European Commission

Regional Balkans Infrastructure Study - Transport

Appendix 14 - Final Report

Containerisation Study

July 2003

REBIS transport
Joint Venture

European Commission

Regional Balkans Infrastructure Study - Transport

Appendix 14 - Final Report

Containerisation Study

July 2003

Report no.	2
Issue no.	Final
Date of issue	23 July 2003
Prepared	JC/BS
Checked	PCH
Approved	ELH

Table of Contents

1 Introduction and background

1.1 Objectives

The objective of the study is to assess the current market for multi-modal transport solutions and the prospects for such solutions (success rate for these solutions).

After a brief introduction on the terminology used, the study analyses the elements of the system and its recent evolution. It will cover, in particular, the following aspects:

- organizational context, including existing cooperation between several actors associated with/involved in the various segments of the chain
- infrastructures and technologies (rail; road; inland waterways, maritime); loading units (container; swap bodies and trailers) and handling facilities
- traffic flow and services: maritime transport of containers (intercontinental) and its terrestrial prolongation on the one hand, and intermodal transport (intra-continental) on the other

The study describes the main problems encountered within the sector and the perspectives and possible supporting measures, by distinguishing the nature of the recommended action (technical, operational or institutional), which could improve the sector.

Most of the information was collected during the mission to the Balkans by the expert on containerisation. During this mission interviews were held with representatives from relevant participants, both at policy level (Ministries of Transport) and at operational level (railways, combined transport operators; shipping companies, forwarders, etc).

1.2 Preliminary definitions

To facilitate the understanding of this working paper on containerisation, a brief summary of the definitions, agreed upon by international organizations such as the ECMT (European Conference of Ministers of Transport) is provided.

The carriage/transportation of goods, in its simplest forms, consists of loading, conveying, and unloading goods from a starting point to a destination point. In this respect, the techniques used are structured in transport systems, or **"modes"**: road, railway, maritime, river, and air.

If the same technique is used from the original destination to the final destination, the transport operation is called **unimodal**.

However, the use of only one transportation mode is not always possible. The freight market, particularly the international market, is generally **multi-modal**: goods are transported successively, from beginning to end, using several modes of transport. In this sense, the transport operation is not a simple journey, but forms a **chain** (sea-land; land-land, etc) linking different modes. For instance, air transportation is almost always multi-modal as it includes road transportation and/or rail transportation, at either end of the journey.

The technical organization and coordination of a multi-modal chain can be traditional, segmented by break bulk operations to transfer goods from one mode to another. It can also be organized in a more global way where all the elements of the transport system are integrated into a door-to-door transport chain using equipment specially designed to ensure effective transfer from one mode to another. The term of **intermodal** transport is then used: a multi-modal transport which makes use of "intermodal transport units" (ITU): maritime container, swap bodies or certain types of semi trailer - and specific haulage and handling equipment at the reloading points.

There are two main forms of intermodal transport:

- Maritime transport (inter-continental) which is the transportation of containers by sea followed by inland haulage.

- Intermodal transport (intra-continental). Rail-road is the most frequent (more than 70%) form of transport. It may however comprise inland waterways, even maritime coastal traffic, generally supplemented by the road. However, for the inland waterways, transport is limited to the routing of ISO containers[1]: swap-bodies[2] as land intermodal vehicles cannot be stacked.

One of the characteristics of intermodal transport is thus, in comparison to unimodal transport, its complexity. This handicap can be overcome, from an economic point of view, through the increased competitiveness of rail, river or maritime transport for long distance transport: the greater the distance, the greater the competitiveness of intermodal transport. Under European conditions, it is estimated that the cost of intermodal transport becomes lower than road costs for distances greater than 500 - 600 kilometres. Consequently,

[1] A freight-carrying unit specifically designed as a fraction of a maritime vessel, and not frequently used for intra-continental transport, as they are too narrow to accommodate two standard pallets side by side by side by side.

[2] A freight-carrying unit optimised to road vehicle dimensions and fitted with handling devices for transfer between modes, usually road/rail.

combined transportation should mainly involve **international freight traffic** (overseas trade, continental trade and transit).

Apart from the distance factor, there is **a need to concentrate traffic activity on trunk routes** where the available freight potential is such that special intermodal through-trains (or dedicated vessels) can be organised. For railways, this is traction haulage from terminal to terminal without marshalling and without stops, thereby reducing the unit cost of rail traction making it cheaper than road operation[3].The freight concentration logic is also in the utilisation of a reduced number of aligned specialised terminals[4] (or ports container facilities). The volume exchanged must be of a magnitude/scale (100 000 t/year [5]) to allow the daily transportation of goods by rail.

Furthermore, limiting partial loads and empty returns in long-distance transportation as much as possible is a condition *sine qua non* in order to create an economically viable operation. What makes intermodal transport interesting is the ability to balance **the traffic flow in both directions** (containers, swap bodies and trailers)**.** In other words, combined transport can often only be conceived on routes where the bi-poles exchange equilibrated freight volumes.

From a political point of view, the development of intermodal transport can be justified by the socio-economic advantages: intermodal transport can contribute in reducing road congestion; air pollution, road accidents, etc. An intermodal transport chain deliberatively conceived to make the major part of the journey by rail, inland waterways or sea, and/or any initial or final part of the journey by road, as short as possible is described as **combined transport (CT)**.

The combined transport business has to rely on the expertise and **co-operation between different partners,** involved on two different levels**:** the policy level and the operating level.

At the «policy level», the Ministry of Transport is the main actor, the authority in charge of defining general transport strategy and policy together with the assistance of professional unions emanating from the sector.

At the **«operating level»,** there are three main actors: the carriers (railway companies and shipping companies); the combined transport operators[6] and the customers (freight owners and freight forwarders).

Carriers, such as the railway companies, provide the network and rolling stock together with the necessary staff (terminal managers in charge of handling,

[3] If the advantage is not substantial, freight forwarders or even carriers would prefer to conclude the operation by road.

[4] An increase in the number of specialised terminals in many different areas can only push up the unit cost of container transport. The higher the number of terminals, the lower the traffic activity per terminal. The resulting handling unit cost will be high, since the overall cost must be shared among fewer containers handled.

