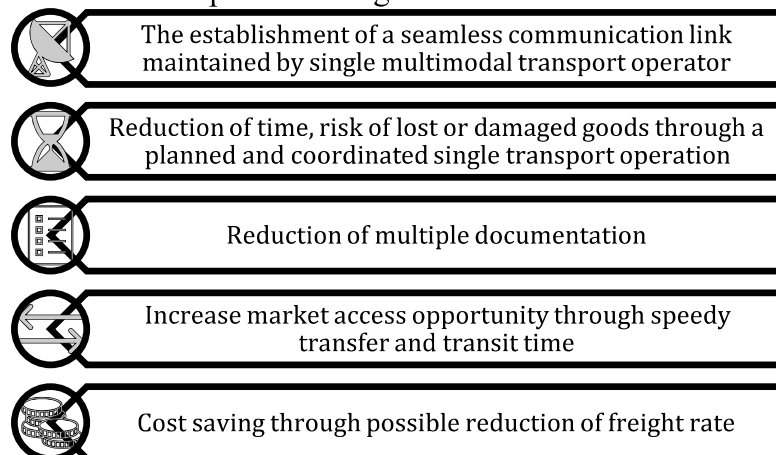
Figure 1. Multimodal transportation system



Source: adapted from Bektas and Crainic, 2007

Term multimodal transportation as a concept is the result of the emergence of different driving forces such as economy, transport operation complexity, technology, business competitiveness, and regulation. Multimodal transport creates substantial commercial values for transporters concerning other alternative transport systems as part of international trade. Thus, White paper European Transport Policy for 2010 (European Commission, 2001) proposed promoting multimodal transport because it can lower the road congestion (Macharis et al., 2007). Authors (Zelenika, 2006; Bendeković & Aržek, 2008; Vasilj & Činčurak Erceg, 2016) state several characteristics of multimodal transport: (i) transport of goods is performed with at least two means of transportation from different modes of transport; (ii) the entire entrepreneurial venture is based on only one transport contract which the transport operator has concluded with the consignor; (iii) the cargo is accompanied by only one document on the transport of goods, (iv) the entire transport process is organized by only one multimodal transport operator (usually international freight forwarder) and (v) the multimodal transport operator is responsible for the actions and omissions of the persons he has engaged in the venture since the time of taking over the goods until their delivery to the recipient. Figure 2 is showing some of the many multimodal transport advantages.

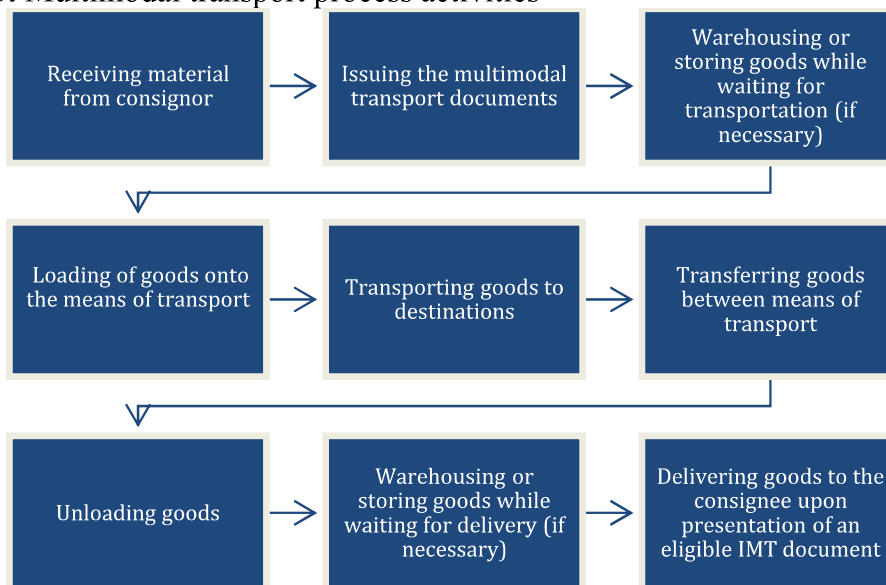
Figure 2. Multimodal transport advantages



Source: adapted from Islam et al., 2005

Multimodal transport is an incorporating tool in providing shippers a great choice of flexibility, reliability, cost control, competition, and a one-stop service (Islam et al. 2005). Taylor (1993) concludes that the multimodal transport is vital to increasing the productivity and competitiveness of the cargo transport industry while preserving the ecological balance. Hoeks (2009) states that this is due to the adequate multimodal transportation guarantees the usage of the most efficient method of transport during each phase while at the same time lowers congestion, energy expenditure, and pollution. Figure 3 shows activities included in multimodal transport process.

