JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF CIVIL AFFAIRS AND COMMUNICATIONS
(BOSNIA AND HERZEGOVINA),
MINISTRY OF TRANSPORT AND COMMUNICATIONS
(FEDERATION OF BOSNIA AND HERZEGOVINA), AND
MINISTRY OF TRANSPORT AND COMMUNICATIONS
(THE REPUBLIKA SRPSKA)

THE STUDY
ON
THE TRANSPORT MASTER PLAN
IN
BOSNIA AND HERZEGOVINA

FINAL REPORT

VOLUME I: THE TRANSPORT MASTER PLAN

MARCH 2001

PACIFIC CONSULTANTS INTERNATIONAL

The following foreign exchange rates are applied in this study.

1 KM(Konvertibilna Marka)	=	1 DEM	=	0.51 EUR
			=	0.43 USD
			=	46.99 JPY
		1 USD	=	1.19 EUR
			=	2.32 DEM
			=	108.97 JPY

(As of October 31, 2000)

PREFACE

In response to the request from the Government of Bosnia and Herzegovina, the Government of Japan decided to conduct the Study on the Transport Master Plan in Bosnia and Herzegovina, and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Dr. Katsuhide Nagayama of Pacific Consultants International Co., Ltd. between November 1999 and February 2001. In addition, JICA set up an advisory committee headed by Mr. Nobuhiro Koyama, Development Specialist of JICA between March 2000 and January 2001, which examined the study from specialist and technical points of view.

The team held discussions with the officials concerned of the Governments of Bosnia and Herzegovina and conducted field surveys in the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the improvement of transport systems and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Governments of Bosnia and Herzegovina for their close cooperation extended to the team.

March 2001

Kunihiko Saito
President
Japan International Cooperation Agency

March 2001

Mr. Kunihiko Saito
President
Japan International Cooperation Agency

Subject: Letter of Transmittal

Dear Sir,

We are pleased to submit herewith the Final Report of "The Study on the Transport Master Plan in Bosnia and Herzegovina".

The report contains results of the study which was carried out by Pacific Consultants International between November 1999 and February 2001. The report consists of Executive Summary, Main Text (Volume I and II) and Entity Reports (Volume III and IV).

The Executive Summary briefly illustrates the findings of the entire study. In the Main Text, Volume I is comprised of 7 chapters and presents the comprehensive master plan, and Volume II is comprised of 10 chapters and presents sector plans, pre-feasibility study results and environmental aspects of the study. Based on the agreement of the final coordination committee meeting, Volume III and Volume IV are derived from the Main Text, and are comprised of sector plan and project-oriented documents focused on each Entity. The Study Team sincerely hopes that the plans and recommendations presented in the study will be implemented for the realization of the Master Plan.

We wish to express grateful acknowledgement to the personnel of your Agency, Ministry of Foreign Affairs, Advisory Committee, Ministry of Land, Infrastructure and Transport, and Embassy of Japan in Bosnia and Herzegovina, and also to the officials of Ministry of Foreign Affairs of Bosnia and Herzegovina, Ministry of Civil Affairs and Communications of Bosnia and Herzegovina, Ministry of Transport and Communications of Federation of Bosnia and Herzegovina, and Ministry of Transport and Communications of Republika Srpska who greatly assisted the Study Team. The Study Team sincerely hopes that the result of this study will contribute to the transport development and peace in Bosnia and Herzegovina.

Yours faithfully,

Katsuhide Nagayama
Team Leader, JICA Study Team
The Study on Transport Master Plan
In Bosnia and Herzegovina

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List of Abbreviations

AGR	European Agreement on Main International Traffic Arteries
ANS	Air Navigation System
ASG	Assignment Group
ATC	Air Traffic Control
ATS	Air Traffic Services
AWZ	Section Waterways and Sea Affairs
BiH	Bosnia and Herzegovina
BiHTMAP	Bosnia and Herzegovina Transport Master Plan
BiHDCA	Department of Civil Aviation
BOT	Build-Operate-Transfer
BR	Brcko Administrative District
BRIC	Joint Road Infrastructure Public Corporation
BHZJK	Joint Railway Public Corporation
B/C	Benefit Cost Ratio
CAA	Civil Aviation Authority
CB	Central Bank of Bosnia and Herzegovina
CEE	Communanté Economipac Européenne (Albania, BiH, Bulgaria, Croatia, FYR Macedonia, Romania and Yugoslavia)
CEEC	Central and Eastern European Countries
CEMT	Conference of European Ministers of Transport
CFR	Crash/ Fire/ Rescue
CIS	Commonwealth of Independent States
CTT	Combined Transport Terminals
CTP	Common Transport Policy
DEM	German Mark
DvS	Dienst voor de Scheepvaart
DOTS	IMF Direction of Trade Statistics
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EDI	Electric Data Interchange
EDS	Economic Development Strategy
EIB	European Investment Bank
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plans
ESCAP	Economic and Social Commission for Asia and the Pacific
ETRP	Emergency Transport Reconstruction Program
EU	European Union
EUR	Euro
FAA	Federal Aviation Authority
FBiH	Federation of Bosnia and Herzegovina
FDI	Facilitating Foreign Direct Investment
FED	Federal Institute of Statistics, Federation of Bosnia and Herzegovina
FDI	Foreign Direct Investment
FYR	Former Yugoslav Republic
FYROM	Former Yugoslav Republic of Macedonia
GDP	Gross Domestic Product
GRDP	Gross Regional Domestic Product
GPS	Global Positioning System
HDM-4	Highway Development and Maintenance - 4
HST	Hypersonic Transport
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICB	International Competitive Bidding
IEE	Initial Environment Examination

ILS	Instrument Landing System
IMF	International Monetary Fund
IMG	International Management Group
INTERBUS	International Passenger Transport by Road
ISO	International Organization for Standardization
ITT	Intermodal Transport Terminals
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
KM	Konvertibilna Marka
LOS	Level of Service
MAC	Mine Action Center
MOTC	Ministry of Transport and Communications
MTEF	Medium Term Expenditure Framework
NATO	North Atlantic Treaty Organization
NIS	National Institute for Statistics
NGO	Non Governmental Organization
NVZ	NV Zeekanaal en Watergebonden Grondbeheer Vlaanderen
OBB	Austrian Railways
OSCE	Organization for Security and Cooperation in Europe
OHR	Office of High Representatives
PCU	Passenger Car Unit
PD	Project Descriptions
PFI	Private Finance Initiatives
PPP	Public Private Partnership
ROI	Return on Investment
RS	Republika Srpska
RPC	Railway Public Corporation
RUC	Road User Charges
SAA	Stabilization and Association Agreement
SD	Site Descriptions
SEE	South East European
SECI	Southeast European Cooperative Initiative
SFOR	Security Force
SME	Small and Medium Enterprise
TEM	Trans European Motorways
TEN	Trans-European Transport Network
TEN-T	Trans-European Network for Transport
TINA	Transport Infrastructure Needs Assessment
TIR	Transport Internationale Rouliere
TOR	Terms of Reference
TSM	Transportation System Management
UIC	Union Internationalle der Chemines du Fer (International Union of Railways)
UIRR	International Union of Rail – Road Transport Companies
UK	United Kingdom
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
USAID	United States Agency for International Development
USD	United States Dollar
VAL	Value Added Logistics
VAT	Value Added Tax
V/C	Volume to Capacity Ratio
WB	World Bank (International Bank for Reconstruction and Development)
WTO	World Trade Organization
ZBH	The Bosnia and Herzegovina Railways
ZRS	The Republika Srpska Railways

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BiHTMAP
The JICA Study
on Transport Master Plan
in Bosnia and Herzegovina
N
W
E
S
CROATIA
CROATIA
SERBIA
MONTENEGRO
ADRIATIC SEA
Banja Luka
Sarajevo
Mostar
Split
Ploce
Dubrovnik
LEGEND
Intermodal Points
Cities
Primary Centers
Primary Centers
Administrative Centers
Main Border Centers
Airports
Airport Development and Improv. of Safety & Security
Improvement of Safety & Security
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Other Airports
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Focused Railway Facilities for Improvement
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Urgent Rehabilitation Ports
Rivers
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Other Rivers
Urban Transport Studies
Entities
Republika Srpska
Brcko Administrative District
Federation of BiH
20 0 20 40 60 80 100 Kilometers

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

The Japan International Cooperation Agency (JICA), in cooperation with the Bosnia and Herzegovina Ministry of Civil Affairs and Communications; the Ministry of Transport and Communications, Republika Srpska as well as the Ministry of Transport and Communications, Federation of Bosnia and Herzegovina have conducted the Bosnia and Herzegovina (BiH) Transport Master Plan (BiHTMAP), based on the *Scope of Work* agreed upon between the Governments of BiH and Japan on 27 November, 1998. Pacific Consultants International, headquartered in Tokyo, Japan, was the designated lead consultant for the study, which was initiated during November, 1999.

A basic premise of all investigations is that the BiHTMAP shall be comprehensive in nature, that is, address transport needs within each Entity, between Entities and between the country and her European neighbors[1]. Two key products form the foundation upon which planning efforts are based:

- Formulation of an integrated, multi-modal (road, rail, inland waterway, air) transport master plan extending over a twenty year planning horizon to year 2020; and,

- Identification, within the overall master plan framework, of high-priority projects whose implementation is to be achieved by year 2005, and whose merit is determined via pre-feasibility studies.

