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Integrated transport
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INTERMODALITY AND INTERMODAL CARGO TRANSPORT IN THE EUROPEAN UNION

ABSTRACT

Efficient transport system is an essential prerequisite for the competitiveness of the European Union. The predicted increase in international trade, sudden expansion of the Union to the middle and eastern European countries and wider co-operation of the Mediterranean countries will make the role of transportation even more significant.

Unless the transport industry reconsiders its requirement for modal-independent services and uses the additional capacities in other modes of transport, the road traffic is likely to further increase its share in the market, which amounts today to 72%.

In order to achieve social, economic and ecological sustainability, efficient and balanced use of the existing capacities in the overall traffic system of Europe has become the key challenge.

Therefore, the Community, among other things, strives towards real balance of the business policy which gives preference to the development of unique, integrated traffic systems for the Community as a whole.

Promoting intermodality is a means of business policy which enables systemic approach to traffic. Traffic services are offered as modally independent links from home to home, based on a series of feasible alternatives regarding transport mode through a new, efficient implementation of the traffic system thus reducing the transport costs and enabling creation of additional values.

KEY WORDS

intermodal cargo transport, integrated traffic system, efficiency, competitiveness

1. INTRODUCTION

Since 1970, European cargo transport has increased by about 70%. During the next two decades an annual increase by about 2% is expected. According to the current figures, the costs caused by congestion in traffic reach up to 120 billion ECU or 2% EU gross national product. Traffic accidents, air pollution and the level of noise add 2% more to these costs.

These costs undermine the competitiveness of Europe at a time when transport is required to be flexible, reliable and economical.

The share of road transport in the market amounts to 72% (from almost 50% in 1970). The share of railway transport has decreased since 1970 from ca. 32% to less than 15% in 1995. This fall will probably continue if the current trend does not change.

A whole series of barriers has been noticed which prevent intensive application of intermodal transport. These include the lack of a unique network of various types of transport and their interrelationships, lack of technical interoperability between and within single means of transport, differences in regulations and standards for transport vehicles, data exchange and procedures. Between single methods of transport there are different levels of efficiency and service quality, different levels of responsibility and lack of information on intermodal services. As a result, the modal - independent transport from door to door is still underdeveloped.

Economically sustainable stability in accordance with the ecological aims is the main objective of the common traffic policy and different kinds of transportation have different impact on the environment, e.g. regarding emissions, energy economy, noise and use of the land, promoting the development of ecological characteristics of traffic system as a whole. Therefore, the reduction of share of railway in traffic is especially worrying. The ecological problems caused by road traffic are very serious in some transit regions, where the transition to railway traffic would represent an obvious remedy for such a situation.

2. INTERMODALITY CONCEPT

Due to continuous increase in cargo transport and a growing imbalance in using various transport modes and infrastructure, the European Union traffic system is showing signs of inefficiency from the social and

economic aspect. Cargo transport appears more and more as an innovative and promising means, which can support an integral systemic approach, which tends towards more balanced and efficient usage of available traffic capacities (infrastructure, motor pool, equipment for cargo handling, etc.)

Intermodal transport can be understood as movement of goods which uses at least two different modes of transport in the door-to-door transportation chain.

Intermodal transport is the movement of goods in one and the same loading unit or vehicle which successively uses several transport modes, with the very method of handling the cargo remaining the same.

Combined transport is intermodal transport in which the major part of travelling through Europe is done by railway, continental waterways or sea, and whose every starting or ending segment of transport, by road, is as short as possible.

Intermodality is a qualitative indicator of the integration level between different transport modes. Several intermodalities mean more integration and complementarity between different transport modes, leading to more efficient usage of the transportation system. The economic basis of intermodality is the fact that transportation modes, where each is characterised by favourable economic and operative properties, can be integrated into house-to-house transportation chain, in order to improve the overall efficiency of traffic system. Integration of various transport modes has to be carried out at all levels of infrastructure and other equipment (e.g. loading machinery, vehicles,

telecommunications), business operation and services, as well as regulation conditions (see Figure 1).

The objective of intermodality is to develop one frame for an optimal integration of various transport means, in order to enable an efficient and economic use of the traffic system by means of easily through-going transport services from house to house, adapted to the individual needs of the users, at the same time giving incentive to competitiveness among carriers.