Figure 3. Multimodal transport process activities



Source: adapted from Nguyen et al., 2008

UNCTAD Secretariat (1995) states that the structure of multimodal transport benefits transport providers and transport users with one contract, one document, and one party that is responsible for the entire transport process, which is using more than one transport mode. This is confirmed in research by Nguyen et al. (2008).

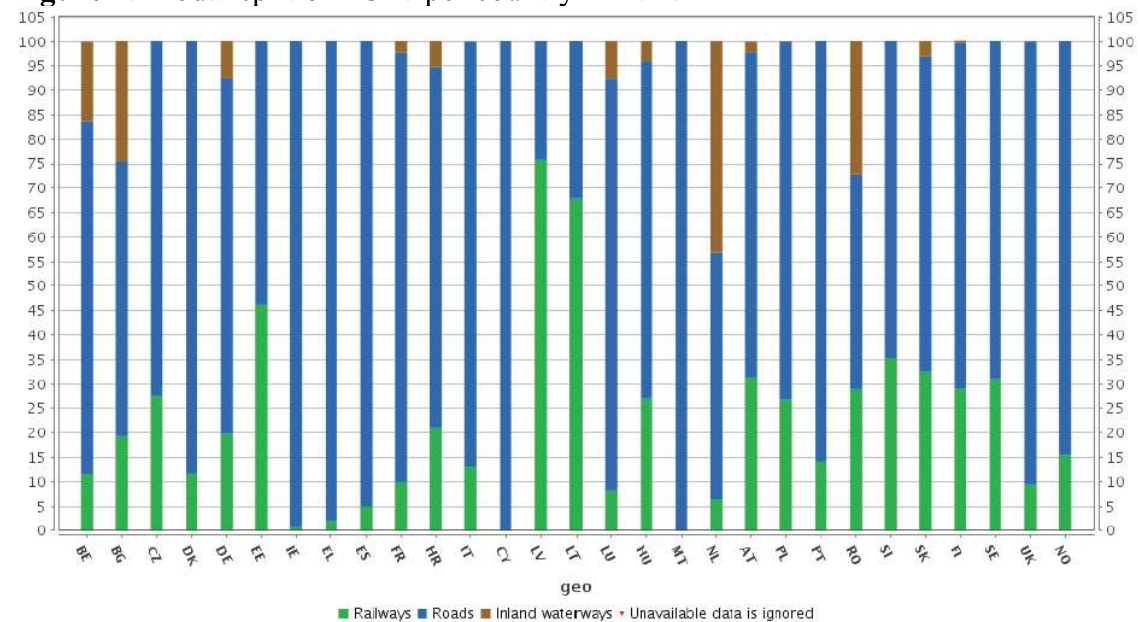
3. ECONOMIC VIEWPOINT

Transport services are growing significantly in Europe because of the growing demand by multinational corporations, their supplies, and distributors for different logistic services. Thus, multimodal transportation infrastructure and multimodal transportation services will have an essential role in the companies' logistic operations in the 21st century. One of the reasons why transportation systems are used together as chains in multimodal transportation is due to economic reasons. The decreasing costs due to the increase in efficiency causes the price competition, which leads to the thought of the exporter's price advantage (Turkey Ministry of Transport, Maritime Affairs and Communication, 2014: 30). Rondinelli and Berry (2000: 397) presented

four trends that will be changing multinational corporations' strategies: *continued economic globalization as the driving force in trade and investment, the growing demand for speed-to-market product delivery, the adoption of agile manufacturing and business practices, and the need to manage supply chains more efficiently*. As an essential economic viewpoint, multimodal transport is part of the national government's policies as it is a case in the USA where the government promotes the development of multimodal transportation to increase the nation's ability to compete in the world economy (Krebs, 1994). Multimodal transport is having a significant impact on the country's economic development, so the government should give importance to the country's economic progress using multimodal transportation (Mwaijande, 2000).

