Contribution of New Intermodal Logistics Chain: Idea for the EU Future and Better Environment – Balkan Challenge

Natasa Gojkovic Bukvic

***Abstract*—The start point is to find adequate transport and welcome the development of infrastructure changing policy instrument reducing congestion and automaticly making roads safety and reducing environmental impacts. As regads, between economic growth and and growth in freight transport, the solution is not in reduction of transport but in redistribution between modes and in that case implementation of a new corridor canalizing transport from EU through short sea shipping and block trains. The final goal of the process is to develop a common market in the sphere of transport services. To develop a common transport policy for south-east Europe. The European Union strategies for the region have a social dimension such as the European Union Roadmap on enlargement for the Balkans. The main goal of the project is to give an opportunity to demonstrate an increasment of the demand for intermodal logistic chain using short sea shipping and railways finalizing to a two main objectives: reduce road congestion and reduce of CO_2 emission. Finally, implementation of legal regulations under supervision could produce different positive consequences on transport, environment, crime control, protection and defense.**

***Index Terms*—Balkans, CO_2 reduction. EU common transport policy, intermodal logistic chain.**

I. Introduction

The White Paper of the European Commission [1] sees internalization of external transport costs as an important instrument of stimulation of intermodal transport. European common transport policy consists in reforming national policies of member states with an aim to shaping a new European Union common policy. The aim of the process is to develop a common market in the field of transport services. To do so it is necessary to develop a common transport policy for south-east Europe and to the declared goals which could contribute economic growth, stability and cohesion in this part of Europe. For the Balkans in particular, regional stability depends on the stead lines of each and every component country. The European Union strategies for the region have a social dimension such as the European Union Roadmap on enlargement for the Balkans [2]. "European Commission prepared the following steps:

1.The selection of a limited number transport infrastructure projects of regional interest (selection of main road and rail axes, selection of seaports etc.) [3] with a subsequent aim of channelling investment towards the selected projects.

2. Liberalization of transport operation services and opening access to infrastructure.

The European Shippers Council suggests that European Commission and governments have a key role in delivering [4]:

TABLE I: Key Roles

Improving the quality of transport by:	Liberalisation and deregulation of transport markets	Focus on quality in the road sector
Securing infrastructure needs	Open up the rail market	Road transport reduction through the European Modular System
Securing the supply chain	Reform of liner shipping	Harmonization of contract clauses
Making short sea shipping an attractive alternative for shippers	Improving market access to port services	Road safety, social protection and fair competition
		Correct charging for the use of infrastructure

The main goal of the project is to give an opportunity to demonstrate an increasment of the demand for intermodal logistic chain using short sea shipping and railways finalizing to a two main objectives: reduce road congestion and reduce of CO_2 emission. The realization of both objectives consequently will reach a final aim of increasing profit and give a better contribution on the environment.

A. Brief History of a Common Transport Policy Regarding Road, Rail and Sea-Inland Waterway Transport and Intermodality for the European Union Review Stage

A common transport policy for SE Europe starts from 1999 when the Stability Pact for SE Europe was set up by European Commission. EU today is a promoter of intra-regional cooperation, specially in transport section.

The main objectives for the road transport are to improve quality, apply existing regulations more effectively by tightening up controls and penalties. Road haulage is one of the sectors targeted because for forecasts for 2010 point to 50% increase in freight transport. Congestion is increasing even in the major roads and road transport alone accounts for 84% of CO_2 emissions attributable to transport. Objectives

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for the rail transport are to revitalize the railways by creating an integrated, efficient, competitive and safe railway area and to set up a network dedicated to freight services. Problems are lack of infrastructure suitable for modern services, the lack of interoperability between networks and systems, the constant search for innovative technologies and, finally, the shaky reliability of the service, which is falling to meet customers' expectations. The World Bank document "Railway Reform in the western Balkans" [5] contains a list of recommended railway reform measures to be implemented by each western Balkan country such as staff reductions, privatization of freight operator and closing loss making local lines.

Objectives for the sea and inland waterway transport are to develop the infrastructure, simplify the regulatory framework by creating one-stop offices and integrate the social legislation in order to build veritable "motorways of the sea". Problems are truly competitive alternative to transport by land. They are reliable, economical, clean and quiet but their capacity remains underused. Better use could be made of the inland waterways in particular, where remain bottlenecks such as inappropriate gauges, bridge heights, operation of locks, lack of transshipment equipment, etc. Proposed measures are a key part of intermodality, which allow a way round bottlenecks between France and Spain in the Pyrenees or between Italy and the rest of Europe in the Alps, as well as between France and the United Kingdom and looking ahead between Germany and Poland. The Commission has proposed a new legislative framework for the ports which is designed to lay down new, clearer rules on pilotage, cargo-handing, stevedoring etc; to simplify the rules governing operation of ports themselves and bring together all the links in the logistics chain [6].