The transport strategy embedded in the Master Plan must concurrently contribute to an efficient economic structure of the country, strengthen trade relations with national neighbors and other areas of Europe, and provide a base for market-oriented transport

[1] Further detail regarding scope of work, Study Team composition and technical framework is contained in *Inception Report – The Study on the Transport Master Plan in Bosnia and Herzegovina*, prepared for the Japan International Cooperation Agency, Ministry of Civil Affairs and Communications (Bosnia and Herzegovina), Ministry of Transport and Communications (Federation of Bosnia and Herzegovina) and Ministry of Transport and Communications (The Republika Srpska), by Pacific Consultants International, November 1999.

activity. Post-war economic recovery within BiH is well underway; continuing improvements in productivity and well-being are expected. As economic recovery continues, changes in transport activities and behavior will follow suit. Thus, the foci of transport planning must gradually shift from alleviation of war damage to realization of a transport system founded upon mutual cooperation and free-market principles. This strategy is particularly valid given the 20-year planning horizon adopted by the current study.

These challenges, especially when viewed through the prism of existing realities, required innovative, yet practical approaches to problem solving. Analytical efforts therefore focus, in the case of high priority projects, on transport system inadequacies catalyzed by the war and maintenance shortfalls, thus reflecting present, observed transport patterns, preferences and deficiencies. In the longer term, however, transport activities and demand are anticipated to gradually evolve and diversify according to European norms and practices.

1.2 STUDY SCOPE AND OBJECTIVES

The principal objectives of the BiHTMAP include:

- Formulate a phased BiH transport master plan to target year 2020 which includes the road mode, road operators, railway mode, waterway mode, air mode as well as related managerial aspects, and which concurrently supports the social, economic and developmental evolution of Bosnia and Herzegovina;

- Conduct pre-feasibility investigations of the most urgent high-priority projects; and

- Facilitate technology transfer in terms of transport planning techniques and methodologies to counterpart personnel.

The components of the master plan must further diversify beyond the traditional "hardware" concepts associated with infrastructure provision. Additional key elements of the process consist of:

- "software" aspects, that is, available technology, international (EU) standards, and multi-modal integration needs (terminals, transfer points); and,

- "humanware" needs, or the cultivation of human resources via the designation of training and education programs as well as other requirements for developing expertise.

Thus, strategies for enhanced operation and management of transport systems, infrastructure and the operation thereof are addressed within BiHTMAP.

Another vital element incorporated into formulation of the BiHTMAP is the notion of consensus building. The Study Team has brought considerable expertise and technical knowledge to bear during the course of the study; however, BiHTMAP was not

formulated in isolation. Instead, it relied on continues liaison and close coordination with many representatives of the local communities; in other words, stakeholders in the BiHTMAP process had considerable say and input toward shaping the vision of their own transport future. This participatory planning process is seen as being of paramount importance in terms of ownership building and will ensure, it is hoped, that the Transport Master Plan is adopted by, and used for the benefit of, all peoples of BiH.

1.3 REPORTING APPROACH

The Study Team produced four reports during the course of the study. The content of each report can best be described by considering typical steps associated with deductive technical analysis (Figure 1.1):

- The *Inception Report*, which was submitted during November, 1999, contained detail regarding study methodologies, staffing plan and study outputs. This document was finalized in close cooperation with counterpart committees and other governmental representatives.

- The *Progress Report*, which was submitted during March, 2000, quantified and clarified study progress to near conclusion of what, in study terms, had been categorized as Phase I efforts. The content of the *Progress Report* amplified, as necessary, technical techniques and methodologies, presented findings as to existing conditions, documented major surveys and identified early opportunities and constraints.

- The *Interim Report* was submitted near end of November, 2000. It contained results of technical analyses, findings of designated surveys, evaluation of alternative approaches, demand forecasting/modeling, sectorial improvement strategies, and preliminary conclusions as to Master Plan content.

- The *Final Report* was submitted in two versions, a draft during January, 2001 and, following receipt of comments, the current document which was submitted during March, 2001[2]. The *Final Report* documents the Master Plan, details sector plans and describes results of pre-feasibility reviews for selected high-priority projects.

In line with mutually accepted procedures, a pre-agreed number of copies of each report were provided to the studies Coordinating Committee, as well as to each of the two Entity Technical Committees.

[2] In line with established procedures, Pacific Consultants International submitted the *Final Report* to the Japan International Cooperation Agency in Tokyo, Japan during latter March, 2001. JICA then forwarded all documents to the BiH side via diplomatic channels.

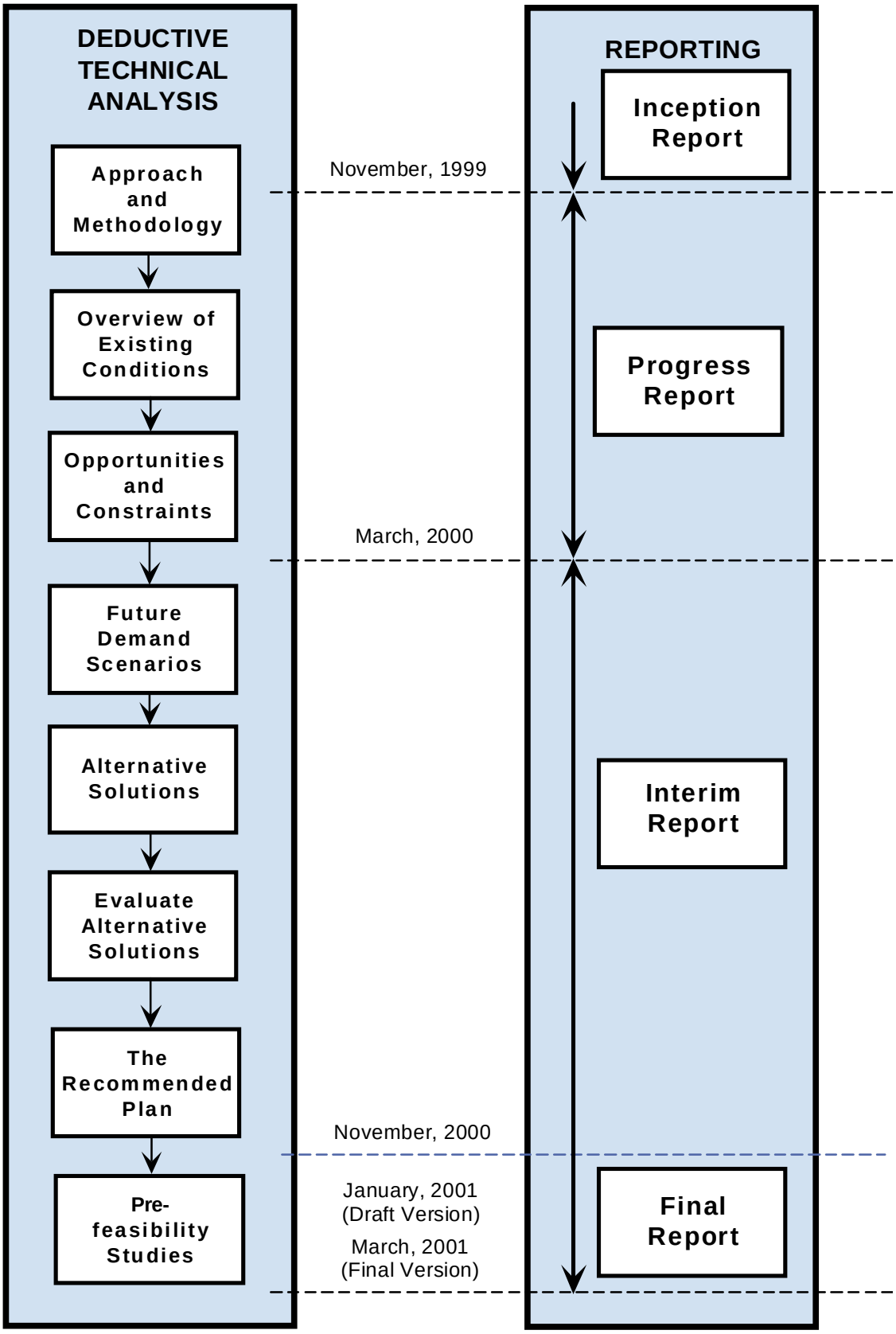


Figure 1.1 Overview of BiHTMAP Reporting Process

The scope of the work encompasses a wide variety of technical components as appropriate to a comprehensive transport study such as BiHTMAP. As part of road transport modeling efforts, a country-wide survey consisting of traffic counts and roadside origin-destination (OD) interviews was completed during June and July, 2000. In summary, 86 points were surveyed, 62 of which included both traffic count (24 hours) and roadside interview (12 hours) surveys. Sixteen hour traffic counts were collected at remaining locations. The roadside OD program queried major items such as trip origin, trip destination, number of passengers, trip purpose and, in case of trucks, type and amount of commodities carried. On a composite BiH-wide basis, some 35 percent of passing traffic was surveyed resulting in a data pool of roughly 89,000 interviews.

This survey was the first since the end of the war to provide traffic data on a uniform, country-wide basis and therefore represents a unique reference source for the transportation community in BiH. The Study Team, in recognition of this fact, therefore issue a supplementary report:

- *Traffic Survey Report*, dated July, 2000, which provides full detail regarding survey locations, data collection methodologies as well as site by site traffic volumes stratified by clock hour, two directions and ten vehicle types.