Multimodal transport plays a significant role in EU policy on the future transport network in Europe. During the last 30 years, road transport had the primary position in cargo transport in Europe. The current split in EU (Eurostat, 2020) for road/inland waterways/railroad is 76,5/5,5/18, and this has not significantly changed in the last ten years. (Eurostat, 2020). (Figure 4)

Figure 4. Modal split of EU28 per country in 2018



Source: Eurostat, 2020

In most countries, road cargo transport has a significant share. Railway has a considerable percentage in some countries (Latvia, Estonia, Lithuania), and in some countries inland waterways have a more substantial share (Netherlands, Romania, Bulgaria). Although road transport is flexible and fast, the EU cannot depend only on road transport in the future due to capacity problems. Recently, road transport performance is declining due to traffic jams, road taxes, increased prices of fuel, and environmental issues (Ghareghozli & de Vries, 2019). Multimodal transport is cheaper than road transport if the savings on transportation are higher than the extra handling costs (Beghdani et al., 2014).

On the other side, multimodal transport faces barriers like long waiting times, capacity problems, limited track-and-trace options, and problems with bookings (Bhat, 2011). Multimodal transportation is very complicated since there are a lot of service providers involved. To provide the best possible service to customers, it is significant that companies involved cooperate (Partanen & Moller, 2012). Alignment and standardization of the business process in multimodal transport might reduce problems (Ghareghozli & de Vries, 2019). Standardization can accelerate the compatibility and interoperability of subsystems to enhance the accomplishment of the entire system.

4. LEGAL VIEWPOINT

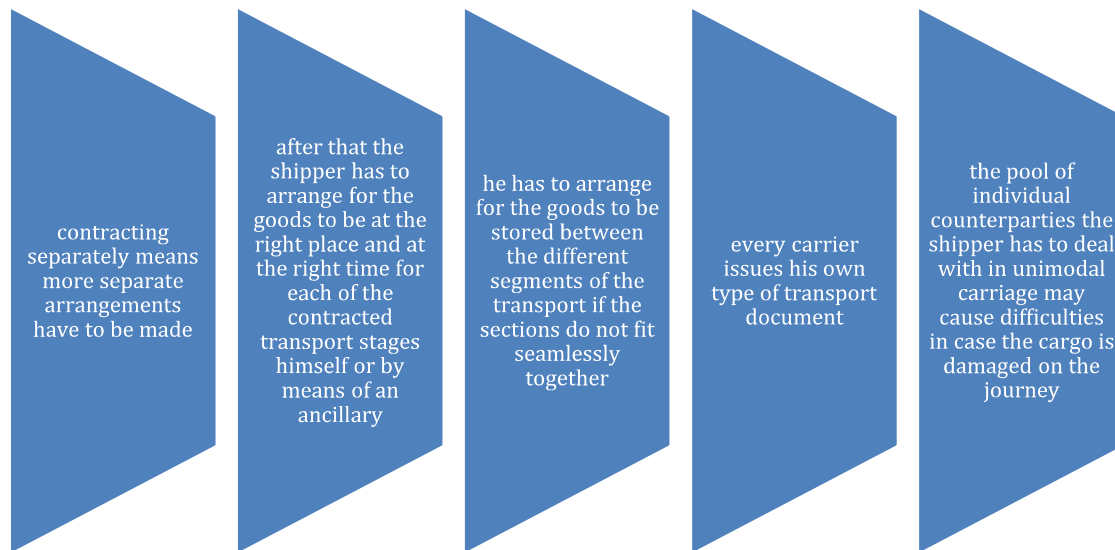
The law of multimodal transport, according to Zelenika (2006: 53), is a system of legal rules and legal institutes which regulate legal relations (obligations and rights and responsibilities arising from there) between active legal entities in multimodal transport in national and international frameworks. Since multimodal transport is a complex system composed of relatively autonomous subsystems (road, rail, air, maritime, inland waterway transport, freight forwarder's law, etc.) that have specific rules, the complexity of this type of transportation can be seen. Nevertheless, although these subsystems are autonomous, in multimodal transport, they are relatively compatible and complementary.

