

APPENDIX 4

STATUS OF THE STUDY TRANSPORT NETWORK

1. HIGHWAYS

1.1 Albania

The road network consists of some 16,000 km with around 3,200 km of primary network. There are a further 12,000 km of local network (feeder and distributor roads) and some 1000 km of urban roads. The network is generally in a poor condition.

The main regional and international network is focused around two axes: the North–South and East–West Highways, both of which have been attracting considerable donor funds for rehabilitation and development activities. Pan European Corridor VIII follows the line of much of the East–West Highway. A summary of the current status of the remaining unimproved sections of these strategic highways follows:

North – South Highway:

1. Lezha – Shkoder section: Studies are current and construction should be complete by end 2003 using GoA funds. The project may consist of several lots to be tendered locally.
2. Shkoder – Han-i-Hotit section will be studied and designed by end 2002 (Italian aid). Italian funds may finance construction, which could start end 2003. Italian approval procedures for funding are very lengthy and delay implementation. Construction may be complete by 2005.
3. Rivers Drin and Mati bridges are still not started (delays from procedures for Italian Co-operation Fund). Road sections are completed between Milot and Lezha but cannot be used until Drin and Mati bridges are complete.
4. The listed “Quick Start” projects from the recent Regional Funding Conference remain confirmed (Lushnje – Fier and Fier – Vlora) but Fier – Vlora (to be funded by EIB) may become Near Term. The Italian Co-operation Fund were to review the designs from Lushnje – Fier – Vlora prior to committing funds for the Lushnje – Fier section.
5. Fier – Tepelene section is confirmed as a Medium Term project.
6. The EC had made advance notices on the internet for studies and designs for several sections in the southern part of the Highway: (Fier – Tepelene and link from Saranda; Konispoli – Saranda; Tepelene – Gjirokaster). Tepelene – Gjirokaster construction is a co-funded project between the EIB and the EU Phare Programme.
7. Other Near Term Projects: The Islamic Development Fund is to finance the upgrade of the road section: Vora – Fushe – Kruje; this project may also take into account an upgrade of the existing Tirana Airport access road. The proposed new access road to Tirana AIRPORT is deferred until the proposed BOT scheme for a new Airport Terminal is decided (this scheme could incorporate the new 5 km access road to the airport).

East – West Highway (and Corridor VIII):

1. Construction projects are currently progressing through to Qaf Thane from Rrogozhine. The missing sections on this length, Durres – Plepa and Rrogozhine by-pass are to start design (re-design) stage soon followed by construction with EU funding.

2. The remaining missing sections beyond Qafe Thanës (Qafe Thanës – Pogradec – Korca) are to be studied or re-studied under EU funding but construction funds are not yet planned.
3. Medium Term project to rehabilitate Tirana – Elbasan road is in GRD's budget. This road is currently restricted use (cars and small buses only – no trucks) but is an important link on the E-W route.
4. The Tirana RING ROAD is regarded as a Medium Term project.

Corridor VIII is routed via Durres – Rrogozhinë – Elbasan to Qafe Thanës. Once the Tirana by-pass is complete and a new Tirana – Elbasan road is constructed then the designation of the routing for the Corridor may be reviewed. The Memorandum of Understanding for the Corridor is still under discussion. The proposed branch, from Qafe Thanë to Kapshticë, is not accepted by the Macedonian Government, although approved by Greece.¹ The proposed Maritime links to the Corridor (Brindisi – Vlora and Bari – Durres) have been agreed with Italy.

Since the 1999 Balkans conflict, the link with Kosovo, between Shkoder on the North-South Highway and the border with Kosovo at Morina, has taken on a strategic significance for the Region, being one of only two routes out of Kosovo for the Albanian community.

The Adriatic Ionian Corridor was considered an important aspect for Tourism in Albania. The Albanian Government however had stated that the designated route for the Corridor from Fier should follow the coastal highway, Fier - Vlora – Saranda – Konispoli, not as presently designated, from Fier to Kakavija and Greece via Tepelene and Gjirokaster.

Maintenance of roads, has been ineffective for a decade or more. A project under IDA financing through the GRD is currently in preparation that will see the introduction of pilot projects utilising private contractors for future maintenance operations.

1.2 Bosnia and Herzegovina

The network in Bosnia and Herzegovina comprises some 21,700 km of highway of which around 11,500 km are paved. Main roads, i.e. roads of international and national importance, account for 3,722 km and regional roads for 4,104 km. There is just one short section (around 12km) reported to be of motorway standard highway in the country, North of Banja Luka. The remaining network consists of 2 lane highways apart from the urban area of Sarajevo where the main city highway is a multi-lane route. Most of the 2 lane highways are sub-standard.

As a result of the war, much of the network fell into disrepair and long sections were damaged or were inoperable due to destroyed bridges. Emphasis has been made in recent years to rehabilitate components of the strategic network to enable basic road communications to be restored throughout the country. An Emergency Transport Reconstruction Program (ETPR) financed by the World Bank has been defined for the rehabilitation of the primary road network. Within this program, 2,165 km of roads have already been rehabilitated and 1,767 km are planned to be rehabilitated in the near future. By the end of 2001, all destroyed or damaged bridges on the primary network have been reconstructed or repaired, and they no longer constitute an impediment to surface movements, even if some bridges are still single-lane. Routine maintenance of the network however is virtually non-existent and as a result the level of serviceability remains low.

The only route in the BiH territory belonging to the Pan-European Transport Corridors is the Branch C of Corridor V, which provides the North-South axis through the entire country, passing through the major cities of Mostar, Sarajevo, Zenica and Doboj. Rehabilitation of the majority of the war-

¹ Would provide link to the Egnatia East – West Highway in Greece which offers a parallel E-W corridor to Corridor VIII between the Adriatic and Thessaloniki (southern terminus of Corridor X).

damaged sections of the Corridor has now taken place and the Corridor may once again be fully utilised by road traffic, from border to border.

Other routes of international or national importance include:

- A recently studied Northwest-Southeast axis which traverses the country from Velika Kladusa, through Bihac, Jajce, Travnik and Sarajevo towards Foca Srbinje and the FRY border (Montenegro);
- A North-South route from Bosanska Gradiska on the Sava river towards Split on the Adriatic sea, through Banja Luka, Bugojno and Livno;
- An East –West axis from Banja Luka to Zvornik at the FRY border, through Derventa, Doboij and Tuzla;
- Two branches stemming from Sarajevo, one towards the North, serving Tuzla and Orasje on the Sava river, the other one to the East, serving Visegrad and the FRY border.

1.3 Bulgaria

The total length of the Bulgarian road network is 37 288 km. About 90% of the roads have an asphalt pavement.

The distribution of the network into the various administrative categories is as follows:

Type of roads	Length (km)	%
Motorways	324	0.87%
First grade roads	3011	8.12%
Second grade roads	3818	10.29%
Third & fourth grade roads	29937	80.71%
Total....	37090	

Because of the social and economic difficulties in Bulgaria, road maintenance activities have suffered from a lack of funding which has resulted in an increase of the deterioration of the roads: at present, more than 28% of main roads are in very poor conditions. In order to correct this situation a road rehabilitation programme named “Transit Roads 1” was launched in 1992 with the financial assistance of the EIB, the EBRD and the PHARE programme. It has been followed by “Transit Roads 2” during the period 1997-1999 and for the period 1999-2002 a “Transit 3” programme is under way. With these three programmes, about 2000 km of the main road network will have been catered for, bringing about 85% of this network in accordance with the European standards for quality, safety and capacity (axle loading and traffic flow).

The study network comprises the sections of the Pan European corridors which occur within Bulgaria and are described below plus additional links identified by the TINA exercise and/or the Consultants.