Roadside OD survey results were also made available in original hardcopy (survey) format, as well as processed format (expanded daily trip matrixes at the 54 zone level of detail, by four vehicle types).

1.4 STRUCTURE OF THE FINAL REPORT

The structure of the *Final Report* is consistent with essential formats and tenets voiced in the *Inception Report*, as well as directives received from the studies Coordinating Committee[3]. The *Final Report* consists of five separate volumes:

- *Executive Summary*;

- ***Volume I: Transport Master Plan*** **(this report) presents the Transport Master Plan in Bosnia and Herzegovina in such a manner as to address substantial discussions related to and necessary for seeking the transport sector policies and development directions from a long-term perspective, including not only hardware elements (infrastructure-specific items), but also software elements (technology and institution) and the human aspect (organizational issues, human resources training). Ultimate accession to the European Union is an essential element of the Master Plan.**

[3] The Coordinating Committee, as documented in the *Minutes of Meeting on the Draft Final Report* dated 7 February, 2001, instructed the Study Team to prepare the *Final Report* in such a manner as to document the BiHTMAP as well as prepare, as separate volumes, reports for each Entity. The Entity reports are to be project and implementation oriented.

- *Volume II: Sector Plans* presents individual sector plans for road, railway, waterway and air, based on analytical and technical arguments obtained through surveys and investigations conducted by the Study Team. The sector plans contain a wide variety of technical issues so that the relevant agencies responsible for each transport sector may deepen their insights into future visions and tasks.

- *Volume III: Entity Report-Federation of Bosnia and Herzegovina;* and, *Volume IV: Entity Report-Republika Srpska,* each contain sector-specific and project-oriented documentation to assist each Entity in finalizing implementation strategies and administrative approvals thereof. In addition, results of pre-feasibility analyses of high-priority projects in each Entity are documented.

The current volume, that is, *Volume I: Transport Master Plan*, structures discussions as follows:

- Chapter 2 documents historical context as well as current socioeconomic status, and provides insight as to recent recovery and emerging changes in the economic and social fabric of BiH.

- Chapter 3 articulates planning approaches and goals embedded in the BiHTMAP, including those relevant to infrastructure enhancement, institutional development, and capacity building.

- Chapter 4 deepens discussions of future socioeconomic development perspectives which underlie transport sector evolution. A structural shift towards a market-oriented economy and transition from the heavy industry-dominant past towards more value-added and competitive industrialization emerge as foci of this chapter. Based on these considerations, a socioeconomic framework is formulated.

- Chapter 5 presents the essence of a multi-modal transport development plan which unifies and consolidates sector plans (details of which are contained in *Volume II: Sector Plans),* addressing the importance of functional "intermodal system development" while concurrently retaining sensitivity toward European norms and standards.

- Chapter 6 discusses formation of priority projects and programs to initialize the materialization of the master plan. To ensure successful implementation, discussion topics address realistic concerns such as financial affordability.

- Chapter 7 discusses the institutional arrangement to properly govern the transport sector in Bosnia and Herzegovina, addressing both current and long-term issues. Concepts are proposed which retain sensitivity toward existing realties as well as European expectations.

1.5 THE PARTICIPATORY PLANNING PROCESS

The final structure of BiHTMAP, and the successful reception thereof, was achieved as a direct result of cooperative efforts and close liaison between the Study Team and local experts. Considerable efforts were expended in gathering information, reviewing previous studies and holding numerous discussions to enhance knowledge of, and sensitivity to, local transport conditions, norms and practices.

A partial listing of governmental contacts include various experts within the BiH Ministry of Civil Affairs and Communications (whose representatives participated in the Coordinating Committee for this study), the FBiH Ministry of Transport and Communications (whose representatives chaired and coordinated the FBiH Technical Committee) and the Republika Srpska Ministry of Transport and Communications (whose representatives chaired and coordinated the Republika Srpska Technical Committee). Close liaison was also maintained with Kantonal authorities in all ten FBiH Kantons, various Ministries within both Entities, the BiH Railways Public Corporation and railway companies, members of the waterway community, airport and civil aviation authorities, statistical agencies at both the state and Entity levels, as well as various Institutes in both Entities. Representatives of municipal governments were, as reasonable and practical, consulted regarding sector-specific issues. In addition, on-going contact was maintained with the BiH Ministry of Foreign Affairs as well as the Japan International Cooperation Agency.

Likewise, on-going and effective consultations were carried out with various international agencies, donors, and consultant groups in order to obtain an overview of previous, current, and likely future activities and/or involvement in BiH. A partial listing of contacts includes the Office of the High Representative, International Management Group, European Bank for Reconstruction and Development, World Bank, SFOR, European Commission, OSCE, Private Sector Development Task Force, USAID, ICAO, various institutions of the United Nations, the European Intermodal Association, Shipping and Transport College-Rotterdam, Communaute des Chemins de Fer Europeens, and the European Dredging Association. Contacts had also been arranged with representatives of the transport community and industry in neighboring countries.

Wide-spread information dissemination methodologies were, in addition to meetings and the issuance of reports, employed. These include, over the entire extent of the study, conduct of four workshops and three seminars (Table 1.1).

Table 1.1 Schedule of BiHTMAP Workshops and Seminars

Event	Date	Location	Umbrella Responsibility
Workshop 1	29.11.99 10.12.99	Sarajevo Banja Luka	FBiH Technical Committee RS Technical Committee
Workshop 2	29.2.00 6.3.00	Banja Luka Sarajevo	RS Technical Committee FBiH Technical Committee
Seminar I	15.3.00	Sarajevo	Coordinating Committee
Workshop 3	21.7.00 25.7.00	Sarajevo Banja Luka	FBiH Technical Committee RS Technical Committee
Workshop 4	23.10.00 25.10.00	Sarajevo Banja Luka	FBiH Technical Committee RS Technical Committee
Seminar II	24.11.00	Banja Luka	Coordinating Committee
Seminar III	8.2.01	Sarajevo	Coordinating Committee

The content of workshops was technical in nature, with a focus, to varying degrees, on matters pertaining to each Entity. The content of seminars was broader in nature, with more a countrywide and international orientation. Seminar I dealt with transport "Issues and Opportunities," Seminar II the "Draft Transport Master Plan" and Seminar III "Pre-feasibility Investigations." Attendance at all workshops and seminars was pronounced, and featured representatives from local governments, institutes and the international community, as well as other guests, both domestic and foreign. Invaluable exchanges of information took place at each event, which were, in essence, structured in the form of presentations followed by discussion forums. Media coverage was widespread.

BiHTMAP also published six newsletters at varying intervals during the course of the study. Dissemination was via e-mail, fax, or mail depending on recipient preferences. The newsletters dealt with informational items, as well as major milestones achieved during the course of the study. The dissemination list ultimately totaled about 300 persons located both within BiH and abroad.

The Study Team also submitted monthly progress reports to the Chairmen of the Coordinating and Entity Technical Committees as well as the BiH Ministry of Foreign Affairs, and frequent progress reports to JICA.

BiHTMAP Seminar III: Pre-feasibility Investigations of Selected Urgent Projects
- Closing Remarks -

Mr. Nobuhiro Koyama,
Chairman, JICA Advisory Committee

Date: 8 February, 2001
Venue: Holiday Inn Sarajevo

1. Opening

Distinguished Guests, Ladies and Gentlemen.
I am Nobuhiro Koyama, working as a senior advisor to the JICA Headquarters in Tokyo. As a member of the Scope-of-Work Mission, I visited your country in November 1998 and March last year. I feel honored to have this occasion to deliver some concluding remarks at the final part of today's seminar.

I appreciated your active participation in the discussion forums in the morning and in the afternoon to further elaborate the proposed transport master plan and priority projects and programs. In addition, the Study Team has received candid opinions and comments in written form from the State, Federation of Bosnia and Herzegovina, and Republika Srpska. I thank you very much for your earnest participation in this Master Plan Study.

Judging from the written comments received and discussions today, I have an impression that the Study has properly been carried out in accordance with the terms of reference and that the Study Team's performance has been satisfactory to almost all of you.

I think this kind of excellent outcome can be attributable, not only to the Study Team's efforts, but also to your continued patronage, including daily collaboration, active participation in Technical Committees and Workshops in each Entity, and your incessant coordination efforts in Coordinating Committee.

I feel very happy as well to know that the Study Team has repeated exchange of opinions with the international aid community including OHR, IMG, EU, the World Bank, EBRD and donor countries. I appreciated their excellent suggestions and cooperation extended to the Study Team.

2. Important points to be clarified

Ladies and Gentlemen, now, I would like to touch on my personal response to the comments raised to the Study. I am sure that the Study Team will scrutinize every comment to respond, including those to be submitted by the end of this month.

I would like to touch on two groups of comments:
1st, technical comments; and
2nd, policy related comments.

2.1 Technical comments

I will start with the first topic of technical comments that are mostly related to the reliability of data and information. This is really a difficult task every time in this kind of study even in a stabilized country, but in the case of this country, the difficulty is of multiple times. I think there have been four kinds of difficulties:

1) rapidly changing distribution pattern of population due to relocation and return of refugees;
2) possible change of production activities due to closure of the former state enterprises and new influx of foreign direct investments;
3) changing international trade relations with an increasing importance of European market; and
4) probable change of inter-entity movement of people and goods.