In a broader sense, the multimodal transport law is a system of administrative and property-rights rules and institutes that regulate the social relations of legal entities of a specific multimodal legal system (Vasilj & Činčurak Erceg, 2016: 29). The system of multimodal transport law, in addition to the rules and institutes governing the relations of active participants in the multimodal transport system and subsystem, includes legal rules governing traffic safety, environmental protection, maintenance of transport infrastructure, founding and operation of national and international organizations (Vasilj & Činčurak Erceg, 2016: 30).

However, for multimodal transport to function, it is necessary to know, monitor, and apply the rules of individual transport modes. These rules show the complexity of multimodal transport, the need for regulation, proper education of all stakeholders involved in multimodal transport as well as their knowledge of the rights in all modes of transportation. Namely, many subjects necessarily appear here, with different interests, which is a complex process, and arranging their mutual relations is a demanding job. It should be borne in mind that the relationships between many legal entities in multimodal transport systems are subject to numerous and different national and international rules as well as autonomous rules that are often in conflict.

Hoeks (2009) mentions reasons why a shipper or a freight forwarder would choose to conclude a multimodal carriage contract instead of contracting with separate carriers for each transport stage. (Figure 5)

Figure 5. Legal benefits of multimodal transportation



Source: adapted from Hoeks, 2009

In such a case, each carrier will be tempted to decline liability if he can, and the claimant or his insurer could well be left to bear the loss. It is, therefore, useful to contract with a single multimodal carrier, since even if the exact stage where the loss occurred cannot be identified, at least it is clear which party can be held responsible under the contract of carriage (Hoeks, 2009: 3-4). So, it is more reasonable to leave the responsibility for the transport of goods to one qualified operator. (Hoeks, 2009; Nikolić, 2003)

Since the law of multimodal transport still does not exist and does not function effectively as a legal system, except for the primary rules and institutes of such legislation, the rights of individual transport modes should be monitored, known, and properly applied.

The multimodal transport definitions in the legal sense are most often related to the characteristics of multimodal transport, as stated in the United Nations Convention on the Multimodal Transportation of Goods of 1980. According to Article 1(1) of this Convention *international multimodal transport means the carriage of goods by at least two different modes of transport based on a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country.* The operations of pick-up and delivery of goods carried out in the performance of a unimodal transport contract, as defined in such agreement, shall not be considered as international multimodal transport. Here, therefore, all responsibility for 'door-to-door' transport goes to the multimodal transport operator, which should make it easier to do the business in a system with many persons. In this regard, in international multimodal transport, the choice of the operator should be the most important. International freight forwarders, as an operator, can practically come here and still gives importance to freight forwarders regardless of the (non)existence of the convention for multimodal transport.

The question of liability for damage (loss, damage, delay) is fundamental in all modes of transport. *In relation to multimodal transportation, no uniform international liability regime is in force, and the international legal framework is particularly complex, as liability continues to be governed by existing unimodal conventions, and by increasingly diverse national, regional and sub-regional laws and contractual agreements* (United Nations Conference on Trade and Development, 2009: 124).

The international conventions governing the contract of carriage of goods conventions, currently in force, are more specific. The most important are: Convention on the Contract for the International carriage of Goods by Road (CMR) of 1965, Appendix B (CIM) to the Convention concerning International Carriage by Rail (COTIF) of 1999, the Convention for the Unification of Certain Rules Relating to International Carriage by Air (Warsaw Convention) of 1929, the Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention) of 1999, International Convention for the Unification of Certain Rules of Law relating to Bills of Lading (Hague Rules) of 1924, as amended by the two protocols from 1968 (Visby Rules) and 1979 (SDR Protocol), United Nations Convention on the Carriage of Goods by Sea (Hamburg Rules) of 1978, Budapest Convention on the Contract for the Carriage of Goods by Inland Waterway (CMNI) of 2000. Bolanča (1992) states that current unimodal convections provide for the possibility of combined transport, but their norms in this regard are characterized by incompleteness and inadequacy to modern needs. This is because they do not define combined transport in terms of a particular transport business.