[5] It can be demonstrate that to be able to form a daily 20 wagons trains, loaded with 40 TEU, it is necessary to have a minimum traffic of 100 000 tons to carry in each sense of the traffic flow.

6 These companies are the national members of the two competing groups: IURR (and Intercontainer).

monitoring, storage and intermodal unit's data). In general, they act as wholesalers or traction dealers. They do not sell combined transport packages as done in the freight wagon business.

The combined transport operators purchase rail traction from carriers and, by reselling theses services to individual firms (on the basis of attractive retail prices) they obtain benefits that allow them to finance new infrastructure themselves. The combined transport operators are organized into **two competative groups**: the container companies (subsidiaries companies of the national railway) and the national combined transport operators (rail-road companies dominated by road carriers). Their roles can be summarised as follows:

- The **container companies** originally concentrated their efforts on the maritime container business (inland transport of containers to/from the port of origin to the final destination). They have now extended their activities to the intra-continental traffics of swap-bodies. This enables them to operate within Europe, the European railways companies jointly created **Intercontainer - Interfrigo** (ICF) a company to which they gave the task of organizing the international container rail transport. The services they provide cover the entire combined transport chain i.e.land containers, provision of loading units, initial journeys by road, main journeys by rail, final haulage by road (with their own vehicles or via subcontractors), and handling operations of UTI at the terminals they own.

- The **national combined transport operators** was created through the initiative of about 1000 freight forwarding and haulage firms. Each railway company has a participatory role. These companies then joined the seventeen combined transport companies, to form the "Union Internationale de transport combiné Rail-Route" (IURR). The UIRR companies are, in most cases, the largest operators in their respective countries. They mainly serve the intra-continental market, predominantly with swap bodies. Their role is often limited to rail traction and handling operations. They do not own swap bodies (or trailers or even containers) and do not offer initial or end trucking delivery services. All these operations, as well as the commercial aspects, are exclusively under the control of the haulage companies.

The role of the customers is that of freight provider. As focus on logistics increased, manufacturers realised that in order to meet market demand it was necessary to transport products as efficiently as possible. Therefore, they began sub-contracting the organisation of their transport and warehousing activities to specialists such as freight forwarders who are, in practice, the customers of the combined transport operators firms. As the freight owners contracted out logistic services, the bigger freight forwarders focused their attention on logistic services such as warehousing while contracting traction services out to smaller companies and other carriers, including the combined transport operators. Attention is no longer focused on owning – operating their own vehicle fleet but on control and responsibility for managing the entire freight transport chain.

2 Analysis of the current situation

This section provides a comprehensive view of the combined transport (CT) in the Balkan. It successively analyses the following main subjects:

- general environment of the combined transport in the Balkans
- institutional and regulatory framework
- infrastructures and facilities
- traffic flows and services

2.1 General environment of the combined transport sector

The economic framework in the Balkan countries is characterised by a series of factors, which can be seen, in the short term, as an obstacle to the development of efficient combined transport systems:

- In most of the Balkan countries, present transport flows on key routes, as a result the break up of the Yugoslav Federation, are exceptionally low and insufficiently organised. As a result, the logic of combined transport can not be easily applied: the concentration of traffic on trunk routes does not allow for the formation of frequent through trains.

- In most of the Balkan countries, transport demand over long distances (international trade) is mainly related to the importation of goods, leading to an unbalanced transport flow which poses the problem of returning empty containers.

2.2 Institutional and regulatory framework

2.2.1 General overview

The institutional structures at “Policy level” and the organisational framework prevailing at the “Operational level” are insufficiently developed to allow the implementation of best practices in the combined transport sector:

- At the « Policy level », in the Balkan countries, no clear government policy appears to have been defined for the development of combined transport. Within the Ministry of Transports and Communication, the implementation

of unimodal infrastructure programs (road, rail, ports, and aviation) is still the main focus area.

- At the **« Operational level »**, the organisational framework is complex, characterised by unclear relationships and poor definition of the role of each partner involved in combined transport (CT operators; railways; ports and freight forwarders).

At the « Policy level », the definition and adoption of a national programme for a combined transport system, within the states, is a task for the short term. This includes determining rules and legal issues to guide participants in the transport sector; financial support to improve or develop the infrastructure for combined transport and determining main/basic operating principles for the further development of this sector.

Indeed, an examination of existing regulations and policies governing the combined transport sector shows that provisions to support combined transport, as defined by EU directives and resolutions, ECMT (European Conference of Ministers of Transport), are not well defined or applied and the results are disappointing, especially those related to the following points:

- Access to the market: promotion for the liberalization of combined transport operations from all quota systems and systems of authorisation.

- Fiscal incentives in favour of combined transport: measures to ensure that the purchase or leasing of special vehicles, handling equipment, swap bodies and containers (including their purchase or leasing from domestic manufacturers), as well as road tax applicable to road vehicles involved in combined transport are reduced or reimbursed.

- Exemption from compulsory tariff regulations for initial or final road haulage stages which should form part of the combined transport operations.

At the **« Operational level »:** the role and function of the various actors involved in combined transport (CT operators; railways; ports and freight forwarders) is still unclear.

For instance, present operators are only active on the intercontinental traffic market (maritime containers to/from ports). In spite of larger freight volumes exchanged with continental neighbours, the intra – continental flows involving combined transport are practically equal to zero (swap – bodies, semi-trailers, etc).

It is true, as mentioned earlier, that conditions for efficient combined transport on a continental scale are not being met. Freight volumes are low, distances are not particularly great and traffic is unbalanced. Road transport seems to be in a more favourable position which is reflected in a market share of more than 60% of container traffic to/from ports. However, the intra-continental market still

offers a better business opportunity than the small market for maritime transport to/from ports where distances are shorter.

As for the various railways, apart from organisational problems generated through the dispersion and number of companies operating within the same country, the understanding of their role in the promotion of combined transport is ambiguous: the railways regard container traffic as suitable only for specific types of freight. There is no clear distinction in railway operation procedures for wagon freight traffic and container traffic.