These changes have tended to occur continuously, making clear identification of current situations very difficult, not to mention the possible future prospects of the country. In order to understand the current transport demand as precisely as possible, the Study Team carried out traffic surveys at as much as 86 locations as well as supplemental household and industry surveys. I am sure that the current transport demand derived from these surveys is most extensive and reliable at this moment.

As for the possible future prospects of the country, three causes of discontinuity from the past seem to have made estimation extremely difficult: (1) a paradigm shift from a socialist economy to a market economy; (2) independence from the former Yugoslavia; and (3) new political framework under the Dayton Accord. All of these causes combined to make future estimation difficult.

There have been various comments from your side on the reliability of data and information. However, I would like to invite your attention particularly to the fact that under the present circumstances, a series of factors as I mentioned exist to disturb clear identification of the current situations and future estimation. I am sure that a set of surveys and daily close collaboration between you and the Study Team have produced the best possible identification and estimation for the future.

2.2 Policy related comments

Now, I am moving on to the second topic of policy related comments. According to the report, priority is given to the projects and programs that will contribute to recovery and restoration of the status quo to the pre-war level with an emphasis on future possible integration with the EU.

As I mentioned, your country now has a large number of factors rapidly changing and a substantial degree of uncertainty for the future development. However, there seems to be one clear direction of the country, that is, your aspiration toward the integration with the EU. In view of this, I agree with the proposed criteria for priority selection that is based on economic rationale and better connections with the EU as well as neighboring countries.

There might be different opinions on priority selection from domestic or local point of view, for instance, to tackle emerging traffic congestion on some specific road sections and/or intersections. I would like to invite your consideration to the nature of the countrywide transport master plan that focuses on establishing a transport strategy to support socio-economic restoration and development of the country. I would like to ask you to initiate your studies on your own to supplement the countrywide transport study in terms of this type of local traffic issues.

The Study proposes a countrywide transport master plan that covers two entities of Federation of Bosnia and Herzegovina and Republika Srpska.

During the scope of work mission, two years ago, we had a series of discussions on the approach to be adopted. Whether the transport master plan be developed from a countrywide point of view or from an entity point of view. As far as I understood, we came to a general consensus that a countrywide point of view should be taken, but the Study Team should collaborate closely with each entity to fully take into account of the particulars of each entity.

In line with this, the Study Team established its offices in Sarajevo and Banja Luka to work closely with its counterparts, Technical Committees and local institutions of each entity. As far as I understand, the requirement has been satisfied for both entities of the Federation BiH and Republika Srpska.

If there be any need for developing more detailed entity and/or local transport master plans either in the Federation BiH or Republika Srpska, I would like to invite your own efforts to do it based on the proposed countrywide transport master plan.

3. Closing

Ladies and gentlemen, now, I am going to conclude my remarks. It was really a challenge for JICA to commence this technical cooperation program in your country. During the scope of work mission, we found a number of hurdles JICA had never experienced in the past. These are: (1) the Dayton Accord severely restricting the state functions; (2) existence of two entities with great power; (3) melting pot of donor community; (4) full of uncertainties at present and for the future; and (5) our limited experience in your country.

In spite of our anxiety at the outset, however, it is my greatest pleasure that the Study has arrived at this stage of today's seminar. All of this successful progress can be attributable to your continued collaboration, support from international aid community and efforts of the Study Team. I sincerely appreciate every contribution extended by all the parties concerned.

In closing, I would like to mention three points to ask for your continuation of efforts, following this Study:

- I would like to ask three parties concerned to continue dialogue and discussions on the transport master plan and priority projects and programs. I think the most important contribution of the JICA Study is to have facilitated dialogue and discussions among three of you through the Coordinating Committee. It is my sincere request for you to continue this coordinating process for the future;

- I would like to ask you to continue updating and revision of the proposed transport master plan. The international and domestic environment surrounding the transport sector would change quite rapidly. The proposed transport master plan need to be updated and revised in abreast with the changing environment; and

- I would like to ask you to continue your efforts for realizing the proposed transport master plan, especially priority projects and programs, with the full support of international aid community including Japan. In order to do so, it is my sincere request for you to further strengthen your ownership on this transport master plan.

Ladies and gentlemen, it is my utmost delight that the friendship between Bosnia and Herzegovina and Japan has been extended and strengthened through the process of this JICA Study.

Thank you very much for your kind attention.

1.6 SALIENT FEATURES OF THE STUDY AREA

1.6.1 Administrative Structure

The General Framework Agreement for Peace in Bosnia and Herzegovina was initiated in Dayton on 21 November 1995 and signed in Paris on 14 December 1995. BiH consists of two Entities and the Brcko Administrative District (BR). The two Entities are the Federation of Bosnia and Herzegovina (FBiH) and the Republika Srpska (RS).

Under the BiH Constitution, the state-level government is responsible for foreign policy; foreign trade policy; customs policy; monetary policy; finances of the institutions of BiH and for international obligations of BiH; immigration, refugee and asylum policy and regulation; international and inter-Entity criminal law enforcement; establishment and operation of common and international communications facilities; regulation of inter-Entity transportation; and air traffic control. Additional responsibilities can be assigned to the State if both Entities agree.

There are six state-level ministries: Foreign Affairs; Foreign Trade and Economic Relations; Civil Affairs and Communications; Treasury of the Institutions of Bosnia and Herzegovina; European Integration; and Human Rights and Refugees. The Ministry for Treasury of the Institutions of BiH only deals with financial matters pertaining to the above-mentioned functions assigned to the State under the constitution. All other financial matters are the responsibility of the Entities, each of which has its own Ministry of Finance. Also the Brcko Administrative District handles its own financial affairs. Transport-related functions at the state-level are: establishment and operation of common and international communications facilities; regulation of inter-Entity transportation; and air traffic control. It is, at present, also realistic to emphasize that the existing Constitution assigns no tax collection power to the State.

The Entity governments are responsible for conducting all affairs not expressly assigned to the state. The FBiH government consists of 16 ministries, with 12 being based in Sarajevo and four in Mostar. The four Mostar-based ministries, each of which have representative offices in Sarajevo, are responsible for: Commerce; Transport and Communications; Energy and Industry; as well as Education, Science and Culture. The FBiH governmental administration is sub-divided into 10 Kantons and also municipalities, which are empowered locally to implement various policies and regulations. The RS government consists of 16 ministries based in Banja Luka. The RS sub-unit of governmental administration is municipalities.

1.6.2 Current Population

Pre-war growth in the population of BiH was steady, if modest. A year 1961 population of 3.28 million grew to 3.75 million, 4.12 million and 4.38 million by 1971, 1981 and 1991, respectively. There has been no census in BiH since 1991. Depending on source, some 258,000 to 270,000 persons died or are declared as missing as a result of the war. Displaced persons aggregated to 1.28 million in 1995, 866,000 in year 1997 and 816,000

in year 1998. The war catalyzed an exodus of some 1.2 million refugees and, at present, it is estimated that approximately half have returned to BiH. Current estimates of resident population vary, but generally accepted statistics suggest a population of 3.89 million persons, 2.38 million thereof being in the Federation of Bosnia and Herzegovina, 1.43 million in Republika Srpska, and 80,000 in the Brcko Administrative District.

1.6.3 Recent Economic Activities

Prior to the onset of hostilities, BiH was classed as one of the lower income republics of ex-Yugoslavia; nevertheless, GDP per capita reached some $2,400 (in current terms) in 1990. The economy was fairly diversified, with a large industrial base and a capable entrepreneurial class that produced complex goods such as aircraft and machine tools. Economic performance ground to a virtual halt as a result of the war. By year 1994, GDP had contracted from a pre-war 10.6 billion dollars to some 1.2 billion dollars (in current terms), and GDP per capita had fallen to near $300. The speed of economic recovery from 1994/1995 onward has been impressive by any measure. GDP per capita increased to some $1,000 by 1999, and breached $1,100 during 2000, thus placing BiH solidly in the, per World Bank criteria, “lower middle” income grouping. Unfortunately, economic growth has not been uniform in both Entities. In 1994, the Federation and Republika Srpska contributed almost equally toward the BiH economy. However, by 1998, some three-fourths of a dollar-denominated economy originated in the Federation

CHAPTER 2: CURRENT ECONOMIC RECOVERY AND DEVELOPMENT PROSPECTS

2.1 AN OVERVIEW OF ECONOMIC RECOVERY

2.1.1 General

Since the end of hostilities, massive efforts have been made towards rehabilitation of damaged transport infrastructures as well as the economic recovery. The international community have pledged nearly US$ 5.1 billion for the reconstruction of the country, including transport improvement programs which have understandably focused on the immediate alleviation of physical war damages and the re-activation of basic transport services and facilities. Toward this end, significant improvements to transport infrastructure have been achieved, mainly within the framework of the Emergency Transport Reconstruction Project[1] with support provided by the EBRD, the World Bank, the European Union, and other bilateral donor institutions. These works have still been underway as of November 2000.

Due to the on-going reconstruction efforts, real GDP grew at some 30 % p.a. on the average during the period 1996 to 1998, and it is estimated that GDP in 2000 will reach about 65% of the pre-war GDP. Along with such economic recovery, transport demands are thought to be increasing at a higher growth rate than that of the economic growth. Further detailed observations are discussed below.

[1] Refer *Bosnia and Herzegovina Emergency Transport Reconstruction Project*, authored by the World Bank, March 1996; and, *Bosnia and Herzegovina Second Emergency Transport Reconstruction Project*, authored by the World Bank, August, 1997 and *Bosnia and Herzegovina Emergency Transport Reconstruction Program – Roads, Bridges, Railways and Civil Aviation*, by International Management Group, October 1999.