There have been attempts to adopt conventions for multimodal transport, but they are currently not in force. In the year 1980, the United Nations Convention on the Multimodal Transportation of Goods in 1980 was adopted but never entered the force since it has only 11 parties (United Nations Treaty Collection, 2020). It sets out a uniform regime for multimodal transport contracts based on the Hamburg Rules of 1978, which is not widely accepted (today it has 34 parties, (United Nations Treaty Collection, 2020)). This is considered a reason for the insufficient number of ratifications of the United Nations Convention on the Multimodal Transportation of Goods (Nikolić, 2003; Clarke, 2002). The same is with the United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (the Rotterdam Rules) of 2008, which has five parties and is not in force as well (United Nations Commission on International Trade Law, 2020). The Rotterdam Rules establishes a uniform legal regime governing the rights and obligations of shippers, carriers, and consignees under a contract for door-to-door carriage that includes an international carriage of goods by sea but also applies to multimodal transport involving an international sea-leg.

Following international organizations developed some standard rules and documents for forwarders regarding multimodal transport: International Federation of Freight Forwarders Associations (FIATA), the Baltic and International Maritime Council (BIMCO), United Nations Conference on Trade and Development (UNCTAD), International Chamber of Commerce (ICC).

Of particular importance in regulating the relationship of multimodal transport are the sources of autonomous transport law, such as the Uniform Rules for a Combined Transport Document of the International Chamber of Commerce (ICC),

first made in 1973. The new rules' the UNCTAD/ICC Rules for Multimodal Transport Documents' were adopted in 1991. The UNCTAD/ICC Rules attempts to fill the gap in the international multimodal transport liability, but do not have the status of mandatory law. The Rules apply when they are incorporated into a contract of carriage. (United Nations Conference on Trade and Development, 1992)

FIATA created standard documents for combined transport: FIATA Negotiable Combined Transport Bill of Lading (FBL) in 1970, which was replaced by Negotiable FIATA Multimodal Transport Bill of Lading (FBL) in 1992., and Non-negotiable FIATA Multimodal Transport Waybill (FWB) in 1996. (International Federation of Freight Forwarders Associations, n/a)

BIMCO (n/a) also issued some standard documents: MULTIDOC (negotiable bill of lading for shipments involving several modes of transport), MULTIWAYBILL (non-negotiable waybill to be used for multimodal transports), COMBICONBILL (negotiable bill of lading for combined transport), COMBICONWAYBILL (non-negotiable waybill for combined transport), the latest edition of mentioned documents is from 2016.

The fundamental problem with multimodal transport is the liability of the carrier for damage. The question that occurs in international transport is certainly to determine the point at which the loss or damage occurred. There is also the problem of determining the responsible carrier as well as the liability regime, which applies. Clarke (2002: 74) correctly states the problem of deciding law if loss or damage can be localized, and here, "*it may be unclear whether the case is governed by one unimodal regime or another. For example, if goods are stored before, during, or after the carriage, is that period of storage governed by the regime, or is it outside its scope and governed by some other (e.g., warehousing) regime?*" Since there is no uniform regime for multimodal transport, the applicable liability rules differ significantly from case to case. Hoeks (2009: 11) rightly concludes that *the main problem concerning the unpredictability of the applicable legal regime when it comes to the multimodal carriage is financial. Due to the uncertainty as to the applicable law, the cargo claimant and the carrier are unable to anticipate the amount of compensation, if any, to be paid in a given situation.* Namely, carrier liability limits differ between transport modes. However, there are also other differences between modes of transport.

From all the above, it might be concluded that a convention on multimodal transport in force is needed. Or not? Hoeks (2009) justifiably asks the question, do we need uniform law for multimodal transport? She cites a comment of Van der Ziel about a Study on intermodal liability 'Integrated Services in the Intermodal Chain', who implies that the transport industry does not felt the necessity of such uniform law. Hoeks (2009: 338) also points out that FIATA and European Association for forwarding, transport, logistic and customs services (CLECAT) *are convinced that such uniform law in the form of an instrument of European law may even have a detrimental effect on the popularity of multimodal transport.* She concludes that there are sometimes reasons to prefer national, regional legislation, or even contractual rules over truly uniform law. Considering Hoeks' opinion, together with historical developments and attempts for adopting uniform regime and practice copes with *de lege lata* rules, it may not be necessary to advocate the adoption of an international convention regulating multimodal transport. Hoeks (2009: 390) suggests that a

European Regulation seems to be the most appropriate form for a supplementary regime since the decision-making process of European law seems rather more efficient than that of treaty law in this area. Still, we cannot share her optimism.