Intermodal approach should provide a frame within which the transport user himself will be able to decide on the optimal usage of various transportation types.

Intermodality is not expressly oriented to certain types of transport. It is a question of traffic flow and mobility, expecting from railway, water, air, and road transport to contribute to the optimisation of transport as a whole, with the support of sophisticated information and communication services. At the level of traffic branch, new services, information and communication technologies will improve the use of existing capacities.

3. LOGISTICS - COMPLEXITY OF DEMAND

Cargo transport is one of the derivatives of demand. It is therefore a part of the economic process. The industrial process requirements have drastically changed over the last ten years and can be character-

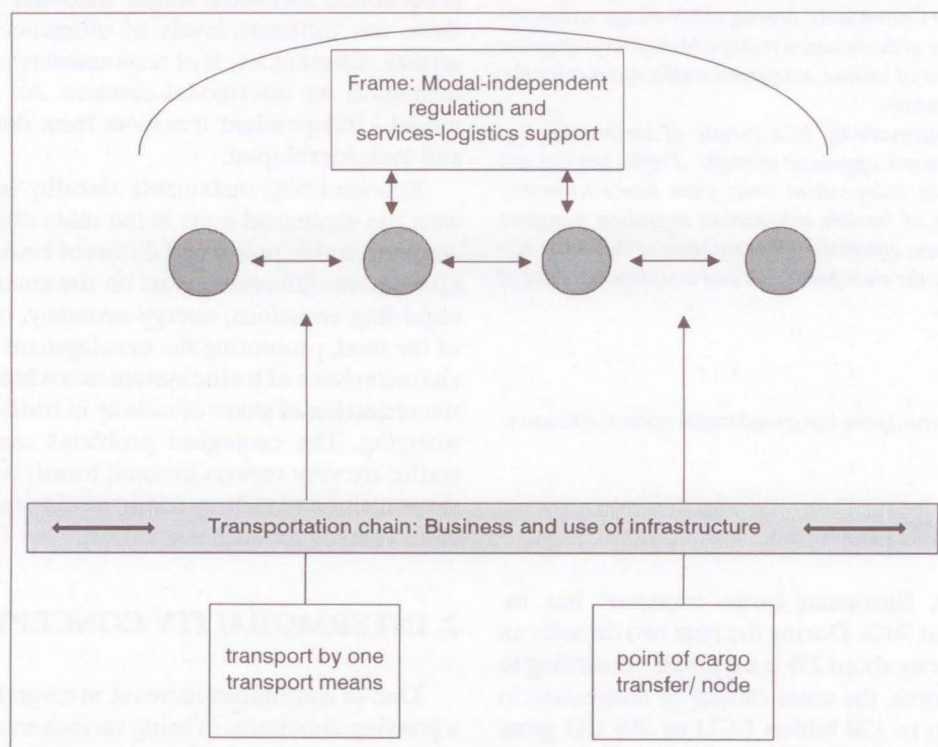


Figure 1

ised by global competition, shorter production processes, and the need to reduce the costs. The implementation of the principle of on-time delivery, manufacture to order, and concentration of supply and distribution centres, have brought to a close connection between the production and distribution processes with transportation, in order to provide better services, shorter delivery times and lower costs. At the same time, competition on the world markets has increased the number of participants and geographical range of supply and distribution chain.

Efficient logistics has become the key factor of competitiveness.

Logistics can be defined as the way of handling the flow and storage of materials, current activities, completed goods, and the related information from the point of origin to the point of end-consumption in accordance with the users' requirements. In a wider sense, it includes also recycling and waste disposal.

Transport plays one of the major roles in logistics and quality of services in the overall supply and distribution chain. Cargo transport must satisfy the increasing requirements for quality regarding flexibility, speed and reliability, in order to deliver the goods precisely on time, and to precisely the right place. This includes also movement of goods and functions of storing, packaging, or adapting to individual requirements of the users. Depending on the type of goods, the expenses of logistics can amount to one third of the final market price, although this share is usually smaller and has generally decreased over the recent decades. About one quarter of these costs can be costs related to transport.

4. HINDRANCES IN IMPLEMENTING INTERMODAL CARGO TRANSPORT

In the present modal-oriented traffic system, every change in transport mode within one travelling includes the change of system, and not only the technical cargo handling. This causes the so-called friction expenditures which could make intermodal transport incompetent in comparison to the single-modal transportation of goods.