2.1.2 Economic Recovery of Bosnia and Herzegovina

(1) Overall Economy

BiH GDP and per capita GDP changes since 1990 are examined as shown in Figure 2.1. The estimated GDP in 1990 was KM 13,674 million in constant 2000 prices. It decreased to KM 2,609 million in 1995 that is less than 20 % of the pre war GDP. However, the GDP of BiH has been recovering from KM 2,609 million in 1995 to KM 8,043 million in 1999[2]. In 2000, it is projected to reach KM 8,803 million[3], which is about 65 % of the pre war GDP.

In terms of per capita GDP, various estimates were published, though significant differences exist among them. The Study Team estimated the per capita GDP in the constant prices, as shown in the same figure. Considering the convenience of comparison with the other countries, it is shown in terms of US dollars. The data of GDP per capita are missing in some years, because reliable population data were not available.

The per capita GDP of BiH was US$ 2,231 in 1990. It dropped drastically by the war, without doubt. However, it became to US$ 984 in 1997 and grew to US$ 1,033 in 1999. In 2000, it is expected to reach to US$ 1,130[4]. The per capita GDP in 2000 will reach to a half of that in 1990. It is noted that the difference of recovery between the GDP in KM and the per capita GDP in US$ comes from the conversion factor difference to the dollar.

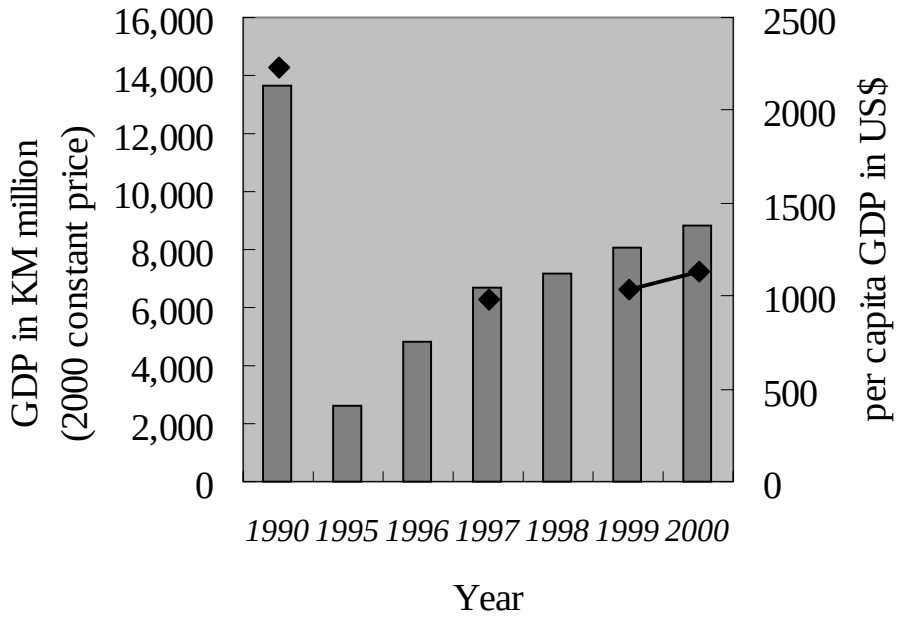


Figure 2.1 Changes of GDP and Per Capita GDP

[2] CB [2000]
[3] CB [2000], USAID [2000]
[4] USAID [2000], CB [2000]

(2) Recovery of the Industrial Sector of BiH

Prewar Bosnia and Herzegovina contained about 1,000 industrial organizations employing nearly 450,000 people, accounting for about half of total employment outside agriculture. Heavy and light industries accounted for 37 % of GDP in 1990, higher than in any other former Yugoslav Republics. The most important industries were iron ore production and processing, coal, ferrous and nonferrous metal production, machinery, forestry, and wood processing.

Heavy industry was already in decline before 1992 with the fading of the cold war. Light industries included food processing, construction, and the manufacture of textile products such as leather goods and shoes. Overall, industrial activities were concentrated in a small number of firms: a dozen large industrial conglomerates accounted for up to 35 % of GDP prior to the war.

The war has affected firms in a number of ways. Many factories were damaged. Some of this damage has been repaired, but much of it cannot be, because of landmines around plants and equipment, loss of critical personnel. One of the most critical factors, however, is change in the market conditions.

Infrastructure was also damaged throughout the country, and much of it remains in disrepair. Skilled workers are in short supply. Nine of ten industrial workers were either in the armed forces or were physically displaced during the war. Many former workers, including some of the most skilled and best educated, are refugees abroad and are unlikely to return in the near future. Because of these problems, manufacturing output after the war was initially at only about 5 percent of prewar levels.

Table 2.1 shows comparisons of GDP by industrial sector in 1990, 1995 through 1998. As seen in this figure, the most recovered industrial sector was “Trade and Business Services”, from KM 209 million in 1999 to KM 262 million in 1998 (1998=125.2, 1990=100), followed by “Government Services” (118.8), “Agriculture and Fishery” (80.1) and “Trade” (78.5).

While, the less recovered industrial sector was “Water Management” (20.7), followed by “Industry and Mining” (30.6) and "Banking and Insurance” (37.9). Slow recovery of the “Industry and Mining” sector is considered as a bottleneck of a countrywide economic recovery, because the sector was the dominating industrial sector by sharing 37% of total GDP in 1990.

Table 2.1 GDP Recovery by Industrial Sector

(KM million in year 2000 constant price)

Type of Industry	1990 GDP	1990 Index	1995 GDP	1995 Index	1996 GDP	1996 Index	1997 GDP	1997 Index	1998 GDP	1998 Index
GDP	13,674	100	2,609	19	4,804	35	6,711	49	7,150	52
Industry and mining	5,100	100	633	12	1,028	20	1,371	27	1,561	31
Agriculture and fisheries	1,228	100	629	51	890	72	1,048	85	984	80
Forestry	244	100	23	9	105	43	128	52	157	64
Water management	28	100	2	6	5	20	10	35	6	21
Construction	1,011	100	79	8	207	20	321	32	400	40
Transport and communication	933	100	160	17	310	33	481	52	565	61
Trade	1,329	100	510	38	794	60	1,071	81	1,044	79
Catering trade and tourism	318	100	58	18	124	39	183	57	179	56
Crafts	323	100	38	12	116	36	132	41	141	44
Housing-public utilities	257	100	25	10	86	33	111	43	147	57
Technical and business services	209	100	108	52	230	110	267	128	262	125
Banking and insurance	554	100	40	7	121	22	197	36	210	38
Education, science, culture	763	100	68	9	232	30	376	49	426	56
Health care and soc. Services	737	100	71	10	190	26	282	38	306	42
Government	641	100	165	26	367	57	733	114	762	119

Source: Statistics Office in Federation of BiH and Srpska

2.1.3 Industrial Sectors of the Federation of Bosnia and Herzegovina (FBiH)

(1) Current Performance of Industrial Production

There were some positive improvements in the economy of FBiH in 1999 in terms of growth of production and service; and dynamic of the economic relations with foreign countries. Nevertheless the general economy of FBiH has still faced difficulties in the following conditions:

- the number of employees did not change, while the unemployment rate is increasing;
- the value of the basket with the necessary products significantly exceeds the value of the average salary.

Those are the direct results of delay and slow implementation of economic reforms including privatization, and sluggish improvements on:

- low rate of production rehabilitation and low participation of industry production in the entire economy revenue;
- weak competing power in domestic and foreign markets;
- high losses and difficult financial situation in all segments of the economy; and
- decline of domestic trade.

At the end of 1999 with regards to the planned growth rates, the following movements in the basic categories measured for the success of one economy were achieved in FBiH, as shown in Table 2.2.

Table 2.2 Economic Achievement 1998 to 1999 in the FBiH

	Planned Growth Rates	Achieved Growth Rates
GDP	22%	
Employment*	25%	3.11%*
Average salary	20%	5.13%
Export of goods and services	100%	47.30%
Industry production	25%	10.60%
Prices (retailers)	8%	- 0.90%

Source: Federal Statistics Office, Sarajevo

As seen in this table, the expectations for the fast economic recovery in FBiH in year 1999 were not fulfilled. The achieved industry production growth in 1999 was 10.6%. This is 2.5 times lower than the growth rate planned of 25%. The slowing down in the industry production of FBiH started in 1997, continued in 1998 and showed in 1999 an unexpected low rate of 10.6% and is a consequence of the slow implementation of economic reforms, thereby resulting in insufficient investments into the production and preparation of production for export. Decline of international assistance might be one of the reasons.

Looking into the industrial sector in 1999, out of twenty-one industrial activities in the processing industry sectors, twelve industrial activities achieved growth and nine industrial activities had their production decreasing. The industrial activities that significantly participate in the industry production are tobacco production (85.5%), metal production (61.1%), chemical production (16.3%) and production of non-metal minerals (12.4%). Those four activities were 24.7% of the total industry in 1999.

The highest decrease of production was in the textile production (-14.1%), clothing production (-13.6%), production of metal products (-8.8%) and production of vehicles (-5.5%).

In the first quarter of year 2000 in regards to the average achieved production in previous year, the processing industry sectors recorded a strong decrease in the production, that is, - 4.7%. Out of twenty-one industrial activities, eleven of them had a significant drop in their production: non-metal production (-53.3%), chemical production (-30.3%), timber processing (-23.4%), and furniture production (-16.3%).