Objectives for the intermodality are to shift the balance between modes of transport by means of a proactive policy to promote intermodality and transport by rail, sea and inland waterway. In these connection major initiatives is the "Marco Polo" community support program to replace the current program. Proposed measure is to open all appropriate proposals to shift freight from road to other more environmentally friendly modes. The aim is to turn intermodality into a competitive, economically viable reality, particularly by promoting motorways of the sea [1].

B. European Union Plans for the Region

The Plan has its hard and soft measures. The hard is related to infrastructures and soft measures are harmonization and reforms (technical standards and border crossing procedures). The soft projects indicate that the rail and ports are considerably affected by "regionalization" and so and Intergovernmental Working Group on Railway and Intermodal Policy was set up. One of the main job of the Working Group is to make an inventory of rail reforms and further recommend measures that ensure the regional integration and harmonization of the reforms for every country and to open access to transport infrastructure. States have usually denied railways enterprises the freedom of a commercial business. This must change. Some railways may focus entirely on their core business of operating trains. Other may choose to enter into partnership for example with road haulers or logistics companies and offer door to door intermodal services. Some may operate across Europe, while others may concentrate on local services. One thing in common of all railways in Region is that they must focus on what their customers want and how they can satisfy these needs. It is important to establish common traffic management which will focus on planning, monitoring and control or influence of traffic. It aim should be to maximize the effectiveness of the use of existing infrastructure, ensure reliable and safe operation of transport, address environmental goals and ensure fair allocation of infrastructure space (road space, rail slots etc.) among competing users [5].

Concerning seaports intention is to identify which regional port (out of total number of seven ports in the regional core network) provides the best long-term solution for Adriatic shipping.

The core network was defined by the "REBIS" study and includes the mail rail and road connections between the five capitals of the region, as well as the cities of Banja Luka, Podgorica and Pristina; the linking of these cities with the capitals of the neighboring countries and to the ports of the Adraitic Sea and the river Danube [7].

C. Social Impact Assessments

In the case of the Trans European Transport Network in last years, European Union found out that transport has a determinant impact on regional development and regional cohesion. South-East Europe countries should be more sensitive because facing more or less critical levels of socio-economic, stability and having a rich history of ethno-political developments.

Most countries in the region have very high (30%) rate of unemployment. They reached these high level over the years as a result for transiting, the Balkan conflicts etc. For example: a sector as railway transport where 50% of labor force has left their jobs within last ten years. The current plans to liberalize rail transport in the region will have a further impact on jobs – and, this time, with no chance of resorting to voluntary departures or early retirement schemes.

Turning to seaports, the intention is to select a few ports of regional interest for future investments. This could be another critical impact on port-dependent communities and domestic economies. The key questions are:

What are the job opportunities for the people who leave the transport industry?

What are the measures to retain the active population in the labor market-training and job opportunities?

The trade unions should be involved as a social partners in the process of reform and some other aspects must be pointed out: South-East Europe countries have young democracies and so less transparency and social dialogue.

Namely, European Union should assist on South-East Europe countries to implement social dialogue, consultation and information mechanisms.

International financial institutions – often a barrier for the reform process because of "chain of blame" social dialogue at national level Consultation of trade union on the European Union regional transport policy for south-east Europe [8].

D. Environmental Aspect

ERTRAC - The European Road Transport Research Advisory Council [9] identified the following research targets in the areas of environment, energy and resources:

-Improvements in vehicle efficiency should deliver as much as a 40% reduction in CO2 emissions for cars and 10% for heavy vehicles for the new vehicle fleet in 2020

-Fuel consumption and CO2 emissions should fall by at least 10% for cars and 5% for heavy vehicles as a result of better vehicle maintenance and driving for fuel efficiency

-Further reductions in fuel consumption of 10-20% should result from improvements to road infrastructure, better use of transport modes, IT systems, higher car occupancy rates and freight loading factors

-Further reduction of carbon emissions associated with fuel production should be achieved

-By 2020, fuel cell vehicles and low carbon or hydrogen fuels should start contributing to carbon reduction, provided sustained research efforts are begun now

-By 2020, Euro 5 and 6 vehicles should be well established in the vehicle fleet

-Transport noise should be reduced by up to 10 dB (A) through a system approach including better indicators and improvements to vehicle and infrastructure [10]

-Sustainable use of resources and recycling of vehicles and road infrastructure materials should contribute to the preservations of the environment [9].