Bulgaria is crossed by five Pan European Corridors, corridors IV, VII, VIII, IX and X.

- **Corridor IV** has two branches in Bulgaria:
 - Section Vidin-Sofia-Kulata (Greek border) representing branches IVa and IVb of corridor IV (“IVa” is from Vidin to Sofia and “IVb” is from Sofia to Kulata and further on , Thessaloniki)
 - Section Sofia-Plovdiv-Kapitan Andreevo (Turkish border) representing branch IVc of corridor IV which ends in Istanbul.

At present along corridor IV, there is ferry service between Calafat (Romania) and Vidin which carries a significant amount of vehicles every day (around 250 with more than 50% trucks). Thereafter, between Vidin and Botevgrad, the highway has two lanes for most of its length, except near Vraca where it has four lanes. This road is not in good condition and rehabilitation is being considered. From Botevgrad to Sofia the itinerary consists of a 2x2 lane motorway.

From Sofia to Kulata the route followed by corridor IVb is being rehabilitated and widened under the Border Crossing Programme financed by EU PHARE programme.

Branch IVc of Corridor IV between Sofia and Kapitan Andreevo consists of a motorway section (2x2 lanes from Sofia up to 50 km East of Plovdiv and between Ljubemec and Kapitan Andreevo for an approximate length of 30km); the central section which is about 75 km is a 2 lane highway (E80).

- **Corridor VIII** runs in the West-East direction from Gjusevo (FYROM border) to Varna through Sofia, Plovdiv and Burgas. Corridors IV and VIII are superimposed between Sofia and Plovdiv.

From Gjusevo to Radomir the route followed by corridor VIII is a 2 lane highway which becomes 4 lanes between Radomir and Sofia.

From Plovdiv to Burgas and Varna, the route followed by corridor VIII bypasses the cities of Stara Zagora and Sliven; it is a 2 lane road with the exception of the Sliven bypass which is a divided 2x2 lane expressway.

- **Corridor IX** runs in the North-South direction from Ruse to Svilengrad through Veliko Tarnovo and Stara Zagora. Corridors IV and IX are superimposed over a short distance between Haskovo and Svilengrad. Section Vidin-Sofia-Kulata (Greek border).

From Ruse to Veliko Tarnovo the route follows a 2 lane highway. The crossing of the Bulgaria central mountain (Balkans) is achieved through the Sipka pass which is a difficult location, especially for the trucks which generally prefer to use an easier alternative route through Gurkovo and Nova Zagora. This alternative route might be considered as the itinerary for corridor IX since there is no need along this route to build a 3km+ long tunnel under the Sipka pass.

- **Corridor X** runs in the North-West South-East direction from Kalotina, the border crossing point with the Federal Republic of Yugoslavia, to Sofia. Plans are being drafted in cooperation with Yugoslavian federation to build a motorway which could ultimately provide a continuous high standard link between Belgrade and Sofia.

Besides the routes covered by the Pan European corridors, the study network encompasses additional routes:

- Botevgrad-Pleven-Rolsko Kosovo which connects Corridors IVa and IX,
- Ruse-Varna where there is a motorway from Varna to Sumen (76 km) which represents about 40% of the total length of this link.
- Burgas-Svilengrad which connects the port of Burgas to corridor IVc through a substandard 2 lane highway

The general strategy of the Bulgarian Government is to constitute a continuous “loop” connecting Sofia, Ruse, Varna, Burgas and Plovdiv.

1.4 Croatia

The Croatian road network comprises:

- 6930 km of state road

- 10510 km of county roads
- 10197 km of local roads

for a grand total of 27 616 km

Part of this network is 593 km of high standard roads encompassing 417 km of motorways, 72 km of first stage motorways and 104 km of highways.

The study network consists of three main routes corresponding to the Pan European corridors Vb, X and Vc and several other routes providing linkages between the Pan European corridors as well as servicing the Adriatic Coast which has huge development potential in tourism activities.

Corridor Vb runs from the Hungarian border at Gorican through Zagreb and down to Rijeka on the Adriatic coast. The corresponding route is practically a motorway over its entire length:

Between Gorican and Zagreb (96km) there is however a 23 km gap in the motorway (from Varazdin to Breznicki Hum); discussions are stalled with the EIB for the construction of this, to get the necessary financing since a concession agreement with an Italian firm is unclear. The parallel route which enables the closure of the gap has been recently resurfaced (1998) and is in very good condition

Between Zagreb and Rijeka, the motorway sections are the responsibility of the concession company "Autocesta Rijeka Zagreb" which is acting to achieve the construction of a complete motorway link between Zagreb and Rijeka. At present the status of the motorway completion programme is as follows:

- Zagreb-Karlovac built in the late 80s, 40km long and tolled,
- Karlovac bypass which will be opened to the traffic for the 2001 summer season and is about 18km long (from Karlova to Vukova Gorica)
- Vukova Gorica-Bosiljevo (7 km) is planned
- Bosiljevo-Vrbovsko (16 km) is under construction
- Vrbovsko-Kupjak (19.8 km) is under construction
- Kupjak-Rijeka (Orehovica), 47.6 km, has been completed as a first stage motorway with many tunnels and viaducts in 1998-1999. The last kilometres before Rijeka (Orehovica-Rijeka) have been built in the 80s as 2x2 lanes motorway.

It is expected that the full motorway will be completed by year 2004.

Corridor X runs from Bregana on the Slovenian border to Lipovac on the Yugoslavian border, in a West to East direction. The status of the various sections is as follows:

- Bregana-Zagreb (13.7 km) has just been opened to traffic
- Zagreb-Slavonski Brod-V. Kapanica (236.7 km) has been built in the 80s
- V. Kapanica-Zupanja (26 km) is under construction
- Zupanja-Lipovac is not scheduled to be built before 2004.

Corridor Vc in Croatia is part of the itinerary which will link Budapest to Sarajevo and Ploce on the Adriatic coast. The Croatian sections are:

- Udvar (Hungarian border)-Osijek-V. Kapanica-Bos. Samac (Bosnian border)
- Metkovic (Bosnian border)-Ploce

North of Osijek, the link is 2 lanes substandard. In the south and between the Bosnia Herzegovenian border and Ploce, the link consists of a standard 2 lane highway.

Other links considered within the study network are:

- Zagreb-Macelj (Slovenian border) on the route Zagreb to Maribor
- Rijeka Rupa (Slovenian border) on the route Rijeka to Trieste
- Rijeka-Senj-Novigrad-Zadar
- Zadar-Split
- Split-Ploce-Dubrovnik
- Bosiljevo-Zuta Lokva-Sveti Rok-Zadar with link towards Bosnian border (→ Bihac)
- Gracac-Split with link towards the Bosnian border
- Istrian network: Opatija-Uska-Parzin-Pula and Pula-Baderna-Slovenian border, towards Koper

1.5 Federal Republic of Yugoslavia

The road network of the whole Federation is estimated to represent some 16,200 km of main and regional roads, and about 24,300 km of local roads.

The study network is organized around the backbone of Pan-European Transport Corridor X, which connects Salzburg and Thessaloniki through Ljubljana, Zagreb, Beograd, Nis and Skopje. Within FRY, the highway is a dual carriageway motorway from the Croatian border, up to Leskovac, South of Nis. This motorway has been constructed at the end of the sixties, financed by a World Bank loan. South of Leskovac, the road becomes a so-called “Yugoslav expressway”, typical road infrastructure in the region before 1965, i.e. a single carriageway of two lanes with large shoulders, with limited access and separate level crossings. The last section before the Macedonian border, Bujanovac-Presevo, is a mere two-lane highway in very poor condition and requiring immediate rehabilitation.