Due to the significant increase in electricity production (26.7%) and coal production (6.9%), which represent 35.1% of total industrial production together, the drop of the

production was balanced in the processing industry sectors and total production was increasing by 3.9%.

The beginning of the year 2000 indicated bad results in the industry production in FBiH. There was an increase of 3% in January but in February it became worse with an increase only of 1.4%. In March, an increase of the production of 8.3% has influenced the average quarter increase of 3.9%.

In consequence, according to the existing increase rates, the recovery of the industry after war devastation has been very slow and set aside from the international economy flows. Unless the economy policy does not stimulate the increase of the production, the planned increase rates on basic economic parameters for the year 2000 will not be easy to achieve, thereby not leading to the improvement of the social environment and the possibility to be the self-sustainable economy.

Domestic demand is fulfilled with, on one hand, the international assistance to Bosnia and Herzegovina through donations and credits. On the other hand, the uncontrolled imported goods are frequently with significant value, and offered on the domestic market without paying import excises, customs fees and taxes. This disloyal competition of imported goods on the domestic market, together with other types of Grey domestic economy, are likely to deprive the sources of income.

(2) An Overview of Current Economic Performance in Other Sub-sectors

The following are a brief overview of the current production performance in the other industrial sub-sectors.

1) Forestry

The forestry sector increased its production in 1999, 1.91 million cubic meters of wood; which is 12.8% higher than last year. In particular the production of hardwood increased by 21.3%, but the increase in the production of conifers (5.1%) is significant. The sale is also increasing compared to 1998. The Federation Government took important decision in preventing export of timber.

2) Construction

Construction sector in 1999 on the domestic market realized works for a total value of KM 343 millions which is 3.7% less than the previous year (KM 356 millions). This realization was achieved with reduced effective number of working hours of workers on site of 8.5% and with the average monthly engagement of 7,851 workers, which is 11.5% less than the previous year during the same period (8,763 workers).

The total number of employees in the construction sector accounted for 22,631 in 1999 and 23,070 in 1998, which means 2 % less in 1999.

It was reported that the competition between the construction enterprises on the domestic market was high and the enterprises have to cut their prices. This fact has for consequences problems such as insolvency, low salaries, and irregular payments.

3) Domestic and Foreign Trades

Domestic and foreign trades in the structure of the FBiH economy played an important role and, in 1999, as well as in previous years, the total trade represented over 43%of the total FBiH income. The domestic and foreign trades sector in 1999 in FBiH employed in average 41,018 workers which are 8.3% higher than those in the previous year.

Inter-Entity trade remains on an irrational low level. For the first quarter of 2000, it was a little bit more than KM 25 million in both directions. The main products, which are sold to the Republika Srpska, are chemical products, food, and metal products. The products that FBiH is buying from RS are: food products, wooden products, and chemical products. The real inter-Entity trade, however, is much higher and is done mostly as gray economy.

Four (4) European countries of Croatia, Italy, Germany, and Slovenia are the most important foreign trade partners to The FBiH economy. The scope of exchange with Croatia was significantly reduced in 1999, namely, imports of Bosnia and Herzegovina: by 28% and exports from Croatia by 32%. This tendency continued during the first two months in 2000 when the drop of export was 49.5%, while that of import, 26%.

4) Basic Financial Indicators in 1999

The companies achieved KM 14,440.6 million of the total revenue in 1999, which is 11.2% higher than the previous year. Since the growth rate of the total revenue in 1998 compared to 1997 was 20%, it is noted that these rates are similar to the rates of industry production growth.

The private sector had a total of 17,286 companies in 1999, out of which 88.7% of companies participated with 56% in the total revenue, 52% in profits, while 15.3% of companies fell in accumulated loss of 9.4%. Compared to the previous year, the private sector remained at the same level with the largest participation in total revenue. This illustrates the fact that the state-owned enterprises slowly are recovering and are showing need for rapid privatization.

(3) Employment

The total of employees accounted for 395,445 in 1998 and 407, 754 in 1999, which means an increase of 3.1%. In December 1999, compared to December 1998, the recorded number of unemployed people in FBiH increased by 5,306 workers and bring the total unemployed people to 261,793 workers.

The industrial sector today employs 163,881 workers which are less than that in 1991. While, the rate of the employment in the trade sector increase to 4.1%, the transport and communications sector, to 2%, the handicraft industry, to 3.5%.

2.1.4 Industrial Sectors of the Republika Srpska (RS)

(1) Current Performance of Industrial Production

The business environment in RS is improving substantially, with the growth of several economic indicators, namely, industrial production, GDP, and the average wage rates. However, regardless of these positive trends, the economic activity is still at low level.

According to some estimates, 25 % of GDP in RS, is linked in a way or another with Yugoslavia (exports of finished products, imports of inputs). The loss of the market during the war cannot be replaced by the exchanges with the Federation (still a small market marked by low purchasing power of the population), Croatia (due to political issues), or Slovenia (due to inadequate quality of RS products).

Looking into GDP in RS, as shown in Table 2.3, until 1995, GDP followed a decreasing trend due to the war. Many production activities have been restarted in 1996 and in the three-year period 1996-1998, the annual GDP, on average, increased by more than 18 %.

Table 2.3 GDP in RS 1994 - 1998

	Value in thousand US$	Annual growth rate in %
1994	794,227	
1995	636,909	-19.8
1996	759,521	19.2
1997	932,518	22.8
1998	1,049,579	12.6

Source: Institute for Statistics, Banja Luka

In terms of sectoral distribution, as seen in Table 2.4, the industry shares almost one forth (24.7%) of the RS economy and the agriculture and forestry sectors generated almost 30 % of the GDP in 1998. Trade accounts for less than 10 %. By contrast, the share of tertiary activities such as financial services, education, health, political organizations and other related activities exceeds 20 %.

Table 2.4 GDP Sector Breakdown of RS

	Value (KM in thousand)	Share of GDP (%)
Industry	453,798	24.7
Agriculture	463,740	25.2
Forestry	74,384	4.0
Water production	2,062	0.1
Construction	77,826	4.2
Transport	113,890	6.2
Trade	175,762	9.6
Catering	48,334	2.6
Handicrafts	16,209	0.9
Housing and communal services	25,638	1.4
Financial and other services	108,333	5.9
Education, science, culture and information	86,782	4.7
Health and social protection	74,106	4.0
Social and political organizations	115,900	6.3
Total	1,836,764	100.0

Source: Institute for Statistics, Banja Luka

In general, low capacity utilization, high production costs, and low export competitiveness are interrelated. World Bank estimates that, at the end of 1996, production in BiH was only 7-8 % of the pre-war level. In 1997, the level of capacity utilization in RS is about 10.7 %, which is unusually low. In 1998, capacity utilization doubled to 22.7 % in RS. This considerable improvement can be explained by a fact that economic reconstruction started only in 1996.

Table 2.5 shows capacity utilization in RS (1997 and 1998) for the industry and mining sectors with broken down to all relevant sub-sectors. The sectors with high capacity utilization of more than 50% in 1998 were three, namely, metal processing (61.4%), electricity production (59.9%), and coal production (58.7%), followed by tobacco industry (42.2%), beverage production (39.5%).

Table 2.5 Capacity Utilization Ratios in RS Industry

	Capacity Utilization 1997	Capacity Utilization 1998	Share of Output 1998
Industry and Mining (total)	**10.7**	**22.7**	**100.0**
Electricity production	56.6	59.9	28.5
Coal production	29.3	58.7	6.6
Coal production	12.9	26.8	2.8
Oil derivatives	6.5	19.8	0.4
Ferrous metals metallurgy	8.3	5.3	0.6
Nonferrous metals extraction	5.9	7.6	0.9
Nonferrous metals processing	0.0	1.2	0.2
Non-metal minerals extraction	10.1	14.4	0.9
Non-metal minerals processing	1.8	3.1	0.1
Metal processing	11.8	61.4	7.7
Machinery	9.9	11.4	1.8
Transport equipment	5.5	6.8	0.8
Electrical machinery industry	8.3	14.8	3.4
Basic chemicals	6.3	3.7	0.7
Chemical products processing	5.7	22.0	2.9
Concrete and sand production	12.6	24.3	0.7
Construction materials production	8.3	17.2	3.9
Processed lumber	23.0	24.4	5.4
Finished wood products	12.8	17.2	5.8
Paper industry	2.7	5.0	0.6
Textile industry	7.4	11.2	1.3
Clothing industry	7.2	1.7	7.7
Leather and fur industry	3.8	6.5	0.3
Leather shoes and products	17.8	13.0	2.1
Cotton processing	1.6	3.4	0.1
Food industry	4.0	9.1	8.8
Beverages production	31.0	39.5	2.6
Cattle food industry	8.7	18.6	0.4
Tobacco industry	40.4	42.2	1.3
Graphics industry	7.6	13.1	0.5
Recycling	26.3	21.0	0.2

Source: Institute for Statistics, Banja Luka
Assuming technologically feasible capacity of equipment.

The future industrial development strategy of RS will have to be based on export expansion. Priority to development will go to those sub-sectors, and enterprises that have the ability to compete with the international and domestic markets.

In the case of most RS enterprises, competitiveness is still primarily determined by production costs, out of which capital costs constitute a significant portion. RS labor

costs are low due to the low level of salaries, even though excessive employment and low labor productivity tend to reduce this unit labor cost advantage.