The European Union has recognized the importance of multimodal transport in the White Paper of 2011, and at the level of the entire Union is striving to promote integrated multimodal transport operations, especially throughout the EU. The following goals that they want to achieve for transport are especially emphasized, such as sustainable mobility, energy-efficient mobility, and mobility respectful of the environment (European Commission, 2020). These goals can be achieved by using multimodal transport because multimodal transport "*combines the various modes of transport optimally, exploiting each one's strength and minimizing the weaknesses*" (European Commission, 2020). At the European Union level, there is the Combined Transport Directive (European Council, 1992) for which the Commission stated that it needs revision and that the member states should work towards a legislative framework to protect passenger rights in multimodal journeys (European Commission, 2020). During the 2018 'Year of Multimodality', the European Commission tried to raise the importance of multimodality for EU transport. However, it appears that these actions are more focused on promoting multimodal transport and highlighting its advantages, which will ultimately lead primarily to a reduction of pollution, congestion, and costs rather than they aimed at passing legislation.

5. SITUATION IN TURKEY AND CROATIA

Next part of the paper will present multimodal transport in Croatia and Turkey. Both countries are presented using case study methodology and are prepared as small case studies in which current situation, barriers, and impact of development of multimodal transportation is presented.

5.1. Situation in Turkey

Turkey has an outstanding location in terms of geography. It has seas on three sides. Transportation services have gained importance in terms of both land and sea routes, as Turkey connects the Asian and European continents, as it has a coast with the Black Sea, the Aegean, and the Mediterranean, and owns an inland sea such as the Marmara Sea. It is a country where multimodal transportation is essential due to its volume and strategic goals. Third-party suppliers have come to an exceptional level in the country, as buyers and sellers are now publishing their financial tables. At this point, transportation-costs become essential for all companies. Muneer et al. (2011) state that the number of companies offering multimodal transportation services is increasing and their share on the market is growing following the Turkish industrial growth. The Turkish government is supporting multimodal transport since it considers it as an essential tool for Turkey to become a logistical base (Karagulle, 2011). Between 2014-2018, Turkey has created a strategic plan for Multimodal transportation and highlighted the improvement by developing a multimodal transport

share (Turkey Ministry of transportation, maritime affairs and communications, 2014: 64). When the multimodal transportation requirements in terms of physical conditions examined, there are five different ways in Turkey (Ateş, 2009: 18-19): (i) Container transportation by rail, pedestal container transportation, (ii) Seaway-related container transportation, (iii) Ro-Ro transportation, (iv) Ferry transportation, and (v) Ro-La Transport.

Since these transportation types are also the sea transportation export forms, they are included in the export records by Turkstat (2020) under sea transportation. Multimodal transportation, which gains importance, especially in intercontinental or long-distance container exports, has brought its advantages as an alternative to road transport. Especially when comparing in European exports, it comes to the forefront due to reasons such as reduction of inefficiencies caused by drivers, fuel savings, and environmental policies of the European Union.

Turkey's most used transport mode in foreign trade is seaway transportation. Based on previous data, the Ministry of transportation, maritime affairs and communications (2010) emphasized the importance of multimodal transport in Turkey due to the trade routes going through Turkey and since the EU is one of the Turkish main trade partners. With increasing multimodal transportation services Turkey can reach its aim of becoming a logistical base in the region (Karagulle, 2011). To become a logistical base priority is given to the following objectives (COMCEC, 2011): (i) Improving transport in the North-South and East-West axes to integrate Turkish transport with international transport networks better; (ii) Improving intermodal transport facilities and services, to take advantage of the strong growth in container transport; and, (iii) Improving maritime connections and nodal points (seaports), to take advantage of their potential strategic role as industrial and logistic platforms.

Within the framework of the EU accession process of Turkey's Trans-European Transport Network (TEN-T), Transport Infrastructure Needs the order to articulate Assessment (TINA) Study, completed in May 2007 and July 10 the High Planning Council approves 2008. TINA-Turkey Study in Turkey's borders with the EU's TEN-T system in Turkey is aimed at developing qualifications extension of a multimodal transport network. In this context, the highways for Turkey as a whole, railways, ports, and airports consisting of a core network (core network) defined and evaluation is made. With the traffic forecasting model created within the scope of the project, forecasts of 2020 traffic flows were also considered, as well as forecasts for trade growth. Following this, plans that will improve the network were prioritized by *applying the multi-criteria analysis method on the multi-mode core network created according to these estimates* (TUSIAD, 2014:39).