Friction expenditures are a measure of inefficiency of a certain transportation activity.

These appear in the form of:

- higher prices,
- longer travelling, more frequent delays, or less reliability regarding deadlines,
- poorer availability of quality services,
- restrictions regarding type of goods,
- greater risk of cargo damaging, and
- more complex administrative procedures.

In order to make intermodal transport attractive to users, friction costs must be identified, quantified, qualified and reduced.

At the same time, the logistic services within the intermodal transportation chain will need to offer additional value in order to compensate for the friction costs. The nodes and cargo handling places in the traffic network have to be especially well adapted to offering services such as storage, information, or individual approach to the product. The market has to be able to recognise and use these opportunities, and the intermodal transportation policy has to eliminate the bottlenecks which could prevent the carriers from using them.

5. IMPROVED INTERCONNECTIONS AND NODES

The points of transfer from one transport mode to another, will be the intermodal network nodes. Activities and services at those places should improve the whole transportation chain. Some of these nodes will become centres of economic activities, integrating the regional potential of industrial supply and demand with competitive logistic structures and markets. Introduction of the equipment for production or product individualisation, networking of local supply chains, and organisation of distributive centres around those nodes will give them a new function which goes beyond the exclusively traffic function.

New concepts of cargo handling and improved automation can reduce the friction costs for the users, by speeding up the transfer from one transport mode to another. They will provide more efficient dispersion of traffic from the high traffic density paths to regional flows of lower density. They will also increase the possibility of consolidating the traffic flows from various origins into common flows on the main traffic networks. Terminals and nodes will function as linking points between the high traffic density corridors and the regional and local traffic networks.

5.1. Harmonised standards for cargo handling machinery

The issues of differences in cargo handling means (such as containers of various sizes, exchange equipment) should be solved according to the requirements of intermodal transport and requirements of its users. Harmonising of standards for sizes, weights, and other characteristics for all methods of transport will simplify the intermodal transfers for the great many transported goods. The new cargo handling equipment, especially for minor deliveries and flexible cargo handling technologies, will provide modular planning and usage of capacities. Flexible solutions of leasing will

give incentive to innovation and enable the carriers to reduce their fixed costs. A more efficient usage of cargo handling machinery in the systems of collecting or circulating cargo deliveries will contribute to the factor of utilisation and to avoiding the empty rides.

5.2. Integration of free paths for railway cargo transport in intermodal context

The question of free approach to infrastructure for all the licensed carriers is of special significance in railway traffic.

The development of Trans-European free paths for railway cargo transport is suggested, which are characterised by free approach and elimination of a great number of hindrances in international traffic. Free paths will become one of the major elements in intermodal transport.

The European Community has understood the need for a networked approach to planning traffic infrastructure, and has adopted the guidelines for Trans-European traffic infrastructure networks (TEN-T). A multinational task group has been founded within the European Community, that will develop one intermodal basic plan for all the transportation modes and will suggest criteria for locating the inter-linking points and terminals. The EC task group will take into consideration the results of research projects which are related to intermodal traffic policy and traffic concepts. These include EMOLITE (evaluation model for optimal location of intermodal terminals in Europe), IQ (improvement of quality of intermodal networks and terminals) and IMPULSE (technological improvements in intermodal networks and terminals).

5.3. Charging for infrastructure costs and transportation pricing

Taxes and tariffs are calculated today in very different ways in different transportation modes and there are great differences in the level of covering the costs of infrastructure and outside expenditures. This leads to two problems. First, modal selection is deformed, due to the different level of covering the costs and use of various bases for costs calculation (e.g. average, marginal, and lump sum calculation of costs). This causes inefficiency in combining different transportation means in intermodal transport chain. Secondly, the different pricing systems, which have developed in completely modal lines, means that the calculation of costs for elements of traffic (e.g. railway and road) is based on different and sometimes conflicting principles. Therefore, it is generally difficult to determine the basis for pricing in intermodal transportation. This is made difficult by the development of intermodal services themselves.

5.4. Development of combined transport in Intercontainer - Interfrigo (ICF)

Combined transport in Intercontainer - Interfrigo (ICF) was significantly reduced in 1997 as compared to 1996 and 1995 (Figure 2).