With production recovering, excessive employment will be progressively absorbed and both labor and capital productivity will increase because unit capital costs decrease with increasing capacity utilization level.

(2) Major Industrial Sectors in RS

There are six (6) sectors with capacity utilization levels with twice compared to the industry and mining sector average (1997 and 1998), as described above. Presumably they have good restructuring and recovery potential. The following are an outlook of these potential sub-sectors:

1) Electricity Production

Capacity utilization is 59.9 % in 1998. The existence of a captive domestic market explains this high level of capacity utilization, reflected by the household sector's consumption, 75 % of electricity. In this sector, capacities are relatively new with all production facilities utilized (3 large hydropower plants and 2 thermal-power plants). The capacity utilization level will also remain high in the future. Part of the output is exported to Croatia and Yugoslavia but in still insignificant volumes to make a real impact on the foreign trade balance of the RS. A key problem of electricity production in RS is the low price of electricity for residential users. This results in severe losses.

2) Coal Production

This sector supplies coal to the thermal-power plants, which explains the high level of capacity utilization. Households consume only small volumes of coal. Capacity utilization is 58.7 % in 1998, jumped up from 29.3 % in 1997. The future of this sector is linked to that of the electricity production sector, however, it depends greatly on the quality and volume of coal deposits.

3) Processed Lumber

This sector achieved a capacity utilization level above the industry average (24.4 % in 1998), because cheap and easily available raw wood materials. The sector consists of mostly small private sawmills whose owners are readily able to find markets (mostly in Yugoslavia).

4) Leather Shoes and Other Small Leather Products

The high level of capacity utilization is resulted from the fact that the industry is producing for foreign companies as well as for humanitarian organizations. However, the sector's production represents only 2.1 % of the total industrial output. Wholesale

prices are low. This sector needs restructuring. Prior to the war the industry produced mainly for the Eastern European markets, but this option is no longer straightforward and that can explain the trend with the decrease in capacity utilization from 17.8 % in 1997 to 13 % in 1998.

5) Beverages Production

This sector is not a significantly large with one brewery and several beverage producers accounting for only 2.6 % of the total industrial output (1998). Capacity utilization is around 39.5 % in 1998. Generally, such a sector offers solid prospects.

6) Tobacco Industry

This sector consists of one producer that is able to sell its products on the local market. This sector is exposed in strong competition against foreign products that are not subject to high import customs, duties and excises. This producer should have a prospect for privatization.

(3) Employment:

The total employment of RS is about 230,000 workers. Industry and agriculture account for over 140,000 employees, or more than 60 % of the total employment in RS. Since the two sectors generate 50 % of the GDP, this figures point at a situation of excessive employment. Another sector is interesting "Public and Social Services" with 30,449 employees. Adding this figure to the employees in other sectors that are also dependent on the public budget, it is noted that 15-20 % of the total employment level is paid out of the public budget. This contributes to high public expenditures and constitutes a heavy burden on the economy as well as jeopardizing growth prospects.

BOX: An Observation: Prospect of Mining and Heavy Industries of BiH

In the conjunction with the BiH freight transport, the heavy industry's recovery is a crucial factor to determine the future demand, especially, for the railway transport. It was reported that at the end of 1999, the manufacturing and the mining sub-sectors generated a great amount of losses, namely, KM108.3 million (profits of KM48.7 million against losses of KM48.7 million) in manufacturing, and KM 52.2 million (profit of KM1.0 million against losses of KM53.2 million). Looking more closely at the industrial branches, the top seven loss-making sectors in terms of net profits/revenue are: 1) Coal: -51.2%; 2) Paper: -15.6%; 3) Machine building: -15.0%; 4) Ferrous metals: -14.5%; 5) Electricity: -14.4%; 6) Transport equipment: -13.6%; and 7) Non-metal mineral products. These are generally capital-intensive.

In 1999, only seven companies with losses of more than KM10 million accounted for 37% of the all the losses: Electroprivreda BiH Sarajevo (electricity); Vodovos 1 Kanalizacij JP Sarajevo (water); Zeljezara Zenica (steel); Zica Sarajevo (manufacturing); Kreka Djurdjevik Doo Rudnici Uglja Tuzla (coal mining); Srednja Bosna Rudnici Uglija Doo Kakanj (coal mining) and Zeljeznice BiH (railwasy).

Coal is supplied mainly to the thermal power plants, marginally to household consumption. The future demand for coal will be linked with the electricity production sector, but depending on the quality and the deposit volume.

For instance, ***Coal mines-Tuzla*** are exploiting coal areas of Kreka (lignite brown coal), Banovici and Djurdjevik (black coal). They were the biggest coal production in BiH, sharing around 53% of the total coal production during the pre war period. After the war, the situation was significantly changed. Today, Coal mines-Tuzla has 9,800 employees, including 2,500 with waiting status (compared to 14,000 employees before the war) and achieved 23% of the pre war production (about 9.0 million ton during the pre war period). 80% of the production is distributed to Thermo Plant Tuzla. Under such a condition of high fixed expense that would be sufficient for three times higher coal production, the coal mining firm suffers from continual high losses, over KM200 million in 1998. Present price of DM3,612 per gigajoule cannot cover production expenses of any coal mine, thereby leading to less competitiveness at the world market.

Zenica Iron and Steel Works have 11,000 employees, of whom only 4,500 are active, and produce 50,000 ton annually. This amount of production could not afford more than 400 employees. The firm has been liquidating old inventory to raise cash. In general, the steel market is sluggish, and the European steel industry has more than enough capacity. In the last two years before the war, the capacity utilization dropped by 60%, and the Zenica Iron and Steel Works became a huge loss maker with annual losses as high as DM300 million. The plant has high production costs due to excess labor, low metal yields, excessive enough costs, obsolete technology and overprices local raw materials. It is difficult to assess the future demands of the production by this firm, depending on the success in privatization. However, the world market of steel is highly competitive.

2.2 ON-GOING ECONOMIC REFORMS

According to the World Bank, recent economic achievements include: 1) establishment and widespread credibility of the Konvertible Marka (KM) pegged to the Deutsche Mark; 2) adoption of a liberal countrywide customs tariff regime; and 3) elimination of barriers to the internal movement of people and goods and substantially increased inter-Entity trade. The third aspect is relevant to the transport sector reforms.

Progress has been made on pension and health system reform. Fiscal discipline has been maintained, with the 1999 budget deficit amounting to around 1.3% of GDP, and efforts are underway to improve expenditure management. The Federation has passed legislation and embarked on a comprehensive program to privatize all publicly owned enterprises and banks. Sale of small and medium enterprises (SMEs) began recently, with the privatization of nearly one-third having been completed. Preparations for the sale of large enterprises, of which about 50 are considered strategically important and likely to attract foreign investment, have begun, with a handful having already been sold.

In order to meet these objectives, the Government is currently preparing an Economic Development Strategy (EDS) for the period 2000-2004. The EDS builds on strategy formulation initiatives underway in the context of the Budget Framework Paper and on work underway in the context of the Feasibility Study for closer association with EU institutions. An initial Framework Paper prepared by the Government defines the following medium-term development priorities:

- **Fiscal Management:** Stable public finances will be important in the context of decreasing aid flows. Better planning and budgeting of public expenditures, and increased accountability of governments for expenditures at all levels are needed. Debt management and enhanced creditworthiness are key objectives.

- **Fighting "Poverty":** Unemployment is the key determinant of poverty. Labor market reforms are needed, along with reduction of payroll and other taxes and adult education and retraining. Social protection for those not capable of working is flagged. The governments have committed, with donor assistance, to developing reliable poverty and social sector statistics and to preparing a Comprehensive Poverty Reduction Strategy.

- **Development of a Market-oriented Economy:** The identified core reforms are appropriate legal, fiscal, and regulatory arrangements, creation of a single economic space, completion of privatization of SMEs and large enterprises and labor force flexibility.

- **Institution-building:** Institutions need to be strengthened throughout the public sector, and the confidence of citizens in the governments that will protect their rights and property must be built.

- **Completion of Reconstruction:** Significant challenges remain in reconstruction, including housing, de-mining, and environmental protection and local infrastructures. The transport system reconstruction is also a key to support and facilitate the economic reconstruction.

- **Access to WTO and European integration:** Enhanced trade with Europe, the biggest potential market for BiH goods and services, is emphasized, and the **Stability Pact** is seen as a key path to that objective. Reaching a Stabilization and Association Agreement is a priority, along with joining the WTO.

- **Fighting Corruption and the Grey Economy:** The impact of corruption on private investments and fiscal revenues is recognized, and reforms of both institutions and policies are needed to reduce corruption and shift activity from the informal to the formal economy.

Based on the assumption of continued strong macroeconomic management and good performance in the policy reform areas outlined above, Government projections indicate that real GDP growth will recover to 14% this year, and average around 10% during 2001-2003 – a rate normally associated with open and dynamic economies. Over the medium term, per capita income could exceed KM 3,800 by 2003, and living standards should reach close to the average for the region. If this growth path is maintained, BiH should be able to restore its pre-war level of GDP during the latter half of the decade.

The projections assume that private investment increases steadily in the coming years, fuelled by privatization and improvements in the business-enabling environment, including reforms of financial, tax, and regulatory systems and the labor market. Given the impact of large-scale privatization, the high unemployment rate is likely to decline only slowly in the next several years. Following the initial adjustment period – and once labor market reforms and improvements in the fiscal and business environment are made – the unemployment rate should decline more consistently over the medium term. This highlights the importance of putting in place a sustainable social safety net in the near term.