2.2.2 Organisational framework in the different countries

Croatia
Croatia is the only country within the region where the first decisive step towards the creation of a combined transport industry has been achieved. The general organisation appears to be similar to that of Western Europe. In Croatia there is a container company, AGIT, and an independent combined transport operator, *Crokombi*. The container company is a subsidiary of the railway company and, as an initiative of the Croatian authorities to develop combined transport activities in the country, *Crokombi,* was appointed, in 1998, as a national combined transport operator (member of IURR).

However, in practice, the role and function of these companies is still unclear and results are disappointing.

After operating for five years, the activities of *Crokombi* are still close to zero. Instead of trying to develop its market in the field of intra-continental traffic over long distances, as IURR companies' used to do, the company strategy focuses on the traction of containers to/from Koper, in competition with road carriers and even with AGIT. On the other hand, the company has not developed any particular facility or purchased swap bodies or built a network to operate at the « other end ».

The performance of the container company AGIT is also poor and the strategy rather unclear: no connection with the Intercontainer hub in Sopron has been developed or even contemplated.

Serbia and Montenegro
An excessively complex organisational framework prevails in this country. The company " ZIT", a subsidiary or RTE Belgrade and the only inland container company in the country, do not have direct access to the intra-continental international market of land container transport.

ZIT is under the Serbian Railways which are themselves under the Yugoslavian Railways so that the container company cannot organise any international container trains on their own. The company has to go through the former-Yugoslavian Railways Committee, which acts as the main interlocutor of international networks. The problem is that this committee is not an operator

and can not organise any container transport (they are only in charge of the organisation of trains in transit through Serbia). As a result, no operator is empowered to sell rail traction, provide container wagons, containers as well as handling services for potential customers.

In particular, ZIT can not directly deal or operate any container train in connection with the ICF network which is fairly developed: it offers tracking and tracing services related to containers shipped to/from Sopron (the closest main ICF Hub in Central Europe providing access to the European network) The company has to go through the former-Yugoslavian Railways Committee, which acts as the main interlocutor of international networks.

Furthermore, ZIT suffers from an ambiguous market position, the company combines the function of a container transport operator and a forwarding agent, operating its own fleet of trucks. Although the company's effectiveness is apparently reinforced by this situation, other traffic operators have doubts regarding the neutrality of the firm. This dubious/unclear position compromises its future and makes difficult to gain the confidence of freight forwarders working for large industrial firms.

2.2.3 Bosnia and Herzegovina, Albania and FYRO Macedonia

The situation in Bosnia and Herzegovina, where the network is operated by three different railways, is worse than in Serbia as the country has neither domestic container companies nor combined transport operators.

In Albania, with the exception of the private company operating in Durres, there is very little involvement of the authorities or the railways in favour of combined transport.

In FYRO Macedonia, combined transport is evolving towards a better organisation with the involvement of ICF which operates a weekly direct container train between Skopje and the ICF hub in Sopron.

2.3 Infrastructure and technologies

2.3.1 Introduction

The overview of the existing transport infrastructure and technologies is organised around the following items:

- combined transport networks (railways lines, road and inland waterways)
- combined transport terminals and equipment
- road fleet and rolling stock dedicated to combined transport traffic

2.3.2 Combined transport networks

The Pan European transport corridors crossing the Balkans (IV, V, VII, VIII, and X) offer potential for the organization of a combined transport, though

some major improvements are needed, especially regarding the rail and road links in the East-West Corridor 8 and Corridor X.

In the present context, (low volumes, unbalanced character of traffic flows, weak organization), the improvement of transport infrastructure to facilitate the development of container traffic is something for the medium term.

All efforts in favour of this technique, in the short term, should be focused on the organisational; regulatory and institutional framework.

2.3.3 Combined transport terminals and equipment

Apart from Tirana, the existing terminal network links the major capitals of the region and offers potential for the organization of a combined transport sector in the Balkan region, though some improvements are needed, especially in FYRO Macedonia.

The description of these main terminals (layout and handling equipment) can be summarised, country by country, as follows:

Albania
The only terminal for containers is in the Port of Durres. The facility has been created behind quay 6.

Containers are handled either with ships' gear or with a 40 tons gantry crane. To move them to a smaller stacking area, behind the berth, the terminal has two mobile cranes. Present area for container handling and storage is about 32500 square meters.

The terminal is operated by a container operator, Pelican, under the port authority. According to information provided by the port, the Albanian railways do not handle containers and are in no position to, as the railway does not operate a container terminal.

A project for future expansion to include Quay 7 and to increase storage capacity (by increasing paved area) is foreseen by utilizing the abandoned railway yards and through the acquisition of handling equipment, including a 100 tons container mobile (rubber wheels, no rails) crane. Future capacity is estimated at 60000 TEU per year.

Croatia
The country has a well developed container terminal network, including five major facilities: Zagreb Vrapce, Osijek, Split and Rijeka Bradjica. The main characteristics are as follows:

- The Container terminal in « Zagreb Vrapce » has a relatively modern design. It is a railway property and the main inland terminal of Croatia. The terminal has good road and rail connections. It is equipped with a gantry crane with a transhipment capacity of 120 UTI/day and lifting

capabilities of up to 40 tons and the ability to handle 40 containers. The terminal has the possibility of loading and unloading freight on wagons, on the parking lot, or on vehicles. The terminal is equipped with three tracks (1712 m), and a storage surface of 25.000 m2. It also has 2 mobile manipulator loaders with a lifting capacity of up to 40 tons as well as one forklift (12 tons) for the handling of empty containers. The terminal is equipped with its own information system. Traffic activity is decreasing: in 2001, it was only 4475 TEU (7612 TEU in 1997).

- The small container terminal of Osijek, railways property, is located within the railway station Osijek. It has a transhipment capacity of 10 UTI/day with handling capabilities for 40 containers, a one side-forklift type Kuna. The terminal has one track length 200 m, with a storage surface of 2400 m^2. The terminal has no information system. Traffic activity is particularly low and remains unchanged since 1996: about 60 TEU /year.