Two branches stem from this main route in FRY:

1. branch B, from the Hungarian border to Beograd, through Subotica and Novi Sad. Two infrastructures are in parallel: one regular two lane highway and a half-motorway. The latter had been constructed in 1975, with earthworks, platform and structures for the final motorway but with a single carriageway. It was supposed to be widened to a dual carriageway ten years later, when unfortunately the Yugoslav turmoil started. Widening to dual carriageways has been attributed a couple of years ago as a concession to a consortium composed by the Bank of Belgrade, a private transport company and a Yugoslav contractor. This concession is supposed to last only until 2006, and there are possibilities that it may be cancelled before.
2. branch C, from Nis to Gradina on the Bulgarian border, through Pirot, with an old two lane highway in poor condition.

Other highway links in the study network are:

- the road from Pancevo to Moravita, towards Timisoara in Romania and Corridor IV,
- the road from Paracin to Zajecar and V.Cuka, towards the crossing of the Danube at Vidin and further Craiova and Bucharest,
- the North-South liaison between Novi Sad and Tuzla in B&H, one of the most heavily trafficked highway in FRY, with more than 8,000 vehicles a day,
- the transversal liaison from Paracin to Uzice, towards Sarajevo,
- the North-South liaisons from Belgrade to Podgorica and Bar and from Belgrade to Pristina and further to Deneral Jankovic towards Skopje,
- the transversal liaison from Sarajevo to Shkoder, through Niksic and Podgorica in Montenegro,
- the transversal liaison from Nis to Bijelo Polje through Pristina in Kosovo,
- the continuation of the route along the Adriatic sea, from Dubrovnik to Bar, via Herceg Novi and Kotor in Montenegro,
- the liaison from Pristina to Albania through Prizren and Vrbnica.

Some of the liaisons above have stretches in common. Most of these liaisons are two lanes sub-standard highways, in poor state of repair.

1.6 Former Yugoslav Republic of Macedonia

The Macedonian road network covers 4,400 km of main and regional roads. Among these roads, we have kept in the study network the following:

- Corridor X, from Tabanovce at the Yugoslav border up to Bogorodica at the Greek border, through Kumanovo and Veles. This liaison, 176 km long, has been progressively upgraded to motorway status, on a total of 109 km. This has been done in general by doubling an existing two lane highway by a second carriageway, sometimes at a noticeable distance of the old one (up to 5 km). This type of upgrading is still underway south of Negotino, mostly under EU financing. Sections that remain to be done are: 6.5 km up to Demir Kapija, then the whole section from Demir Kapija to Gevgelija (44.3 km) towards the Greek border, and 7.4 km in the north, from Tabanovce to the entry of Kumanovo. Traffic levels are respectively 3,300 and 2,000 vehicles a day.
- Branch C of Corridor X, from Veles to Medzitlija, at the Greek border, through Bitola, a two lane highway reconstructed 15 years ago on its most trafficked section.
- Corridor VIII, from Kafasan at the Albanian border up to Deve Bair at the Bulgarian border, through Struga, Gostivar, Skopje and Kumanovo, with a stretch in common with Corridor X, from Miladinovci to Kumanovo. Part of this liaison has already the motorway status, either constructed on a new alignment, section Gostivar-Tetovo, or upgraded are mentioned above, section Tetovo-Skopje (construction underway). Other sections have the regular standards of a two lane highway, with a crawler lane when necessary, with the exception of the section Struga-Albanian border and at the other end of the section Rankovce-Deve Bair. Traffic on both sides are 1,500/2,500 vehicles a day.
- The so-called Central Route of Corridor VIII, an alternative to the Northern route defined above, with the liaison Ohrid-Bitola between the two corridors, and the liaison Veles-Kocani-Delcevo towards Bulgaria and branch B of Corridor IV. The two above liaisons are partly standard 2 lane highway, partly substandard, mostly East of Kocani, where traffic is nevertheless at 4,000 vehicles a day.
- The liaison Skopje-Blace, at the FRY border (Kosovo), with low standards and poor conditions, despite its traffic at 4,000 veh.day.

The Government of FYROM has clearly made a serious effort during the last ten years to upgrade its main network, particularly on the two Pan-European transport corridors which cross the country. Some recent works may be considered as overstated, sometimes to the detriment of the resulting technical standards. Some important regional liaisons are conversely in a poor state of repair and need be rehabilitated.

1.7 Romania

The road network of Romania has a length of 78 601 km, excluding city streets. The distribution of the network is as follows:

Type of roads	Length (km)	%
Motorways	114	0.15%
National roads	14696	18.70%
Country & communal roads	63791	81.16%
Total...	78601	100 %

In terms of road surface types, 19 521 km are paved (24.84%), 19 431 km have a light asphalt pavement (24.72%), 27 029 km are gravel (34.38%) and 12 620 km are earth roads (16.06%).

The national roads correspond to the major road network and carries 70% of the total road traffic.

At present, the national roads networks can be distributed as follows regarding the pavement surface types:

- 91% permanent pavements
- 8% with light asphalt pavement
- 1% gravelled.

In terms of road type,
5586.151 km are E roads,
165 km are three lane roads
and 943 km are four lane roads.

The greater part of the national roads opened to international traffic (E roads) do not comply with technical conditions set forth by the “European Agreement on Main Road traffic Arteries” (AGR). Besides, 61.2% of the paved roads and 81.9% of the light asphalt pavement roads have their life cycle finished. A comprehensive programme of road rehabilitation has been devised in order to bring the infrastructure and the traffic conditions to the levels required by the European norms². The programme (RRP) was initiated in 1993 and comprises fifteen phases distributed among five periods; it covers 123 road sections with a total length of 9515.9 km. Step 1 (1031 km) was financed by the IBRD, the EBRD, the EIB, the European Commission PHARE programme and the Romanian Government and is now completed. Step 2 (694 km) is on-going and financed by the same donors and the Romanian Government. Step 3 (550 km) is also on-going and financed by the EIB and the Romanian Government. Step 4 (654.5 km) is to be financed by the EIB, ISPA funds and the State budget; it will deal with the following sections:

- Cluj-Dej-Bistrita-Suceava,
- Simeria-Petrosani,
- Craiova-Drobeta Turnu-Severin-Lugoj.

The negotiations with EIB for the financing of step 5 are almost finalised, which means that the following road sections could be rehabilitated fairly quickly :

- DN 66 : Filiasi-Petrosani
- DN 56 : Craiova-Calafat, including South Craiova by-pass
- DN 2 : Sabdoavi-Siret
- DN 56A : Maglavit-Simian
- DN 76 : Deva-Oradfa
- DN 1 : Brasov-Sibiu

The details of the programme are provided in the following table; it is expected to be completed by year 2015 and will provide Romania with a National Road Network of more than 9 000 km in good condition and matching the European standards.

Years	Phase	No or road sectors	Length (km)
1994-2000	I	15	1031.0
2001-2004	II – IV	40	1898.0
2005-2008	V – VIII	26	2966.4
2009-2012	IX – XII	13	2065.0
> 2012	XIII – XV	19	472.0
Total		123	9515.9

² such as the increase of the bearing capacity of the rehabilitated sections pavement from 10 to 11 tons, bridges design for the E-class loading, improvement of the road geometry and construction of a third lane or slow vehicle lane in the ramps.

Romania is crossed by three Pan European Corridors, Corridors IV IX and VII (Danube river).

Corridor IV runs West-East from Nedlac at the Hungarian-Romanian border to Constanta on the Black Sea for one branch and North West-South East, from Timisoara to Vidin where it will cross the Danube River on a new bridge whose construction is to be financed mainly by the EIB.