European policy implication and its key impacts regarding environment are resource use, climate change, waste, local air pollutants, noise and land take. Resource use- fuel reserves remains uncertain what makes costs increasment and also insecurity of the market. Governments need to stimulate greater energy efficiency and encourage the uptake of those alternative fuel technologies which can be shown to be less damaging the environment. This could be done by providing incentives for development of alternative fuels, opening projects and adoption of alternative vehicles for government fleets [11].

Research has been conducted and here are some measures included which have environmental impact of transports: regulations on the use of vehicles and the effective enforcement of those regulations; demand management approaches which reduce the need to travel or the use of less sustainable modes: pricing measures; soft options such as travel plans and informational and behavior change campaigns and land use planning [12].

Research on climate change for the United Kingdom government from the Tyndall center for climate change research [13, 14] has shown that limiting carbon emissions from transport in order to achieve sustainability targets will be extremely difficult to achieve.

These environmental aspects of transport cover the full life cycle of transport as well representing in the Table II [15]. The largest impacts come from transport use, but the effects from development and construction of infrastructure and vehicles, as well as the waste from the disposal, and to the environmental costs of transport.

The Transport and Environment Reporting Mechanism report for 2008 from the European Environment Agency , concludes that " the current economic turmoil may lessen the demand for transport, but the transport sector still contributes significantly to rising emissions of greenhouse gases, noise exposure, air pollution, fragmentation of habitat and impacts on wildlife.

Although there is growing awareness of the transport sector's disproportionate impact on the environment, the report shows that there is little evidence of improve performance of a shift to sustainable transport across Europe" [16, 17]. The increasing volume of transport is challenging the EU transport policy of decoupling transport usage from economic growth.

A reduction of CO_2 was called for Kyoto Treaty and that agreement targeted a real reduction in CO_2, emission economy world-wide, but due to growth on current trends, CO_2 from transport will be some 40% higher in 2010 compared to 1990.

TABLE II: MAIN ENVIRONMENTAL PROBLEMS

Main environmental problems from transport
Resource use: - large amounts of oil-based resources used for transport - extraction of infrastructure construction material
Climate change: - emissions of CO2 and other global warming gases
Waste: - vehicles, fluids, tyres
Air pollution: - local emissions of CO, PM, lead VOCs, hydrocarbons and NO
Noise and related vibration: - quality of life for those living nearby roads, airports, stations, ports
Land take: - land user for infrastructure habitat fragmentation
Water impacts: - pollution from spillage - pollution from runoff changes to water systems by infrastructure

Growing transport volumes have driven emissions up by 27% between 1990 and 2006 (excluding the international aviation and marine sector), so transport issue is moving up into many political agenda and more research in this area is being conducted. The world's total energy consumption is expected to increase at an average annual rate of 1.7% to 2.0% [18, 19]. The transport sector will represent 63% of the increase in global oil demand over the period 2004 to 2030 and in non-OECD countries transport will be the biggest contributor to oil demand growth. The peak of oil production highlights the need to develop alternative technologies not dependent on fossil fuels [20]

The main goal of the project is to give an opportunity to demonstrate an increasment of the demand for intermodal logistic chain using short sea shipping and railways finalizing to a two main objectives: reduce road congestion and reduce of CO_2 emission. Connecting Southern part of Europe using

intermodal transport chain (short sea shipping Ro/Ro and railways) and in that case eliminate road transport; means directly reduction of road traffic and of course enormous reduction of CO_2. Three main topics are recognizable in environmental benefits which are: emission, accident and traffic congestion

In the literature, the most important external costs of transport are the following ones [21]: accidents, noise, air pollution, climate change and congestion.