- The Container terminal of the port of Split has road connections to city and state coastal roads and has a transhipment capacity of 35 UTI/day with handling capabilities for 40'container and manipulator type 'Beloti'. The terminal has one track length 80 m, with a storage surface of 1600 m2. Traffic activity in 2002 was only 15 TEU (456 TEU in 1997).

- Container terminal Rijeka Brajdica (Port of Rijeka) is connected with a special track line to the railways station Rijeka Brajdica and Rijeka junction. It has a transhipment capacity 240 UTI/day and a crane with a lifting capacity up to 40 tons. The terminal is property of Port Rijeka. The operation is carried out jointly by AGIT, a subsidiary container company of Croatian railways and is situated close to the Port Rijeka. Traffic activity is modestly increasing : 15239 TEU in 2002 (12580 TEU in 1997).

Bosnia and Herzegovina
There are four container terminals in the whole Federation: Sarajevo, Mostar, Tuzla and Ploce. None of these are modern, but, for the time being, are able to meet the current requirements, although some improvements are needed.

The terminal of Sarajevo is the largest. The terminal road access is in a poor condition. The crane has a lifting capacity of up to 40 tons. Three forklifts with a capacity of up to 12 tons are used to handle empty containers.

Both Mostar and Tuzla are small terminals and are being used exclusively by the military forces with their own handling equipment (mobile forklift).

FYRO Macedonia
FYRO Macedonia has one container terminal close to Skopje at Tovarna, near to the to the railway station. The terminal is equipped with one gantry crane with limited transhipment capacity. Storage area is also small, limited to 600 TEU.

In order to develop container traffic, the FYRO Macedonian railway is planning to purchase two mobile cranes. One could operate between the railways stations of Bitola and Prilep (along Corridor Xd) and the other between the stations of Gevgilija and Gradsko (along Corridor X).

Serbia and Montenegro
There are three main container terminals: Port of Bar, the Port of Belgrade and the ZIT inland terminal of Belgrade. The main characteristics are as follows:

- Port of Bar: This port is the major maritime facility within the territory of Serbia and Montenegro. It extends over an area of 200 ha with good road and rail connections and excellent expansion potential (600 ha). The port facilities include a container cargo depot, 120 000 m² of warehouses and a Ro-Ro terminal. While most of the handling equipment is relatively old (20 years and more), it has been sufficiently maintained to offer a robust handling performance with few equipment breakdowns. While the port offers good (service) performance to its users, its weak interior connections affect its overall competitiveness. In particular, Montenegro has problems regarding gauge and (cannot handle) (does not allow) high cubes (special maritime container higher than a standard 404 container).

- The Port of Belgrade has a container terminal. The transport infrastructure of the terminal facilitates reloading of containers from vessels, railway wagons on three tracks, and road vehicles in two traffic lanes. It has a large container storage area and can cope with a terminal capacity of 10,000 TEU per year (used at 10% at present). The port has good railway connections but its location, in a central area of Belgrade makes the connection and organisation of road transport rather difficult. The connection with Corridor X will require large investments (a Belgrade eastern by-pass).

  The Port of Belgrade aims to develop Ro-Ro facilities: although this type of transport transits through the country, Serbia does not have a single adequate terminal for the use of this form of combined transport.

- The inland terminal of Belgrade, operated by the company ZIT (established by the RTE Belgrade: Railways Transport Enterprise). The terminal has good roads and rail connections; 8000 m^2 of covered storage warehouses (including customs warehouses) and 20000 m^2, of open storage area. The terminal is equipped with a gantry crane with a lifting capacity able to handle 20' and 40' container. The company owns a fleet of 300 containers as well as a road fleet of 18 semi-trailers.

2.3.4 Fleet and rolling stock dedicated to combined transport traffic

As a rule, the Balkans intermodal operators are poorly equipped in regard to an intermodal rail wagon fleet. The existing container wagon fleet is mainly adapted to the transportation of ISO containers.

As a rule, there is a lack of road equipment which can be handled by a TEU carrier (containers, swap bodies) within the RoLa and RoRo techniques.

In the Balkans, trucks or the semi-trailers meeting the UIC (Union Internationale de Chemin de Fer) conditions of transport on the railway wagons are not commonly available.

2.4 Traffics flows and services

2.4.1 General

Transport statistics for combined transport are not well developed in the Balkan countries. Traffic figures reproduced in this section are from interviews with operators and officials met during the mission.

In general, flows of unitised traffic (container and swap bodies) are less than 0.5 % of the total traffic, which is exceptionally low compared with a share of about 4% in western European countries.

The registered traffic is almost totally due to the *international market* and corresponds to land transport of maritime containers from/to overseas (intercontinental traffic) organized from/to ports:

- Major Mediterranean ports: local ports in Rijeka, Split, Ploce and Dubrovnik in Croatia, Bar in Serbia and Montenegro and Durres in Albania as well as other important Adriatic ports: Koper in Slovenia and Thessaloniki in Greece.

- Northern European ports: Hamburg and Rotterdam.

The intra-continental traffic (involving semi trailers and/ or swap bodies in intermodal transport chains) is close to zero as Balkan carriers do not own or make use of this technique. Other techniques such as a rolling motorway does not exist at all. International Ro-Ro chains through the Danube is not developed either. A small amount of Ro-Ro traffic is registered in the Port if Durres (Albania).

The *domestic market* for combined transport does not appear to be relevant due to the practicability of cost-efficient combined transport. There are no domestic (agreements) relations where distances are great enough to provide competitive services. Furthermore, the proposed corridors, or those under construction, will decrease the competitiveness within road transport.

The *transit market* represents a promising market, given the strategic geographical position of these countries, especially Serbia and Montenegro as well as FYRO Macedonia and Albania.

The very low levels of unitised traffic in the Balkans is, among others factors, related to the poor techniques in use, which does not encourage, from the

shipper's side, the decision to make use of combined transport. This decision depends mainly on tariffs but also, more and more, on short or, at least predictable lead times.