The detail route for the West-East branch of corridor IV also called “North Route” is as follows:

→Nadlac-Timisoara-Lugoj-Deva-Sebes-Sibiu-Pitesti-Bucharest-Lehliu-Fetesti-Cernavoda-Constantza

The detail route for the North West-South East branch (South Route) is as follows:

→Lugoj-Caransebes-Drobeta Turnu Severin-Craiova-Calafat

Corridor IX runs North-South from the Moldavian-Romanian border to Giurgiu where it will cross the Danube River on the existing bridge between Giurgiu and Ruse in Bulgaria.

The detail route for Corridor IX within Romania is as follows:

→Albita-Marasesti-Buzau-Bucharest and Giurgiu (across the Danube from Ruse)

Other international routes have been defined during the TINA exercise and are as follows:

- Sebes-Alba Julia-Cluj Napoca (E81)
- Cluj Napoca-Oradea-Hungarian border (E60)
- Cluj Napoca-Satu Mare (E81)
- Marasesti-Bacau-Suceava-Ukrainian border (E85), towards Cernivici in Ukraine
- Craiova-Bucarest through Caracal and Alexandria (not a E road)

Besides the rehabilitation of the National Roads network, Romania has focus its major investments on the road sections of the Pan European corridors IV and IX within Romania and more particularly on roads along corridor IV..

2. RAILWAYS

2.1 Albania

The rail network consists of 677 km of single track, non electrified, line and is managed by the general Directorate of Railways (GDR). Services operate from Durres to Tirana, Shkoder, Vlora and Pogradec. The link to the oil field area at Ballsh is operational (no passenger service though). The only other link, to Rreshen, is not operating; it was built in the 1980's to this mining area but was not completed and in 1997 much of it was destroyed as was some 12km between Shkoder and Han-i-Hotit which prevents operations north of Shkoder.

The line from Durres to Pogradec, near the border with FYROM, lies along Corridor VIII. There is however a missing link of 3 km to the border; in FYROM some 65 km of line requires to be constructed to complete the link to the remainder of Corridor VIII.

The present operations are heavily subsidised by the GoA. The current investment budget is sufficient only to make essential minor investments on the Durres – Tirana service route.

The objective for the railways was to sustain current operations through essential subsidy.

2.2 Bosnia and Herzegovina

Since the war some rehabilitation has occurred to allow restricted services to be re-introduced on some sections of the network. There are no BiH services for passengers, only local services (Sarajevo – Mostar, 2 trains a day. Visico – Zenica). In the RS area it is reported there are about 50 trains a day but only over short distances (no through services).

The three railway bridges crossing the Sava river, Northern border between Bosnia & Herzegovina and Croatia, were destroyed or seriously damaged during the recent war. Only one, the Brcko bridge on the route from Tuzla to Vukovar and Budapest, has been repaired to date (financed by USAID). The two other key bridges are still under repair or reconstruction works, and thus do not yet allow international traffic to be re-established:

- the Slavonski Samac bridge on branch C of Corridor V will be reopened only in February 2002 (WB/ EBRD and EU financing),
- the Volinja bridge on the line from Split to Zagreb has been provisionally repaired five years ago, but operates only under drastic conditions, speed being restricted to 30 km/h. Reconstruction of the bridge will be done only in coming years, under a new EBRD/EIB loan.

Limited freight services function thus internationally with occasional services already re-established through to Zagreb (crosses the border at Volinja bridge) and the Port of Ploce. Current freight traffic around Tuzla is very important for coal; other (minimal) freight movements occur around Zenica and Mostar – Ploce (for Aluminium products).

These limited services are functioning at a much-reduced speed due to poor track conditions and lack of signalisation and communication facilities.

Present levels of traffic, when it exists, are not representative of the potential demand. We should keep in mind the pre-war traffics as the order of magnitude of reasonable objectives for railway operations.

Line	Nb of Pas. trains per day in 1990	Nb of Freight trains per day in 1990	Total number of trains/day in 1990	Estimation of total number of trains per day in 1999
Ploce-Sarajevo	22	19	41	2
Sarajevo-Zenica	33	27	60	n.a.
Zenica-Doboj	42	34	76	n.a.
Doboj-Bosanski Samac	17	27	44	n.a.
Doboj-Banja Luka-Bosanski Novi	25	17	42	n.a.
Doboj-Tuzla-Zvornik *	13	22	35	0.7
Bosanski Novi-Bihac	23	15	37	n.a.
Bosanski Novi-Dobrljin	35	20	55	1.2

- The section Tuzla-Zvornik has been actually opened in 1992 only.

Total transport volumes for the country have been reduced during the period 1990-1999 from 1,318 million passenger-km to 52, and from 3,892 million net ton-km to 168. Due to the many line interruptions, average transport distances in 1999 are only 36.9 km for freight trains and 61.0 for passenger trains for the ZRS company, whereas average daily intensity of traffic on its network is 0.7 freight train and 7.2 passenger trains.

The rail study network, which pre-war incorporated overhead electrification, follows a similar pattern to that for roads, with Corridor V and a parallel route to Corridor X being important elements of the network. Not all of the operational sections at present have the overhead power supply re-established.

However EIB have recently confirmed that they, together with EBRD, have signed agreements to provide loans towards a project (total cost €61 million), for upgrading railway infrastructure including 48km of track overhaul on Corridor V_c and the East-West route parallel with Corridor X in the north of the country.

2.3 *Bulgaria*

The railway network included in the study for Bulgaria is almost identical to the road network in terms of general alignment which means that each road link as a parallel railway line.

Thus, the railway study network consists in:

- Several line along the various branches of the Pan European Corridor IV:
According to Tina, Corridor IV in Bulgaria has two branches:
 - a branch to Istanbul
Vidin-Sofia-Svilengrad → Istanbul
 - a branch to Thessaloniki
Sofia-Kulata → ThessalonikiTherefore one can distinguish:
 - branch Vidin-Sofia, called in this report branch IVa
 - branch Sofia-Kulata, called in this report branch IVb
 - branch Sofia-Svilengrad, called in this report branch IVc
 - Branch IVa: Vidin-Montana-Vraca-Mezdra-Sofia
This railway section is totally electrified; it is a single track line from Vidin to Mezdra and a double track from Mezdra to Sofia.
 - Branch IVb: Sofia-Blagoevgrad-Kulata (Greek border)
This railway section is a single track line and has been electrified very recently.
 - Branch IVc: Sofia-Plovdiv-Kapitan Andreevo
This railway section is a double track electrified up to Plovdiv. After Plovdiv, there are two more or less parallel lines: the south one goes to the Turkish border (Kapitan Andreevo) and is a single track line, not electrified; the north line connects to the north south line (Ruse-Stara Zagora) and is a single track, electrified.
- One line following the alignment of Pan European Corridor IX, from Ruse to Stara Zagora and connecting to the East-West line between Plovdiv and the Turkish border. Between Ruse and Stara Zagora, this line has a single track and is electrified; after Stara Zagora, up to the connection with the East-West line, it has a double track and is electrified.
- Along Pan European corridor VIII, the situation is as follows:
 - Single track not electrified from the FYROM border³ up to the industrial site of Pernik
 - Single track electrified between Pernik and Sofia.
 - Same line as corridor IVc between Sofia and Plovdiv
 - From Plovdiv to Stara Zagora, the rail route follows respectively the north line described under branch IVc (single track electrified) and the section of the North-South line (double track electrified), up to Stara Zagora

³ The track stops near the FYROM border, short of about 2.3 km to reach the border. There is no track in FYROM on the other side of the border.