In 2023, 20 logistics centers (10 are in use and 10 will be operational soon) will serve all sectors with a total load capacity of 34.2 million tons in Turkey as part of the multimodal transportation network (Turkish State Railways, 2020). Technical and administrative bilateral operability regulations will be created to ensure uninterrupted and harmonious rail transport with Europe. (Figure 6)

Figure 6. Transshipment centers in Turkey



Source: Turkish State Railways, 2020

Improved use and a better combination of different modes of transportation will allow Turkish companies to increase their competitiveness in the logistics market. Turkish companies, by becoming multimodal transporters, can compete with European competitors and provide better service from one side and improve the use of multimodal transportation on the other side. Reorganizing the company structures, redesigning the transportation processes, and employing more professionals with vocational training will result in a competitive industry and a more significant share of multimodal transportation in Turkey.

5.2. Situation in Croatia

Its favorable traffic and geographical position determine multimodal transport in the Republic of Croatia. As a member of the European Union, the Republic of Croatia should develop a transport network following the EU transport policy, which means that it must encourage the development of intermodal transport.

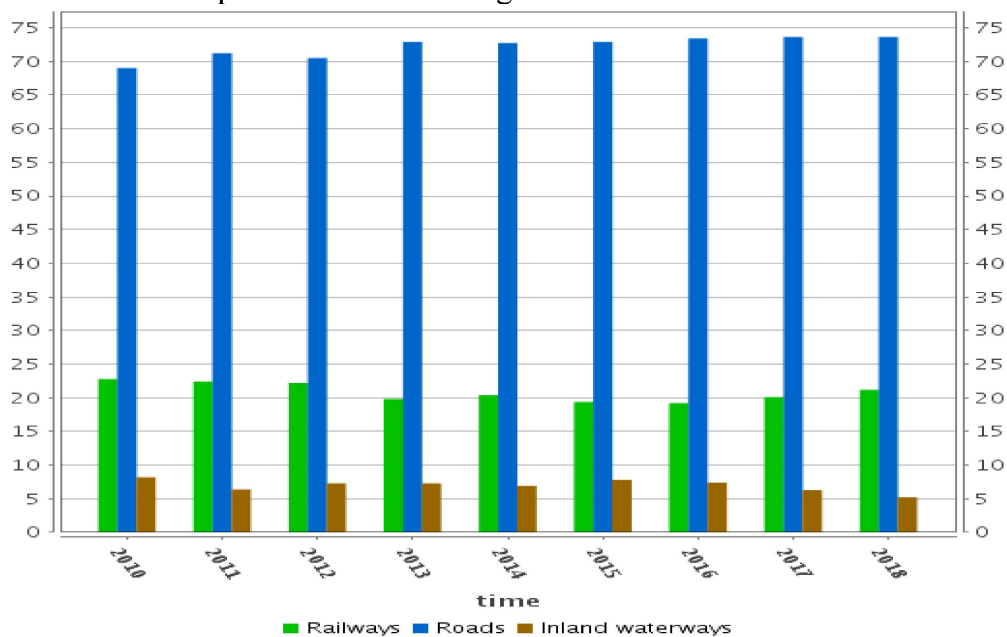
To further develop multimodal transport in Croatia, it is necessary to promote changes in transport technologies, means of transport, and it is required to build networks of terminals, river, and seaports as well as navigable canals. Brnjac (2012) states that multimodal transportation can be seen in two forms:

1. as maritime transport through the ports of Ploče and Rijeka, where it is mainly container traffic
2. as land transport of intermodal transport units (containers, swap bodies, and complete road vehicles) in import, export, and transit through the territory of the Republic of Croatia and internal traffic.

The current split for road/inland waterways/railway is almost the same as the data for EU 28. The most significant share has road transport (73,6%), followed by

railway (21,2%) and inland waterways (5,2%). Multimodal transport is an extremely efficient and economical mode of transport, but in the Republic of Croatia, it is very poorly developed. The biggest problem is in the transport policy and in the fact that the current transport system is not adapted at all for the application of multimodal transport, and this can be seen from the level of infrastructure development and superstructure of individual transport modes. That is mostly seen from the relationship between road and rail where road transport is most developed while rail transport is wholly neglected and visibly declining from year to year. However, it is of great importance for the application of multimodal transport (Figure 7).