Maritime traffic in 1997 compared to previous years (1996 and 1995) noted a continuous and worrying fall in traffic. The reason for the overall fall in transport of combined traffic in Intercontainer - Interfrigo (ICF) is the loss of some kind of monopoly in Europe, whereas the first place in combined transport is increasingly occupied by national combi-companies throughout Europe, being the operators of combined transport in international combined transport. National combi-companies have a very significant role in the international and national combined transport.

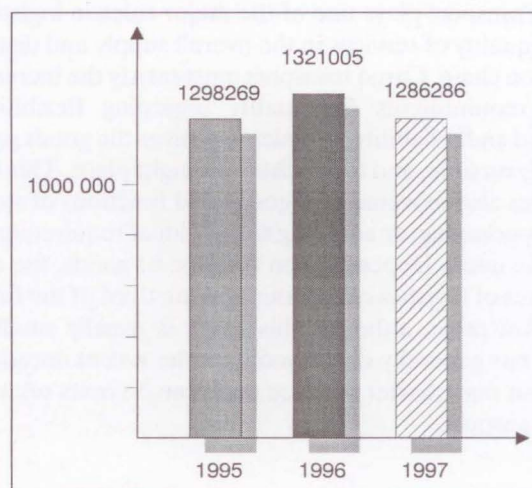


Figure 2 - Traffic development 1995-1997 (in TEU)

Source : ICF Basel

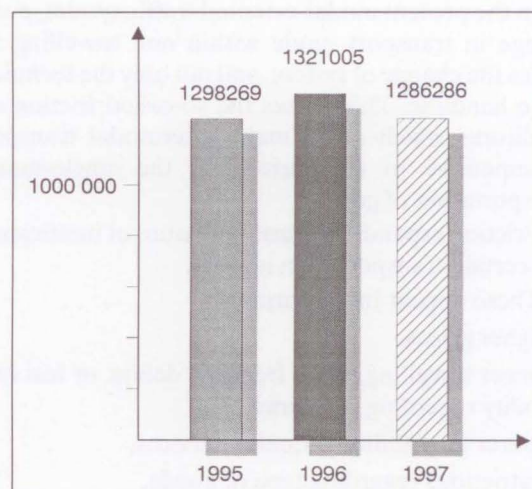


Figure 3 - Maritime traffic 1995-1997 (in TEU)