- From Stara Zagora up to Bourgas, the line is electrified and has alternatively single or double track since the dualization of the section Stara Zagora-Bourgas has been initiated but never completed. The completion works are planned but not financed.
- From Bourgas to Varna, the line has a single track and is electrified.
- Three more lines are considered in the rail study network:
 - A link between Sofia and the Yugoslavian border (Kalotina) which has a single track and is not electrified and belongs to Corridor X (branch Xc),
 - A connection between corridor IVa (Mezdra) and the Ruse-Stara Zagor line near Veliko Tarnovo, which has a double track and is electrified (part of TINA network).
 - A link from Varna to Ruse, which has a single track and is electrified (part of TINA network).

Most of these lines are quite old and need a complete overhaul. The situation is similar for the track equipments, the signals and the control system. Several projects have been devised to remedy this situation.

It is however worth noting the evolution of the rail traffic over the past few years as it is presented in the following table

Figures in Mio tonne-km	1994	1995	1996	1997	1998
Freight total	7563	8407	7394	7283	5972
Freight national	6918	7696	6791	6720	5306
Freight International	645	711	603	563	666
Freight int'l loaded	346	496	467	395	468
Freight int'l unloaded	299	215	136	168	198

Source: EUROSTAT

The following table provides the volumes of traffics presently handled by the lines described above/
Bulgarian Railways – Traffics by Line in 1995

Line	Corridor	Average Nb of trains per day
Vidin-Mezdra	IVa	71
Sofia-Mezdra	IVa	93-100
Sofia-Plovdiv	IVc	107
Plovdiv-Slivengrad ((near Turkish border)	IVc	33-48
Plovdiv-Bourgas	VIII	50-90
Ruse-Stara Zagora	IX	40-96
Sofia-Pernik	IVb	59
Pernik-Kulata	IVb	34-41
Sofia-Kalotina	Xc	55
Ruse-Varna		28-48

Source : TINA

2.4 Croatia

The railway study network within Croatia consists of the following lines:

Along Pan European corridor X:

- i. Savski Marof-Zagreb: double electrified track
- ii. Zagreb-Dugo Selo-Ivanic Grad-Novska: single electrified track
- iii. Zagreb-Sisak-Novska: single electrified track
- iv. Novska-Slavonski Brod-Vinkovci-Tovarnik (FRY border): double electrified track

Sections *ii* and *iii* are used in a one way fashion.

Along Pan European corridor Vb:

Zagreb-Ogulin-Rijeka: single electrified track

Zagreb-Koprivnica-Botovo-Hungarian border: single electrified track

Along corridor Vc:

Beli Monastir (Hungarian border)-Osijek-Dakovo-Strizivojna/Vrpolje – (Bosnian border): single track

Metkovic-Ploce

Other lines are:

- Sisak-Sunja-Volinja-(Bosnian border-Bihac-border)-Knin: which has a single track and is electrified. This line is crossing the Croat-Bosnian border several times between Bihac and Knin and is in poor condition at present. Specific agreement between Bosnia Herzegovina and Croatia has been signed in order to make this line operational.
- Ostarije-Knin-Split has a single track
- Rijeka-Sapjane-(Slovenian border) has a single track and is electrified
- Pula-Pazin-Buzet-(Slovenian border), in Istria, has a single track.
- Kotoriba-Cakovec-Sredisce: single non-electrified track linking corridor V to the branch Vb
- Cakovec-Varazdin-Koprivnica-Osijek: single track
- Knin-Split: single track
- Perkovic-Sibenik: single track

The following table presents the overall rail-freight figures for Croatia which shows a growing share of international freight along with a general growth of the traffic.

Figures in Mio tonne-km	1994	1995	1996	1997	1998
Freight total	1563	1974	1717	1876	2001
Freight national	583	458	575	625	685
Freight International	980	1516	1142	1251	1316
Freight int'l loaded	294	405	359	276	326
Freight int'l unloaded	306	374	435	526	410

Source: EUROSTAT

The following table provides the volumes of traffics presently handled by the lines described above/

Croatian Railways – Traffics by Line in 1998-2000

Line	Corridor	Average Nb of trains per day
Zagreb-Bregana	X	135 – Suburban section 40-remaining sections
Zagreb-Dugo Selo	X	153-175 (suburban section)
Dugo Selo-Vinkovci (X	40-52
Zagreb-Sisak	X	28-34
Zagreb-Ogulin	Vb	50-55
Ogulin Rijeka	Vb	32-39
Ogulin-Knin-Split		18-24
Dugo Selo-Hungarian border	Vb	50-52
Osijek-Dakovo-Bos. Samac	Vc	8-12

Source : TINA Balkans Transport Infrastructure Inventory

2.5 *Federal Republic of Yugoslavia*

The railway study network follows more or less the highway study network, with:

- A backbone line along Pan-European Transport Corridor X, from Tovarnik on the Croatian border up to Tabanovce on the Macedonian border through Beograd and Nis, with a double-track line from Tovarnik to Nis (actually two parallel one-way single-track lines at a distance from Belgrade to Velika Plana, i.e. on some 90 km), and a single-track line south of Nis. Short stretches between Beograd and the Croatian border, for a total of 13 km, have returned to one-track during the last ten years, when improvement or rehabilitation works had to be interrupted. Between Beograd and Nis, three stretches totalling 27 km are still single track. The whole line is electrified.
- A line along the branch B of Corridor X, from Kelebija on the Hungarian border to Beograd, through Subotica and Novi Sad. The line is single-track, with two sections in a very poor state of repair, Cortanovci-Petrovaradin, and Stara Pazova-Hungarian border. All the line is electrified.
- A line along branch C of Corridor X, from Nis to Kalotina on the Bulgarian border, through Pirot and Dimitrovgrad. It is single-tracked and non-electrified, which requires stopping long distance trains for changing locomotives. The line has at least ten black points where the speed has to be seriously slowed down.

Other railway links in the study network are:

- The link between branch B of Corridor X, at Mitrovica and the Bosnian Railways at Zvornik, through Sabac and Loznica,
- The line from Beograd to Podgorica and the port of Bar, through Uzice, with a branch stemming at Podgorica connecting with the Albanian railway system,
- The line Beograd-Moravita, through Pancevo and Vrsac, linking Corridor X to Corridor IV in Romania,
- The line Lapovo-Kraljevo-Pristina-Deneral Jankovic, connecting Central Serbia to Kosovo and further to Macedonia,
- The link Nis-Pristina.

All these lines are single-track and non electrified. They all need some track overhaul, local improvements of alignment and urgent repair or even reconstruction of a few structures and tunnels.

The following table provides the volumes of traffics presently handled by these lines.

Yugoslav Railways – Traffics by Line in 2000

Line	Nb of Pas.trains per day	Nb of Frt.trains per day	Total Nb of trains per day	Pass.km Million per year	Net Ton.km Billion per year
Tovarnik-Sr.Mitrovica-Beograd	28	37	65	54	0.1
Beograd-Nis-Tabanovci	33	28	61	613	0.8
Kelebija-Novi Sad-Beograd	50	18	68	366	0.4
Nis-Dimitrovgrad-Kalotina	14	12	26	49	0.1
Beograd-Uzice-Bar	41	12	53	n.a.	0.8
Beograd-Vrsac-Moravita	8	2	10	n.a.	0.04
Lapovo-Pristina-D.Jankovic	4	20	24	n.a.	n.a.
Nis-Pristina *	14	n.a.	n.a.	42	n.a.

* Figures of 1990

This table shows that a few single-track lines are close to their capacity, like the line Kelebija-Novi Sad-Beograd. The level of utilisation is in general significant, despite it has regularly decreased for the last ten years.