Figure 7. The modal split in Croatia – change from 2010 to 2018



Source: Eurostat, 2020

Nikolić (2003) stated that out of four essential technologies of combined transport, the only one worth mentioning in Croatia is the transport of containers. Author further states that technical - technological problems are that there is no built and adapted system of transportation, transshipment, acceptance, and dispatch of goods in multimodal transport. IT systems are not established or interconnected or even not constructed, and this is making it harder for service providers and other stakeholders to access data and any additional desired information at a given time. Marjanović (2016) states that the difficulties are ambiguous, namely administrative, organizational, and technical-technological, as well as the inadequacy of infrastructure and personnel. The consequences manifest through expensive and inefficient transport, high external costs, and considerable damage to the environment. All this burdens the economy, making the Republic of Croatia unattractive for more substantial investments.

Thus, Croatia should plan the development of multimodal transportation on the existing traffic-geographical advantages of its position. Traffic can no longer be dealt with separately by individual transport branches, each transport branch is, in fact, a

subsystem of a single transport system. For the Republic of Croatia to be compatible and complementary with European and world traffic flows, a program of the development strategy for all transport branches (including the development of multimodal transport) should be developed, to appear as a severe and equal partner in the European Union (Nikolić, 2003). Zelenika and Nikolić (2003) conclude that Croatia needs to develop a quite complicated and coordinated system between single or individual traffic sectors. At the same time, this strategy should be in line with environment protection policy and environment quality improvement. In 2014 Croatian government presented “Transport development strategy of the Republic of Croatia 2014 – 2030” (MMPI, 2014) which emphasizes the necessity of the development of multimodal transport. This development strategy sets a set of multimodal goals considering the results of analyzes of the current situation in all modes of transport. The Strategy also sets out measures for each mode of transport for reaching the strategy goals. Some of these goals are set with a unique and specific purpose in relation to the sector, while others are set with a general or transversal component.

6. CONCLUSION

Multimodal transportation brings savings to all included stakeholders (providers, transporter, buyers, etc.). At the same time, it lowers the environmental threat from road transportation, which has the most significant share in EU28 and as well in Croatia and Turkey. Multimodal transport can have a considerable influence on the country's economic development, and at the same time, it lowers the pressure on the environment. Multimodal transportation infrastructure and multimodal transportation services will have an essential role in the companies' logistic operations in the 21st century.

Internationalization and multimodality call for more coordination and co-operation along the transport chain. Thus, in current conditions, a key is a qualified person who will successfully perform door-to-door transportation. Besides, appropriate legal regulation is undoubtedly needed. There is no single legal regime for multimodal transport in force. Attempts to make uniform laws for multimodal transport have been made (United Nations Convention on the Multimodal Transportation of Goods and Rotterdam Rules). Still, they failed to enter into force due to an insufficient number of ratifications. The issue of liability for damage is undoubtedly one of the most important, especially when we talk about the transport of goods. Without a uniform international liability regime for multimodal transport in force, it is difficult to predict which law will apply in case of damage, which causes uncertainty. However, looking back 40 years from the UN Convention on the Multimodal Transportation of Goods until today and considering all the advantages of multimodal transport of goods as well as the importance of appropriate regulation, it seems that there is neither a practical nor an obvious political need for such an international convention.

Based on analyzed case studies, both countries are facing barriers in developing multimodal transportation. On the other hand, further development of the multimodal

transportation would have a significant impact on both countries. They have different strategies and plans on how to do it in the next five to ten years. Turkey has set a procedure for creating a multimodal transport network that has the goal of having 20 logistics centers, improves the transport infrastructure, and increasing the competitiveness of its multimodal transport operators. On the other side, in Croatia, there are two forms of multimodal transportation (maritime and land transport). However, multimodal transport is still poorly developed. It needs to develop a quite complicated and coordinated system between single or individual traffic sectors. To develop multimodal transport, Croatian government presented a strategy and goals for transportation development in which the multimodal transport has significant role.

For both countries, there is a lack of data on multimodal transport, which represents the limitation of this paper and an opportunity for further research. Thus, we propose additional research, a quantitative study, to find out how much goods is transported in multimodal networks in countries and a survey about how to implement multimodal transportation network which will be sustainable and less dangerous for the environment.

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