The latter criteria, essentially, depends on the operating techniques the railways are able to adopt: block-train (traction from two distant terminals without stops) or wagon load concept (traction of individual wagons through successive shunting operations)[7]. However, organising block trains requires that the two poles of the « axis » exchange equilibrated volumes of freight (to avoid empty returns) at a sufficient rate to form frequent trains (100 000 t/year to form daily through trains) and that there is a distance of at least 500 - 600 km from each point. As noted earlier, these conditions are not met yet: volumes of traffic are exceptionally low, traffic is largely unbalanced and distances are shorter than required, especially in the market segment of transport of maritime containers from/to ports.

As each participant is organising shipments on his own, the required minimum traffic target is never met. The transit time by rail to an Adriatic port serving the Balkans is too long to be competitive. It is not surprising to note that road transport strongly dominates this market.

On the other hand, combined transport operators, both railway container companies and combined transport operators seems to ignore the fact that continental trade could be a good/profitable business: continental trade is much higher than overseas trade, it involves longer distances and, operating in this segment, is now easier to conceive as an important hub[8] has been created in the area allowing faster connections with international continental networks.

For instance, the newly created Intercontainer "South-East European hub" in Sopron, near to the border between Austria and Hungary, is connected (since October 2002) to the "X.net" hub located in Herne. In Sopron, intermodal transport units are being transferred to 5 "block trains" connecting, in both senses, Western Europe to the Balkan region:

- "Europe - Turkey container express»: 4 times/week between Sopron and Halkali
- "European-Hellas Container - Express»: once a week in both directions Sopron -Thessaloniki with feeder to / from Athens
- "Danube-Express" Sopron - Bucharest: twice weekly block train in both directions with onward

[7] It is well known that traction of intermodal unit by individual wagon cost as much as 70% more than the same container carried on a block train.

[8] Central point for the collection, sorting, transshipment and distribution of goods for a particular area. This concept comes from a term used in air transport for passengers as well as freight. It describes collection and distribution through a single point.

- "EFCE – Europe –FYROM Container-Express": this block-train operates once a week in both direction between Sopron and Skopje

- BUSO, Budapest-Sopron feeder train that connect majors Hungarian terminals with the hub in Sopron

2.4.2 Current traffic flows by country

In the following paragraphs, the international traffic flows are summarised according to country, along with some remarks on the relevance of the operating technique being applied to the different market segments.

Albania

Traffic figures provided by the main and single operator based in the Port, Pelikan Ltd, for the year 2002 shows that the existing traffic comprises few containers passing through the port.

Table 2.1 LO-LO traffic in the Port of Durres (TEU in 2002).

Traffic	TEU
Imports	742
Exports	282
Total	1024

The land transport of these maritime containers from/to the port is by road. Besides the maritime containers, the same operator registered a small amount of Ro-Ro traffic as follows:

Table 2.2 RO-RO traffic in the Port of Durres (TEU in 2002).

Traffic of the Port of Durres	TEU
Imports	369
Exports	450
Total	819

The Albanian railways are not involved in any specific container traffic.

Croatia

The hinterland transport of maritime containers (intercontinental cargo) is practically the only form of combined transport registered in Croatia. Indeed, the continental flows of unitised traffic (O-D in Europe, without need for transhipment) are close to zero.

Most of the transport of maritime containers is between the terminal of Rijeka Bradjica (container terminal of the Port) and the inland terminal of Zagreb. With more than 80%, road transport has the largest share. The railways share

(20%) is organised by AGIT (a container company subsidiary of the Croatian railways) which operates the Zagreb terminal, the only significant inland terminal in the country in terms of traffic: 4475 TEU in 2002 (70% is from / to Rijeka and the rest, about 1300 TEU, is from / to Koper). This traffic is largely unbalanced: imports flows represents 80% of the total traffic registered.

Table 2.3 summarised the container transport activity in the different terminals for the year 2001.

Table 2.3 Container traffic in Croatia, by terminal (in TEU for the year 2001).

Terminal	TEU (loaded and unloaded)
Port of Rijeka	15,239
Zagreb Terminal Vrapce (1)	4,475
Osijek	59
Port of Split	15
Total	19,788

Despite the creation of a specific container company, any attempt to explore the continental market by organising direct block trains to Sopron has not been carried out. AGIT, concentrates on the rail traction of maritime containers from/to the port of Rijeka on behalf on limited number of customers and do not offer any container rental service or the organization of initial haul operations, etc).

The company Crokombi has not created or operates any specific facility. With this strategy, the company has little chance to emerge as a real operator able to develop combined transport in the near future.

Bosnia and Herzegovina
Traffic of unitised cargo is due to the hinterland transport of maritime containers (intercontinental cargo), mainly between the Port of Rijeka and Sarajevo and at a lesser extent from Koper and from northern European ports (Hamburg and Rotterdam).

Container traffic registered in the four domestic container terminals (Sarajevo; Mostar, Tuzla and Ploce) was about 4776 TEU in the year 2002. With more than 50% of the traffic, Sarajevo is the main location. About 80% is from/to Rijeka and Koper (via Zagreb), but the traffic is largely unbalanced: imports represent 80% of the total traffic.

The nature of the traffic is essentially military and organised by 4 different operators: SFOR (40%); ICF (41%); AGIT (16%) and AdriaCombi (3%).

All the operators involved in container traffic are foreigners.

FYRO Macedonia
Although being low, the container activity registered in the container terminal of Skopje at Tovarna, is, contrary to other Balkans countries, not only due to overseas cargo, but also to the continental flows from/to western Europe, and, to a lesser extent, the transit cargo from Greece to Kosovo.

In FYRO Macedonia, an exception in the Balkan area, the organization of continental trade flows in FYRO Macedonia is carried out by performant combined transport techniques.

The inland transport of maritime containers between Thessaloniki and Skopje, of about 1500 containers in 2002, is mainly by road. Due to the insufficient volume, the daily direct container train Thessaloniki-Skopje was abandoned two years ago as the volumes of freight were insufficient to allow commercially attractive operations on this route. .

As for the continental market, a block-train, *"EFCE – Europe –FYROM Container-Express"*, operates once a week in both directions between Sopron and Skopje. The organisation of the block train has been made possible thanks to the concentration of FYRO Macedonian exports flows that allowed the necessary balance of the flow. Containerised export traffic from FYRO Macedonia is essentially composed of chrome (going to Germany) and wine. Volumes are sufficient for ICF to organise this weekly block train.