2.6 Former Yugoslav Republic of Macedonia

Railway study network in Macedonia covers most of the actual network. Besides the backbone constituted by the main axis of Corridor X, most of the other lines are only branches ending in blind sidings, with no connection with foreign railway systems. Lines in the network are the following:

- Tabanovci-Gevgelija, through Skopje and Veles, corresponds to the main axis of Corridor X. It is prolonged in the North to Beograd, Zagreb and Ljubljana, and in the South to port of Thessaloniki. It is a single-track line, electrified. This line was the first constructed, in 1873, to link Skopje and Thessaloniki, and extended later to the North. It has been since regularly improved, but its last overhaul is on most sections already 30 years old. North of Skopje, speed on line is 110/130 kmh. South of Skopje, allowed speed is reduced to 100 kmh, with many stretches at 65/70 kmh, and a few at even less in the South of Veles.
- Gorce Petrov-Kicevo, on Corridor VIII, which ends at 66 km of the Albanian Railway system at Q.Thanes, but with a rough terrain in between. This line has been constructed in 1952/1969 and offers good characteristics. The extension up to Albania has already been studied at a preliminary stage, but with a design speed of only 80 kmh. It should be redone for higher speeds if the two governments decide to proceed with the construction of the missing link. On the Albanian side, only a section of 2 km has to be constructed.
- Skopje-Deneral Jankovic, at the FRY border (Kosovo), which continues to Pristina and connects with the Yugoslav network.
- Veles-Bitola-Medzitlija, at the Greek border and connects further with the Greek system, but with secondary and low standard lines. It follows the branch D of Corridor X. It has been constructed in 1939.
- Kumanovo-Beljakovce, towards the Bulgarian border to the East. This last branch may be the first section of the link between the Macedonian Railways and the Bulgarian Railways, on Corridor VIII. Such a connection has been planned already in 1994, in a hurry, to open a new railway access to the country when Greece decided to close its border with FYROM. Construction works have actually started, fully financed by the Government (started 11th October 1994). It is considered that roughly one third of the new link has been constructed,

including a tunnel close to Bulgaria. \$ 121million have been spent in mobilization advances to the contractors. Detailed design is available.

With the exception of Corridor X, all lines above are single-track and non-electrified.

The following table gives the traffic presently accomodated by the different lines. Obviously, the bulk of the traffic is on the main axis of Corridor X.

Traffic of Macedonian Railways by Line

Line Segment	Km of Track	1999 Million Ntkm	2000 Million Paskm
Tabanovci-Gevgelija (Corridor X)	212	332	91
Skopje-D.Jankovic (twds Kosovo)	32	1	-
G.Petrov-Kicevo (Corridor VIII)	103	14	28
Veles-Bitola (Corridox Xc)	129	17	45
Veles-Kocani (towds.Bulgaria)	86	4	-
Other lines	106	11	6
Total System	668	379	170

2.7 Romania

The railway network in Romania included in the study network is following the same general alignments as the road network. It consists of:

Along corridor IV, North route:

- Hungarian border-Curtici-Arad-Simeria-Alba Iulia-Sighisoara-Brasov-Ploiesti-Buchares
- Bucharest Fetesti-Medgidia-Constantza.

The above two sections have double track and are electrified, as most of the CFR rail network.

Along corridor IV, South route:

- Curtici-Arad-Timisoara- Lugoj-Caransebes-Drobeta Turnu Severin-Craiova which is electrified and has a single track from Arad to Strehaia and a double track from Strehaia to Craiova.
- Craiova-Calafat has just a single track which ends at the ferry crossing between Calafat and Vidin on the Danube River.

Along corridor IX:

- Ungheni (Moldavian border)-Iasi has a plain single track
- Iasi-Pascani-Bacau-Focsani-Buzau-Ploiesti-Bucharest has an electrified double track
- Bucharest-Giurgiu has also a single track. There is a continuation with a single track which crosses the Danube River using a rail-road bridge between Giurgiu and Ruse in Bulgaria.

Other links are as follows:

- Pascani-Suceava-Cernivici (Ukraine) which has an electrified single track from Pascani to Suceava,

- Buzau-Braïla-Galati-Tighina (Moldavia) which has a double electrified track between Buzau and Galati and a single non electrified track between Galati and Tighina (Moldavia); the last section has wider tracks (Russian standards).
- Craïova-Bucharest which has a double electrified track
- Giurgiu-Videle which has a plain single track

Alba Julia-Cluj Napoca-Oraddea-Satu Mare which has a double electrified track between Alba Iulia and Cluj Napoca and a plain single track between Cluj Napoca and Oradea-Satu Mare.

Figures in Mio tonne-km	1994	1995	1996	1997	1998
Freight total	24704	27179	26877	24789	19708
Freight national	15968	17907	18276	16550	
Freight International	8736	9272	8601	8239	19708
Freight int'l loaded	3131	3550	3243	2879	
Freight int'l unloaded	2190	2298	2511	2479	
Source: EUROSTAT					

The following table provides the volumes of traffics presently handled by the lines described above:

Romanian Railways – Traffics by Line in 1995

Line	Corridor	Average Nb of trains per day
Hungary-Arad-Deva-Sibiu-Pitesti-Bucharest	IV	68-76
Alba Julia-Blaj-Brasov-Ploiesti-Bucharest	IV	50-55
Bucharest-Constanta	IV	50-81
Arad-Timisoara-Craiova	IV	50-110
Craiova-Bucharest		83-87
Craiova-Calafat	IV	18
Iasi-Bacau-Ploiesti	IX	73-93
Bucharest-Giurgiu	IX	91
Giurgiu-Videle		30
Alba Julia-Oradea-Satu Mare		44-76
Buzau-Braïla-Galati		44-68
Pascani-Suceava-Cernivici		33-62
Source : TINA		

3. WATERWAYS

3.1. The Danube

From the source of the Danube in Germany to the mouth of the river into the Black Sea the Danube has a total head of 678 m over a length of 2 857 km.

It flows in Germany, Austria and Hungary before entering the region of the Balkans. Then it flows in Croatia, Yugoslavia, Romania, Bulgaria and Ukraine up to the Black Sea over a distance of about 1 350 km.

In the Balkans region the river is classified as ECE class VII. It means that convoys of $3 \times 2 = 6$ barges of Europa II type are accepted at a draft of 2.5 m^4 (corresponding to a maximum load of $1\,600 \text{ t} \times 6 = 9\,600 \text{ t}$). Larger drafts are secured downstream in the delta, up to 7.5 m in order to receive sea vessels.

At places and for some days the navigation is limited, interrupted or diverted because of excessive flow or insufficient depth, strong wind, fog or even because the river is blocked with ice. The only serious difficulty sometime occurs downstream in Romania at km 346. At low water navigation is diverted in the river branch called Bala Arm. The diversion causes an important increase in the distance covered by the convoys.

In the Balkans region the river has some tributaries or is linked with some canals.

Name of tributary of canal	Danube km	River bank	Country	Navig. length	ECE class	Remarks
River Sava	1170	Right	YU, HR	587 km	III, IV, Va	national status
B Palan. – N Becej canal	1 076	Left	YU	147 km	IV	with special permission
Bala arm / Borcea branch	346	Left	RO	87 km	VIb	allowed
Cernavoda – Constantza	300	Right	RO	64 km	VIb	allowed
White gate – Midia canal		Left	RO	27 km	Va	status unknown
Chilia arm fo the Danube	79	Left	UKR, RO	116 km	VII	allowed up to Ismail

Source: EUDET Study, 1999

An international agreement signed in 1856 by the interested countries and renewed in Belgrade in 1948 provides for the free international navigation on the Danube. It also created the Danube Commission. The Commission issues recommendations about the navigation. It was also in charge of the co-ordination of national development plans but after 1990, because of lack of financial resources, very little works were implemented in the downstream part of the river. The Commission is not in charge of infrastructure works, the only exception being the cleaning of the river from the debris of the bridges destroyed by the NATO bombing in Yugoslavia.