TABLE I: THE ARRANGEMENT OF CHANNELS

Cost Component	Road (highway)	Rail	Barge	Short-sea
Accidents	5,4	1,5	0	0
Noise	2,1	3,5	0	0
Local Emissions (air pollutions)	7,9	3,8	3,0	2,0
Climate Change	0,8	0,5	Marginal	Marginal
Infrastructure	2,5	2,9	1,0	< 1,0
Congestion	5,5	0,2	Marginal	Marginal
Total	24,1	12,4	Max. 5,0	Max. 4,0
Cost difference with road traffic		11,8	Ca 19	Ca 20
Saved external costs not moved by unimodal road transport		11,8	19	20
Saving of €1 by not transporting freight by unimodal road transport		85 tkm	52 tkm	50 tkm

Table says the external costs of long distance road haulage are twice as high as those of rail haulage, and 5 to 6 times that of barge and short-sea shipping. The largest external costs of road transport are local emissions (33%), congestion (23%) and accidents (22%) The largest one of rail transport are local emission (31%), noise (28%) and infrastructure (23%). On the base of what has been demonstrated above congestion and accidents costs are much more than 50% of external costs in road transport and those could be easily improved switching in a rail transport where that is possible or still better switching into a intermodal logistic chain.

The range of maximal main modality (rail) internal costs of 30-45€/1000tkm can be related to the above mentioned external costs of 24€/ton (road), 12€/ton (rail) and 5€/ton barge. The new modal shifted route, as recently showed by researches of European Environmental Agency that emissions of 51% of nitrogen oxide, 34% of volatile organic compounds and 65% of carbon monoxide are imputable to road traffic, could decrease all the above mentioned elements and help in global environment situation of South-East Europe. The most part of motors pollute are caused by the diesels engine which are equipped mostly in used in commercial vehicles [22, 23]. Improving this multimodal transport chain it also give social benefits linked to the road safety. In fact, the foreseen reduction of the freight transport by road, especially on long distance transport (with high safety risks) and it implies a consistent reduction of the driving mileage. The quantitative environmental and social benefits have been calculated with the comparison of the difference between the relevant external costs for the old route entirely done by trucks and the new intermodal road short sea shipping and railways.

II. PROJECT IDEA

The project idea is to create unaccompanied combined transport chain of intermodal transport units in South East Europe between Bari Logistic Center and Logistic Railways Terminals in Bosnia and Herzegovina, Serbia, Romania, Montenegro, Croatia and Bulgaria avoiding the road traffic and reduction of CO_2 using short sea shipping by Ro/Ro vessels and block trains. The European Commission has developed policy measures to shift the balance between transport modes with special focus on promoting intermodal transport. The type of transport has been strongly advocated because of environmental concerns and safety reasons to avoid road congestions.The first step is to organize railways practice in Bosnia and Herzegovina, Serbia, Romania, Montenegro, Croatia and Bulgaria mixing private and public consortium which will be able to move merchandise from/ to Southern Europe to/from Eastern Europe. To start up a common railways practice it is necessary to create a Intergovernmental Working Group on Railways- new railway management model able take care of the opportunities given by all existing European Programs on intermodal transport sector - which will include all countries interested in a project start up. The aim of European Union policy has been to reduce and in the future to eliminate technical and operational differences among national railway systems and achieve harmonization in terms of technical specifications for infrastructure, signaling, telecommunications and rolling stock as well as certain operational rules [24, 25]. This group should create common intermodal policy.

III. CONCLUSION

Today there is a need for integral and coherent transport policy. It is necessary to recognize that the environmental and social implications of the transport need to be constantly and carefully monitored.

The starting point is to find sustainable transport and welcome the development of infrastructure changing as a policy instrument to contain and reduce congestion and reduce environmental impacts. Kreutzberger [21] state that the environmental performance of intermodal transport is substantially better than that of unimodal road transport when looking at every use and CO2 emission and this is even more outspoken when also local emissions, accidents, congestion and noise are integrated. As regards of the automatic link between economic growth and growth in freight transport, the solution is not in reduction of transport but in redistribution between modes. This is a reason why a project

idea could have success. In this case we are not only talking about redistribution between modes [26] of transport but also implementing a new corridor. Fair and efficient pricing, better investments and some of policy tools that can help to achieve this. Enlargement of the European Union is set to trigger larger exchanges of goods and so need for additional investments in transport infrastructures. It's well known south-east Europe transport system distinguishes itself by extremely fragmented transport, i.e. 5000 km of border. Italy, especially South Italy, with its geographical position and also cultural, political, humanitarian, historical connections could have prestige and favorable role between European Union and Balkans. Furthermore, implementation of legal regulations under supervision could produce different positive consequences on transport, environment, production, crime control, protection and defense etc. The European Commission is supporting the idea that transport costs should reflect the true impact on environment and society and is relentlessly pushing towards the so called internalization of external costs as a policy instrument in order to establish fair and efficient pricing of different transport modes.

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