On the other hand, in spite of difficulties to meet the minimum requirement of combined transport operations, FYRO Macedonian railways is actively stimulating the demand by increasing its offer: the planned purchase of two mobile cranes will simplify container operations in Bitola and Prilep railways stations (along Corridor Xd) and in the stations of Gevgilija and Gradsko (along Corridor X).

Transit traffic of maritime containers from Greece to Kosovo (for the KAFOR, the military troops) is being organised, by road, by a Greek company.

Serbia and Montenegro
The hinterland transport of maritime containers (intercontinental cargo) is virtually the main form of combined transport registered in Serbia. Indeed, the continental market of unitised traffic is very small and includes only a few containers carried through the Danube from / to the port of Belgrade. Institutional barriers already mentioned[9] are one the reasons to explain this situation (besides, there is a transit flow of 331 container train/year registered on the Serbian section of the Corridor X).

On the continental market, the institutional barriers mentioned earlier need to be overcome in order to allow the main traffic of maritime container is from/to

[9] The container company, ZIT, is not currently able to establish business relationship with Intercontainer so as to initiate a business process consisting on canalising and shipping, by one unique frequent block train, the available traffic to western Europe, via Sopron

the Mediterranean ports (Thessaloniki, Koper and Rijeka and Bar) and, to a lesser extent, from/to northern European ports of Hamburg and Rotterdam.

The container traffic of the Port of Bar reached 5000 TEU in 2002. Given that Bar is the only seaport of Serbia and Montenegro, the volume is very low, and still declining (10,000 TEU in 2000). At present, attempts to organise combined transport from the port of Bar have failed: a Block train was organised last year, but the service was immediately stopped, apparently due to the high rates practiced by the Montegrin railways which does not allow for any competition with road carriers on this route.

Efforts aimed at making Bar a regional hub, will need an improvement performance, as the weak domestic market and poor hinterland connections place Bar in an unfavourable position when compared to its competitors, the ports of Koper and Thessaloniki.

From/to Koper, three block trains were organised by AdriaCombi last year. The service has since been abandoned, not due to the lack of competition in term of rates (from/to Koper by road is 1200 EUR/TEU and 1100 EUR/TEU by rail), or delays but due to the shipper preference for "door-to-door" service by road instead of that by rail which involves custom operation at the rail terminal custom warehouses and not at the customers premises.

Most o the container traffic registered from/to these main ports is imports (up to 85%) and by road to the main destination, Belgrade, where the two other significant terminals are located. Their corresponding traffic level is as follows:

- the inland terminal of ZIT in Belgrade registered about 10,000 TEU last year
- the port of Belgrade (1,000 TEU)

A more detailed view of the traffic registered in the main terminal (ZIT) is shown in Table 2.4.

The traffic is largely unbalanced: imports flows represents 85% of the total traffic registered. Most of these volumes are due to imports from China (70% of the total).

On the other hand, facilities of the port of Belgrade are used to serve, not only river traffic, but also maritime containers from Bar. The amount of units loaded and unloaded is very small and represents some 1000 TEU in 2002.

Table 2.4 Container traffic registered by ZIT in the inland terminal in Belgrade (in TEU for the year 2001).

	Total
Koper	4,005
Rijeka	1,300
Bar	1,800
Thessaloniki	1,800
Northern European ports	1,000
Total	9,905

The transit traffic through Serbia of about 331 trains / year is being organised by the Serbian railways.

In Montenegro, a very small flow of container traffic between Bar and Podgorica is organised by road. The Montenegrin railway has neither transhipment nor storage facilities for container transport.

3 Recommendations for improvements

Examination of the current situation showed that the problems of developing combined transport in the Balkan countries is rooted in the deficiencies of the supply system (existing infrastructure and technical means) but above all in the poor understanding and knowledge of the potential market for combined transport; the poor ability of suppliers to organise themselves and the lack of appropriated marketing strategies directed at each of the different product/market combinations.

Indeed, although inter-modal facilities or equipment require improvement, they do not, for the moment, constitute an obstacle to the development of long distance traffic through the region. Existing inter-modal terminals are largely under-utilised. Therefore, if some investments are required to up-grade handling equipment, large investments for the creation of new infrastructures must be avoided as they are not urgently required and can only push up the cost per TEU handled. It would be a mistake to invest large sums of money in infrastructures in the short term without ensuring conditions for its optimum use and successful development.

What appear essential, in the short term, is the improvement of the knowledge of the market and the creation of a new, adequate and more efficient regulatory, organisational and institutional framework.

Therefore, the strategic recommendations proposed places a greater emphasis on the understanding of the potential market, the definition of a corresponding transport policy and the improvement of the organisational framework. In the short term, lower emphasis should be put on the infrastructure and technological matters.

The following four proposals aim at engage a process of creating the initial conditions for an efficient development of the combined transport in the Balkans. These proposal are: a market and capacity study, a organisational study, a policy study and long – term investment study.

In general, it should be underlined that if the recommended measures are to of maximum value, it would be a good idea to implement them on a regional rather than national level.

3.1 A market and capacity study

From interviews conducted with the different operators and suppliers, it appears that the redundancy of container services on the intercontinental market segment reflects the lack of marketing strategies directed at each of the different product/market combinations. Indeed, None of the current participants in combined transport seems to have a clear elaborated marketing strategy so as to increase sales. They just try, when asked, to meet the needs of freight forwarders or shipping companies that intend to use container transportation. None of the suppliers have an evaluation of the potential traffic on a selected axis, in particular on intra-continental O-D relations which are the most promising segment for commercially attractive CT operations. When questioned about this, the operators emphasise the deficiencies of the technological system, but say little about their lack of marketing strategies.

As a first and priority measure, it is recommended to undertake a market study to appraise the real potential to use combined transport in the export/import of leading products (volumes and commodities) and identify strategies to follow for each product/market combination helping the transfer part of the freight currently forwarded by road to combined transport.

In addition, the market study is also to provide a clearer understanding of the currents problems and will specify the precise needs in terms of operating techniques and possible investments in new terminal infrastructure (a business plan should be prepared further).