The fleet in operation on the Danube is presented in the table below (1994 figures)

Type	Croatia	Yugoslavia	Romania	Bulgaria	Total
Tugs & pushers	20	98	272	22	412
Barges	127	516	1 606	183	2 432
Self-propelled	14	118	250	16	398
Deadweight (x1 000)	43	393	1 185	255	1 876

Source: EUDET Study, 1999

In addition to these inland vessels the region also receives vessels from upstream Danube and river-sea vessels coming from Black Sea countries, mainly Ukraine and Russia.

The traffic on the Danube has always been very important and diversified in terms of goods and of lengths of routes. In addition to the domestic traffic of each country (internal traffic, imports and exports) there has always been a significant transit. Because of the economic crisis and the war in the Balkans the traffic in the downstream countries (Hungary and to Romania) dramatically decreased in 1991-1992.

The potential of inland navigation on the Danube was studied by the EUDET project in 1999. Some scenarios were drawn up and the resulting figures (for the whole river basin) are presented in the following table.

⁴ draft recommended by the Danube Commission

(figures in 1 000 t)	Year 1995	2010. Scen.1	2010. Scen.1'	2010. Scen.2	2010. Scen.3	2010. Scen.4
Raw materials	7.8	8.2	8.6	12.0	11.3	14.2
Other commodities	3.7	7.5	10.0	14.6	12.3	17.4
Total	11.5	15.7	18.6	26.6	23.6	31.6

Source: EUDET Study, 1999

The various scenarios are based on assumptions with regard to improvement of the infrastructures and of the transshipment facilities in the ports.

The forecast not only shows an important increase in the traffic. It also draws the attention on the change in the traffic mix.

The transport of goods on the river offers many advantages:

- it is less expensive than the transport by road and even by rail. The study quoted above gives the following example.

	By the Danube	By rail	By road
Vienna-Constantza	15 to 30 ECU / t	27 ECU / t	40 ECU / t

The difference is very important particularly when it is applied to goods in bulk and of low value. (When the transport is mad by inland waterway one has to remember that the cost of a pre- and/or post-transport must be added).

- Road transport is much more detrimental to the environment: congestion of existing roads, danger, noise, gas pollution, etc..

The development of the transportation on the Danube will require some improvement of the infrastructure, of the ports and of the fleet. The improvements on the infrastructure may seem less urgent. Those of the fleet and of the ports are more urgent and should aim at a good adaptation to the needs of the transport and of the economic development.

With regard to ports it should be stressed that they constitute important traffic junctions of integrated traffic systems and together with transshipment centres play a substantial role in ensuring combined transport. Each modern port offers therefore a container terminal and a platform for ro-ro transport.

According to the European Agreement on Main Inland Waterways of International Importance (AGN) each port of international importance would have to meet the following conditions:

- it must be situated on a E-route,
- it must be linked to important railway and road routes,
- it should provide conditions for the development of port industrial zones
- it should be equipped to handle standard containers
- it should provide conditions for trade and customs operations connected with the international exchange of goods.

3.2 The Sava

In Bosnia and Herzegovina the Sava, tributary of the Danube was navigable over a fairly long distance (683 km). It was classified ECE IV, III and II depending on the section.

Because of the economic crisis, the war and inadequate maintenance the navigation conditions deteriorated and the traffic of the main ports (Brcko, Samac) has ceased.

Here also the traffic may have development potential. The possibility of receiving containers through the port of Constantza and the Danube could be an important advantage.

Among possible actions the classification of the Sava as an international river would facilitate traffic, its international status being created with the breakup of the former Yugoslavia Republic since the Sava river now passes through three countries (Croatia, Bosnia and Herzegovina and FRY).

3.3 Albania

The Ministry of Transport, through the Directorate of Land and Marine Transport also has responsibility for the transport of passengers and transport vehicles on the waterway system (man made lake) on the River Drin above Komani to Firza and Kukes. A waterway from the Adriatic Sea to Lake Shkoder used to be operational as an inland waterway but has become silted up and is no longer functional.

Two services operate: Komani – Fierze and Fierze – Kukes. Although provisions exist for the regular issuing of licenses (from the Ministry in Tirana) for these passenger (mainly) ferry services, they have not been applied in recent years and the authorities have chosen not to enforce the regulations in the present circumstances prevailing in the area. As a result there are safety problems with the operations but fortunately to date no serious incidents have occurred.

4. PORTS

4.1 Albania

The main port for the country is at Durres (gateway for Corridor VIII). A port of secondary, but political importance is at Vlora, the maritime terminal of one arm of the North-South Highway. Other smaller ports exist in a number of locations along the coast, Saranda and Shengjin being the most important, but may not be considered as being of significant importance in relation to Regional infrastructure.

Plans exist for the development of all 4 named ports; activities in the main are:

Durres: General Cargo and Container operations. (A new Gas and Fuel terminal is also being constructed north of Durres (Port Romano)
Vlora: General Cargo and Container operations + Gas and Fuel terminal at the “New” Port
Shengjin: Bulk Cargo (Ore); construction materials; Fishing; Tourism (Bari and Ancona)
Saranda: Tourism (Corfu).

The Port of Durres handles most of the country’s imports and exports (mainly mining products). The facilities are however in poor condition and the EU, EIB and World Bank are financing major investments. A Strategic Land Use Plan (prepared by LBII) has been accepted as the reference for future development of the port. The status of current projects in the port are:

The \$13m WB funded programme covers rehabilitation of Berths 4,5 and 6 plus the provision of 2 cranes. It should be completed by end 2002.
The €5m EC project for the Ferry terminal berths is likely to be completed now by the 1st Q of 2002.

The €10m EIB funded terminal and paved area will be completed probably in 2005; this is a new loan, the previous one having been cancelled. The EC are currently tendering the design and supervision stage of this project.

The Italian Co-operation fund may finance the Port Area Survey and Study and Design of paving and drainage throughout the port. This is a high priority project to establish base data for the future development of the port.

The Port of Hamburg is currently making a study and advising on the privatisation of berthing operations.

Recent investment planned for the Port of Vlora (EU funds) is stalled following the cancellation of a construction contract for a first phase development (Master Plan exists). Adverse weather conditions seriously hamper ferry operations with the result that services can never be guaranteed.

4.2 *Bosnia and Herzegovina*

Following an agreement with Croatia, Bosnia and Herzegovina has an access to the Croatian port of Ploce (see below) which traditionally served its economy.

The port is connected with the cities of Mostar and Sarajevo by road and railway⁵ and farther with all important economic centres in the country. Ploce also handled small amounts of transit cargo for Hungary and other republics of the former Yugoslavia. The railway mostly carried break bulk and bulk cargo for local industry but was not active as an operator of intermodal rail services (containers).

Total cargo traffic fell sharply from 4,6 million tonnes in 1989 to a low 268 000 tonnes in 1994 and then recovered slowly to 852 000 tonnes in 1999 and 698 000 tonnes in 2000. It consists in solid bulks (grains, ores and minerals), liquid cargoes (heavy fuel oil, chemicals and petroleum products) and timbers. About 3 000 TEU were loaded or unloaded in Ploce in 1999.

Ploce occupies a very good position with regard to the south eastern economic centres of the country and is the most natural gate for seaborne trade to (and from) Bosnia and Herzegovina. However, with regard to containers it will have to compete with other Northern Adriatic ports (Triest and Koper). These ports have the advantage of larger traffic and are installed with better and more efficient equipment.

The port of Ploce has 11 berths (6 500 m of quays) with draft ranging from 6 to 10 m. It may accommodate short sea shipping vessels but also ocean-going vessels.

It has 70 000 m² of covered storage, 50 000 m² of timber shed and 300 000 m² of open storage.