Source : ICF Basel

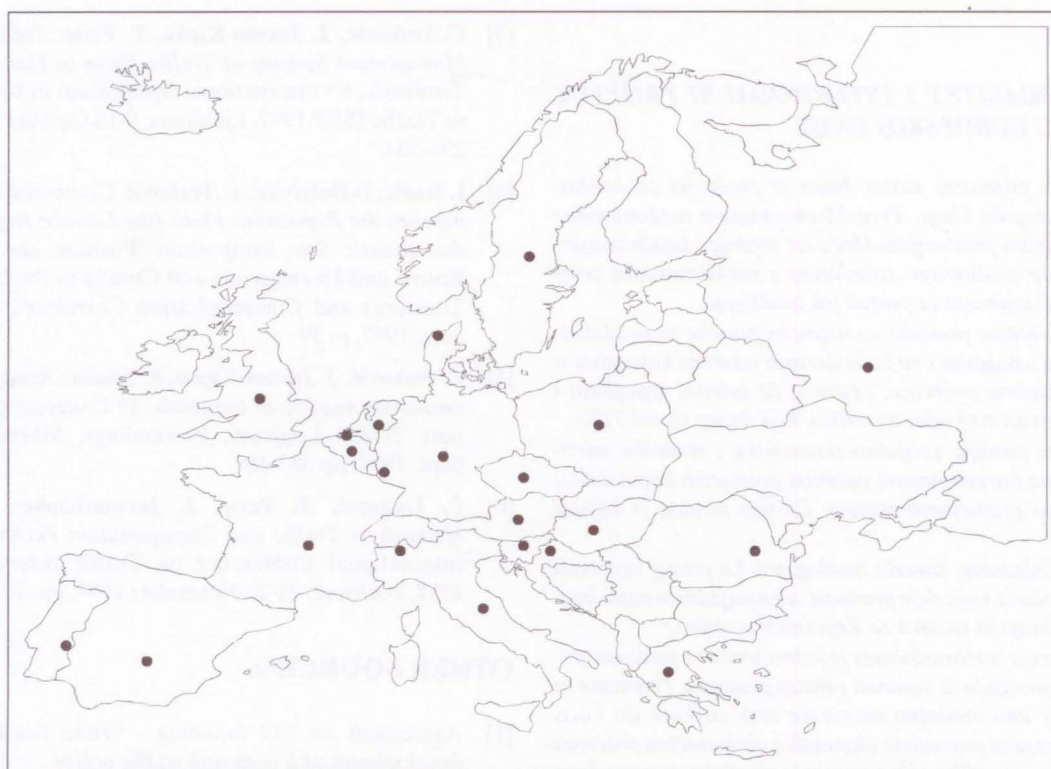


Figure 4 - Intercontainer - Interfrigo (ICF) network in Europe

6. INTEGRATION OF SMALL AND MID-SIZE ENTERPRISES (MSP)

Small and mid-size enterprises (MSP) participate with almost 70% in the overall traffic of the European Union companies. Since such enterprises are involved mainly in supply and distribution at short distances, they influence the structure of trade flows in the European Community. They also play an important role in the field of transport. Their needs are therefore important in defining the future intermodal traffic system.

In order to remain competitive, specific actions need to be considered in order to prepare the small and mid-size enterprises for important changes that they will have to face because of intermodality. These actions may include education, training, and information about the market as well as the application of new technologies, which insure ease of access to the information systems and services.

The economically sustainable stability in accordance with the ecological objectives is the main objective of the common traffic policy. Since various transport modes have various impacts on the environment, e.g. regarding their emissions, energy efficiency, noise and land use, promoting the development of ecologically friendlier ways of transport on the transportation market is the main way towards improving the ecological characteristics of the traffic system in general.

Therefore, the fall in railway share in the traffic is especially alarming. Ecological problems caused by road traffic are very serious in some transit regions, where the transition to railway traffic would be an obvious remedy for such a condition.

7. CONCLUSION

Intermodality is an essential component of the common traffic policy of the European Union for establishing of the economic sustainable mobility. It offers political means for systemic approach to integration of different modes of transport into a single unique traffic system that satisfies the need of European citizens and industry.

The program of actions for intermodal cargo transport in Europe is the next step in realising the common traffic policy. It will require co-operation between carriers and users of their services, relevant industries, member countries and regional and local authorities. The main challenge will lie in the market, namely, in organising combined transport services from home to home, according to the users' requirements, that strengthen all kinds of transport and that use all traffic infrastructure and capacities.

A frame needs to be defined within which the market can act. Regulations and conditions have to be such as to create a field of equal activities for all the carriers and to give incentive to innovations.

SAŽETAK

INTERMODALITET I INTERMODALNI PRIJEVOZ TERETA U EUROPSKOJ UNIJI

Efikasni prijevozni sustav bitan je preduvjet za konkurentnost Europske Unije. Predviđenim rastom međunarodne trgovine, naglim proširenjem Unije na srednje i istočnoeuropske zemlje te proširenom suradnjom s mediteranskim zemljama, uloga prijevoza će postati još značajnija.

Ukoliko sektor prometa ne razmotri potrebe za modalno-nezavisnim uslugama i ne bude koristio rezervne kapacitete u drugim načinima prijevoza, cestovni će promet vjerojatno i dalje povećavati svoj udio na tržištu, koji danas iznosi 72%.

Da bi se postigla socijalno-ekonomska i ekološka održivost, efikasna i uravnotežena uporaba postojećih kapaciteta u cjelokupnom prometnom sustavu Europe postala je ključni izazov.

Stoga Zajednica, između ostalog, teži ka pravoj ravnoteži poslovne politike koja daje prednost razvoju jedinstvenih, integriranih prometnih sustava za Zajednicu u cjelini.

Promicanje intermodaliteta je jedno sredstvo poslovne politike koja omogućava sustavni pristup prometu. Prometne se usluge nude kao modalno nezavisne veze od kuće do kuće, temelje se na nizu provedivih alternativa glede načina prijevoza kroz jednu novu, efikasniju uporabu prometnog sustava čime se smanjuju troškovi prijevoza i omogućava stvaranje dodatne vrijednosti.

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