The market study should cover the following activities:

- Evaluate the existing traffic (all modes) on selected relevant itineraries, including, in priority, the continental market
- Evaluate the existing 'real' opportunities for combined transport, taking account of the potential of each sub-market (maritime; continental and transit) for relevant import/export commodities (auto supplies, chemical in bags, etc.) and for pertinent distant origin/destinations
- Definition of a relevant market product (based on the results of pertinent statistical studies and interview with appropriated firms and organisations)
- Assess the resources to be implemented (technical and organisational)
- Define an operational plan
- Monitor the start up of the operational plan

The main aspects must be considered when defining the potential market:

- Definition of combinable commodities

- Assessment of market segment to be serve: maritime hinterland flows; continental hazardous goods; continental perishable goods; shippers; forwarders and road hauliers

- Minimum distances on the considered corridor

The assessment should integrate the need to operate a reduced number of terminals in order to allow the concentration of available traffic on a few numbers of key corridors and routes chosen for their reliability and subjected to a high degree of management attention and support. Concentrating the traffic on a reduced number of terminals allows for an increased number of departures.

The advantage of such a strategy should be reflected in the price of traction and services (collect and delivery, main transport, handling, storage, etc.), but also in the lead-time (the global « door-to-door » time of the journey), reliability and the associated controls.

Indeed, the increasing importance of logistic factors from the client's point of view must be carefully taken into account in the analysis:

- « Just-in-time » concept: to avoid costly storage, producers tend to produce « just-in-time ». In this production process, the volumes of consignments tend to be smaller but the frequency increases. This implies the need for quick and reliable transport. In parallel, standardised transport units (pallets and containers) are used to ensure that goods keep flowing freely.

- « Trade-logistics »: to decrease transport costs, producer-sellers must improve the packaging, storage policy and insurance, etc. This means speed and reliability between the central storage facility and the customer’s warehouse.

At last, two additional constraints should be considered:

- Containers are an efficient support if used in both directions of traffic flow (containers used for import operations must also be used for exports).

- Efficient container transport requires "door-to-door" operations. «Door-to-door » operations can only be efficient if the transport flow is not disrupted.

The previous analysis should then allow defining the number, the size and position of terminals that should be included in a selected network of terminal for improvements.

This improvement process entails not only in the implementation of the required investments in terminal up-grading but also include training programs as well as the revaluation of the commercial relationships among the parties, a redesign of the product and of the control structure at the operational level

3.2 Organisational study

The organisational study involves three related issues: clarification of the role and function of the participants; improvement of relationships between partners and strengthen of cooperation with international operators.

3.2.1 Clarification of the role and function of each different actors

From the organisational point of view, the current situation is characterised by a certain confusion and misunderstanding of the role and function of each different actors which create a negative background for the development of the combined transport. This represents a main obstacle to ensure that the investment needed can be carried out on a profitable basis.

Clarifying the role and position of the actors and preparing co-operation agreements will allow reversing the negative trend of the combined transport business.

It is highly recommended to revise the whole organisational frame. These calls firstly for a clarification of « who is in doing what » (the operators; railways; ports; customers; equipment makers and dealers and the Authorities) and understand inherent conflicts of interest therein.

The following guidelines have been prepared with the aim to guide the improvement process.

The role of combined transport operators
It must be clearly admitted that all the combined transport operators, combined transport operators (railroad operators such as Crokombi en Croatia) and container companies (AGIT, ZIT); are, and must act as, businesses companies in competition for a higher possible market share. All of them have the unique objective of diverting a portion of freight which otherwise would be carried by road transport. If the attraction of road transport freight traffic is the common « target », it is essential that each participant (railways, operators, forwarding companies, etc.) elaborate a new market approach that includes the necessary interaction between the different links of the chain and a certain degree of specialisation by sub-market.

By a real process of co-ordination, redundancies of services offered and conflicting relationship between actors could be overcome. A positive background of relationships will favour the creation of conditions to gain the confidence from the customers.

The role of both, container companies and railroad operators should be redefined guided by the following:

The role of combined transport operators
The Croatian initiative to create a national coordinator for combined transport should be generalised in all the other countries of the Balkans in order to explore and develop the most promising market of intra continental combined transport.

However, as other UIRR member's CroKombi, the « co-ordination » role must be concentrated on transport concepts able to attract road carriers. Indeed, in the Balkans, as in the rest of Europe, Crokombi is an IURR company mainly marketing the road transport industry instead of entering only in competition with container companies ((dominated by railways subsidiaries).

Companies such as Crokombi should concentrate mainly on the main « profitable axis » on the continental market and deal in priority with road carriers which should use their own swap bodies; semi-trailers and, in their turn, should become the « distributors » of the combined transport product.

The role of container companies
On the other hand, companies such as AGIT and ZIT, railways subsidiaries, should clarify their market positioning: they have to chooses between being a combined transportation operator or a forwarding agent in order to gain confidence from suppliers of orders: shipping companies and forwarding agents, especially those dealing with large industrial firms, which are the « natural » client of such railways affiliated firms. From there, they should develop an efficient marketing strategy based on the global transport concept: « door-to-door » container transport operations with its own means. If the continental market will be a significant activity, they should in priority deal with market the container market.

Both partners, container companies and combined transport operators, will experience difficulties with the function of a consolidator to fill up block-trains. In this sense, they have a vested interest in giving priority to the train frequency and collaborate with other « partners » such as Intercontainer and IURR companies.

The role of the railways
It is recommended to clarify the position of railways in relation to the combined transport businesses. If the role of operators is to provide rail companies with organised and concentrated transport volumes (to increase the utilisation of rail transport capacities); the role of railways companies is to guarantee fast, punctual, reliable and competitive transport through a management of the trains.

The railways should recognise the role of the operators as the very best market intermediary and adopt an impartial commercial policy and maintain neutrality. Railways should take the risk of being simple rail traction seller. They do work exclusively for combined transport operators within a « chain of trust » under a clear organisational structure. They should concentrate on the design of renewed operating techniques to match operator's requirements (propose to

their client a schedule plan and tariff level which is at least as cheaper, faster and reliable as road transport).