The actual port capacity is far above the present traffic.

4.3 *Bulgaria*

There are two important ports in Bulgaria at Varna and at Burgas. They are both connected by rail and road with the economic centres of the country. They belong to the corridor VIII of the Pan – European Corridors and are easily connected to : corridor VII (Danube) ; corridor IX (north – south corridor crossing the Danube at Ruse/Giurgiu) ; corridor IV (Sofia – Istanbul).

⁵ Because of deteriorated technical conditions the speed on the railway does not exceed 70 km/h. There is a project of improving the railway conditions between Ploce and Sarajevo.

Main characteristics of the ports are given in the following table.

	Burgas	Varna
Quays and N° of berths	23 berths. 3 905 m of quay	35 berths. 6 000 m of quay
Depths at berths	Up to 11 m	
Storage	Shed: 87 000 m ² Open storage: 307 000 m ² Cold store: 18 000 m ²	Shed: 50 000 m ² Open storage: 500 000 m ²
Traffic	Total 13 Mt (in 1998) Dry bulk: 4.0 Mt Liquid bulk: 6.8 Mt General cargo: 2.2 Mt Containers: 21 000	
Other		Ferry service

In addition to Burgas and Varna there are smaller ports of local importance.

The capacity of the ports exceeds the present traffic. However the traffic mix differs and will more and more differ from what it was in the past. It will be necessary to adapt both infrastructure and equipment to the expected needs.

In this respect the projects proposed by Bulgarian authorities includes:

- port of Burgas. Reconstruction and modernization of the port: new breakwater, terminals for bulk and liquid cargoes, container and Ro-Ro terminals, oil harbour
- port of Varna. Reconstruction and modernization of the port: container terminal, grain terminal, Ro-Ro terminal

4.4 Croatia

The main ports of Croatia are: Rijeka and Ploce for cargo traffic, Split Zadar and Dubrovnik for passenger traffic. (the port of Ploce is almost exclusively devoted to the traffic of Bosnia and Herzegovina – see above).

Rijeka, the more important one is located in the northern part of the Croatian coast. It is well connected to Zagreb by road and rail and from there to Hungary and the former economic centres of Yugoslavia. It also has a direct connection to Ljubljana and to the south of the country.

The ports of Zadar and Split are located in the central part of the Croatian Adriatic Coast. They are connected with the hinterland (Zagreb and further to central Europe) by rail and road. Motorway and semi-Motorway are under construction. These ports are also the nearest passenger ports for Central and Eastern European tourist destinations in Croatia and Italy. (The ports are connected with regular line services with Italian Adriatic ports, Ancona and Bari). The port of Dubrovnik is situated in the south part of the Croatian coast; this port is particularly attractive to cruisers.

Main characteristics of the described ports are:

	Rijeka	Split
Quays and N° of berths	8 000 m; 37 berths	3 500 m; 11 berths
Depths at berths	5 to 19 m	10.7 max
Storage	Shed: 370 000 m ² Open storage: 400 000 m ²	Shed: 30 000 m ² Open storage: 150 000 m ²
Traffic	Total: 8.1 Mt (1999) Dry bulks Liquid bulks (oil and PP) General cargo Containers and ro-ro Passengers: 119 000	Total: 1.1 Mt (1999) Dry bulks Liquid bulks General cargo Ro-ro Passengers: 1 600 000
Other	Floating dock for large vessels (up to 65 000 DWT) International airport	

The present activity of these ports still is far below their actual capacity.

There are a number of other ports of local importance in Croatia: Pula (0.2 Mt and 26 000 pas. in 1999), Zadar (0.5 Mt and 1 280 000 pas. in 1999), Sibenik (0.6 Mt and 190 000 pas. in 1999), Dubrovnik (0.02 Mt and 275 000 pas. in 1999), etc..

The large number of passengers includes foreign tourists and inhabitants of the Adriatic islands when moving to mainland.

4.5 *Federal Republic of Yugoslavia*

The Federation has only one important sea port, Bar, in Montenegro. The Port of Bar handles more than 95% of FRY maritime transport, with 1.3 MT in 2000, down from 2.7 MT in 1989.

The port has 3.5km of quays with a draft up to 14 meters, and can accommodate vessels of 100,000 tons. It has terminals for general cargo, oil product, liquid cargo, containers, Ro-Ro, timber and passengers. Present mix of traffic is 80% imports, 15 % exports, remaining for transit and local distribution. General Cargo represents half of the total traffic, exports being mainly aluminum products and timber, and imports general cargo and oil products. The port handled about 10,000 containers and 10,000 Ro-Ro units in 2000.

The Port of Bar may receive easily 5 million tons with its existing infrastructure. Warehousing and handling capacity are quite sufficient for the foreseeable future. Only timber warehousing is for the moment used at its full capacity, but important extension space is available. It can handle any type of cargo with above-average performance, despite its handling equipment is becoming old.

The only infrastructure problem is a damaged breakwater requiring rehabilitation works. Financing arrangements have been already found.

Conversely, the port suffers from its distance from one of its major hinterland, Central Serbia, and from the poor conditions of the transport infrastructure towards Belgrade. The railway connection does not offer the quality of service required for containers, nor competitive tariffs. Trucking is as a consequence more and more utilized, even with the poor standard road links connecting the port to

Central Serbia. In total, transport costs to Central Europe from Belgrade are identical by road or using the sea route through Bar, and transportation is much faster.

4.6 Romania

Along the Black Sea Romanian shore there are three sea ports: Constantza, Mangalia and Midia. The most important is Constantza. It has a very important traffic before the nineties with a peak of 62.5 Mt in the year 1989.

The three ports are connected by road and railway to Bucharest and other economic centres. However only Constanta and Midia are connected to the Danube by means of the Danube – Black Sea canal and Poarta Alba – Midia canal.

Main characteristics of the ports are given in the following table:

	Constantza	Midia	Mangalia
Quays and N° of berths	131 berths ; 25 000 m of quays	7 berths ; 1 415 m of quays	2 berths ; 400 m of quay
Depths at berths	From 7.0 to 19.0 m	Max: 9 m	Max: 9 m
Storage	Sheds Open storages Cold stores Silos, etc.	N.a.	Open storage : 500 000 m ²
Traffic	Total: 42.6 Mt (1997) Solid Bulk: 23.4 Mt Liquid bulk: 12.3 Mt General cargo: 6.9 Mt	N.a.	
Other	Total cap. # 45 Mt Cont. cap. # 300 mTEU Dry dock : 250 000 dwt Free trade zone	Floating dock (up to 20 000dwt) Petrochemical plant The Midia canal has low characteristics	Dry dock: 150 000 dwt The port was recently modernized and is in good condition

In the port of Constantza some rehabilitation, modernization and extension works are now underway or considered:

- extension of the breakwater to the south: to improve the protection of the south port and the new container terminal. Financing is looked for,
- new container terminal. Call for tenders for the construction are being launched,
- a grain terminal was considered with a view to help to export grain overseas. The project could not meet the conditions put forward by the World Bank and the construction was stopped,
- free port project. No external financing requested.

5. AIRPORTS

International airports in the region are respectively Tirana-Rinas in Albania; Sarajevo, Mostar, Tuzla and Banja Luka in BiH; Sofia in Bulgaria; Zagreb, Dubrovnik and Split in Croatia; Beograd and Podgorica in FRY; Skopje and Ohrid in FYROM; Bucharest-Otopeni, Constanta and Timisoara in Romania. We have considered only in the TIRS study network the airports in the

capital cities, as in the recent EIB review of Civil Aviation facilities. Organizational structures and main issues are given in Chapters 3 and 4 of the report. For the purpose of this study, additional information on the physical characteristics of the airports were not deemed necessary