The risk is moderate. As conventional wagon-load business can not meet the contemporary quality of services demanded (« door-to-door »; short delay, « just-in-time » requirements), railways will continue to experience an inescapable decline in their wagon activity. The adaptation to a free-market economic system will decrease the market for full load train while the demand for more frequent smaller consignments will increase. The European experience shows that this strategy is one of the keys to economic recovery of railways companies.

Railways companies should think combined transport as in terms of « axis », based on the AGTC and Trans-European Network. This call for strengthening partnership with the European railways companies concerned by each line and concludes agreement on combined transport commercial policies.

The strategy should allow setting up « terminal to terminal » lines served by container « through train ». At present, given the low traffic flow, there is a need for negotiating with all the existing operators and agree on the conditions under which the concentration of flows should be organised as well as on the schedule and prices rebates to be provided in return.

The role of the ports
The Balkans maritime ports network should concentrate on accessibility to only a few Adriatic ports, with the aim to support short sea shipping, which requires the convergence of substantial traffic flows. These ports should be adequately linked to the land transport network and equipped for combined transport.

Priority with regard to the river ports, is considered for the ports of Belgrade and Novi Sad on the Danube. Use of the river Sava between Zagreb and the Danube, as well as the construction of the Sava-Danube canal, needs to be studied further.

3.2.2 Improving relations between actors

The coordination of the various participants from the different modes involves, not only a clarification of their role but also an examination of their relationships and inherent conflicts of interest along the transport chain.

It is necessary to improve the relationship between actors, so that the rules of operation, framing the control of each one of them seeking its own interest, have a good effect, helping the growth of the traffic and its quality.

This can be achieved to some extent through increasing the objectivity in the relationship, and this is done by:

- Defining the processes and procedures in the product delivery

- Defining the inputs and outputs for each phase in the process, including: information, documentation and in terms of the physical goods

- Defining roles, and skills, as earlier mentioned, required for each player in the process individually and collectively, so that each player knows what is expected from him and from the others, and has the skills and authority to do this

3.2.3 Encourage cooperation with international combined transport networks

The cooperation and partnership of Balkan operators of combined transport, in a European system in process of integration and concentration, is essential.

To encourage this process, it is recommended that information exchange and larger cooperation with European network operators such as Intercontainer and IURR be encouraged.

In this sense, it is recommended to create, within the framework of national railways, a structure in charge of the development or improvement of the intermodal terminals operation and facilities, in order to implement a coherent investment policy at the regional level and at the European level as well.

Furthermore, it is recommended to look for the establishment of contracts between managers of terminals, operators, railways and customers founded on reciprocal of volume and quality of services to be provided, including mechanisms or particular clauses of penalty in the event of failure to engagements.

3.3 Policy study

A precondition to the development of proposals suitable for combined transport is the definition of the place of combined transport within the general transport policy as combined transport is only one element among others.

The starting point is to recognize that compared with unimodal transport, multi-modal transport appears much more complicated (as it requires co-ordinating the various modes involved). Nevertheless, potential difficulties of co-ordination are compensated by its advantages:

- Direct economic advantages: the intermediate transport segment (rail, inland waterway, short sea shipping) may be cheap compared with road transport, particularly if it consists of mass transport: block trains, large container barges, etc. The money saved due to the intermediate mass transport may be larger than the additional cost of the intermodal transfers.

- Indirect economic advantages: these advantages are not taken into account in transport prices (externals): less detrimental effect to the environment, security, less traffic congestion, improved land development, etc.

A first step in the process could be to ensure the transposition, in the Balkan countries, of the transport provision contemplated in the European directives and ECMT resolutions, relating to the use of the infrastructures and the principles of priority to grant to the transport combined, are aligned, in particular those related to:

- The promotion for the liberalization of combined transport operations from all quota systems and systems of authorization.

- Fiscal incentives in favour of combined transport: measures to ensure that the purchase or lease of special vehicles, handling equipment, swap bodies and containers (including there purchase or lease from domestic manufacturers, as well as road tax applicable to road vehicles involved in combined transport are reduced or reimbursed.

- Exemption from compulsory tariff regulations for initial or final road haulage legs forming part of combined transport operations.

- Financial support, granted under the form of guarantee of credits for the CT development, to purchase of railway wagons for CT; upgrading of existing terminals.

A simplified manner to justify a government aid, would consist of comparing the number of economic advantages which combined transport makes it possible to obtain with the reduction negative external resulting from the freight transfer from road transport to combined transport.

As the State' role is more complex than a simple distributor of government aid. Efforts have to be accomplished at the political level by Ministry of Transport Post and Telecommunication. A Combined Transport Division should be created by Balkan states to deal with the following issues:

- determination of rules and legal issues to guide the transport participants
- determination of the main operating principles of combined transport development within the transport system of the state

3.4 Long-term investment study

Having a good knowledge of the potential market and having established clarified relationships between actors, it is recommended to carry out specific studies to identify the most urgent infrastructure investments and their respective volumes, related in particular to the adequacy of the a selected terminals network necessary to encourage the growth of the share of combined traffic within the transport sector.

The study should be based on the following principles:

- The network should be based on a selected, reduced number of terminals around which there will be a concentration of freight, Connections with the

network within the region and with the Pan-European transport corridors: TEN-T and TINA networks and interconnect all capitals inside the region as well as ensuring their connection to the capitals of the neighbouring countries.

- The number, size and location of the terminal network must correspond to the expected traffic in the next decade. It is essential that before any decision on project selection and financing, a specific market study for traffic forecasts will be carried out (first proposal). Indeed, all these aspects, more or less ignored in recent studies made available to the Consultant, make difficult; within the present study, to hypothesize on the dimension of any commercially attractive combined transport system.

- Investment on « key » terminals (equipment and layout improvement). Priority is given to the use of existing infrastructure, by repairing and rehabilitating it. Upgrading or new infrastructure components should be kept to a minimum.

- The network should concentrate accessibility to only a few Adriatic ports, which requires the convergence of substantial traffic flows. Selected ports should be adequately linked to the land transport network and equipped for combined transport.