Continued strong export growth in the coming years will depend on further re-orientation of trade towards larger and more stable markets, including those of other countries in the region, as well as the rest of Europe. BiH has applied to join the World Trade Organization (WTO), and reaching this objective will be a priority. Over the medium term, there is likely to be a diversification of exports towards higher value-added and human capital-intensive products.

2.3 SOCIAL DEVELOPMENT PERSPECTIVES

2.3.1 Population and Refugees

Needless to say, the recovery from human damages by the war is substantially crucial to put the BiH society in order as well recover the economy. According to UNDP (1998), 258,000 inhabitants of BiH died or missing during the war. A different number appears at 269,800 by another estimates. It is also estimated by UNHCR (2000) that displaced persons were 1,000,000 in 1995, 845,000 in 1996, 816,000 in 1997, 836,500 in 1998, and 809,500 in 1998. Refugees are estimated to be approximately 1.2 million from BiH at the end of the war, which is equivalent to about 28% of the 1991 total population. According to UNHCR (2000), it is estimated that 544,000 of the total number of refugees have found permanent solutions abroad and that 306,000 refugees are still without permanent solutions.

No population censuses have been conducted after the 1991 census. Therefore, the accurate numbers of the current population cannot be identified. Nevertheless, the Federation Statistics Bureau estimated 2,244 thousand of the FBiH population in 1998 and 2,276 thousand in 1999, while Institute of Statistics of Republika Srpska estimated the RS population at 1,410 thousand in 1997. UNHCR estimates on the total population of BiH were 3,920 thousand and 3,894 thousand in 1997 and 1999, respectively. A population census is awaited to identify the real situation of the peoples.

2.3.2 Household Economy

No household surveys have been officially conducted since the end of the war. Therefore, the JICA Study Team conducted a household survey even with a small number of samples to get an insight into the actual situation of household economy. The survey has no statistical significance, but provided a number of implications for the reality.

(1) Outline of the Household Survey

The purpose of the survey is to identify the current level of the living standard and the annual average household income. The survey is finalized to obtain a qualitative (not quantitative) analysis of socioeconomic situation in BiH and RS.

Households have been selected according to a random sampling method up to fulfillment of a foreseen number and to comprise various residential areas throughout both Entities. In order to stimulate a higher rate of responds from selected households, it has agreed this inquiry to be anonymous. The survey was conducted in such a manner that surveyors visited at the sampled households and made interview directly to the household master.

Number of Samples in FBiH: A total of 432 householders were interviewed. The numbers of samples for households was determined up to reaching responds of 40

households in each of 10 Kantons in Federation of Bosnia and Herzegovina, from which 20 households are in urban areas (Kanton capitals) and 20 households are in rural areas.

Number of Samples in RS: A total of 360 householders were interviewed in RS. The samples for households were selected up to reaching respond of 36 households in each of 10 Municipalities, from which 18 households are in urban areas (Municipality) and 18 households are in rural areas.

(2) Notable Findings from the Household Survey of FBiH

The ownership of durable consumer goods of households is generally high, although a considerable discrepancy among Kantons was observed. The average ownership rates of major durable consumer goods are as follows:

- 62% own a passenger car;
- 78% own telephone;
- 87% own TV Color (45% of them own Satellite receiver); and
- 15% Own Personal Computer.

The distributions among Kantons are shown in Table 2.6, referring to the Kanton location map as shown in Figure 2.2. It is noted that the car ownership rates of households are as high as 84% in Herc-Neretvanski, and 73% in Sarajevoski. The lowest car ownership of 35% is found in Bosansko Podrinjski.

Meanwhile, a question in relation to total annual household income caused most of suspicions and hesitations in spite of anonymous inquiry. For the question of total annual household expenditures, the most frequent answers showed that they are equal to the incomes. There were mainly thee reasons for respondents to be reluctant to answer the question related to household incomes/expenditures:

- Some households were afraid do declare the real income;
- Some households have additional income related to the irregular work; and
- Some households receive some additional income from expatriate relatives.

Nevertheless, the survey revealed that the average household income accounted for KM 8,991. Since the number of household member is 3.66 on the average, the per capita household income is computed at KM 2,455. This figure of the per capita income level is very near to the estimated of GDP per capita used in this Study.

The household income distribution pattern is as shown in Figure 2.3. There is a significant difference between urban and rural areas, namely, the households in urban

areas gain KM 10,458, while those in rural areas, KM 7,641, which is 73% of the urban household level.

The income distribution pattern among Kantons is similar to the car ownership distribution pattern, that is, the higher the household income level is, the higher the rate of car ownership would be. The highest income Kanton is 2.5 times as high as the lowest Kanton on the average.

(3) Notable Findings from the Household Survey of RS

The main findings related to the living standards in RS, in terms of the ownership of durable consumer goods, revealed almost same features as those of FBiH as follows:

- 58% own a passenger car;
- 72% own telephone;
- 82% own TV Color (25% of them own Satellite receiver); and
- 3% own Personal Computer.

The household car ownership rate in RS is 58% on the average, a bit lower than that in FBiH. The highest car ownership rate is found in Brcko Municipality (72%), followed by Banja Luka (69%), Prijedor (69%), Bijeljina (67%), as shown in Table 2.7. On the contrary, municipalities with the lower car ownership rates are Doboj (42%), Sipov (44%), and Zvornik (47%).

Regarding the household income, the surveyors faced with same difficulties in getting good cooperation from the respondents as those in FBiH.

In spite of these difficulties, the Survey revealed that the average household income is KM 3,460 KM. Since the average member of a household is assumed to be 3.68, the per capita household income is computed at KM939. Interestingly, there existed a little difference in household income levels between urban and rural areas, as shown in Figure 2.4, that is, KM 4,006 of urban households against KM 3,603 of rural households which is 90% of the level of urban households. However, the municipality-wide distribution pattern represents a great disparity in household income levels. The highest municipality is Brcko (almost KM 6,000), followed by Bijeljina and Trebinje. While, the lowest is Sipov (a little over KM 2,000), which is one third of the highest level. Banja Luka is regarded as an average municipality in the Entity in terms of the household income level.

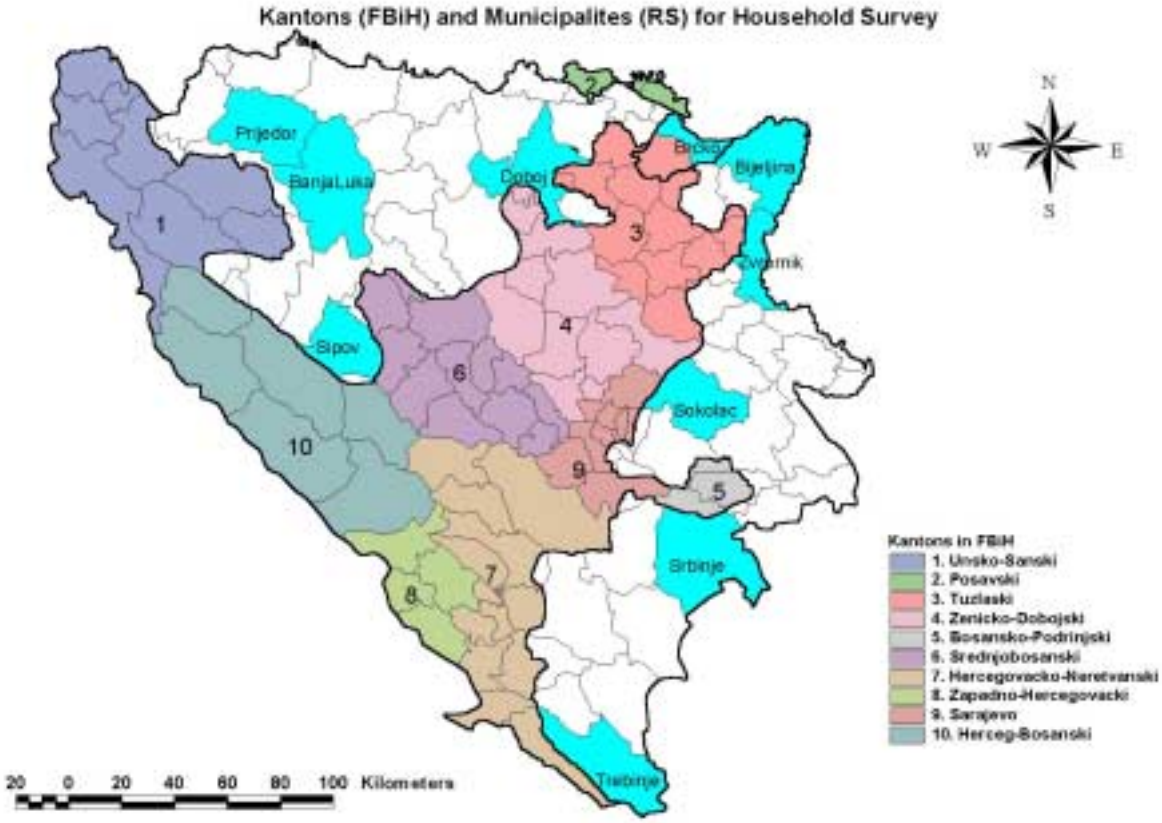
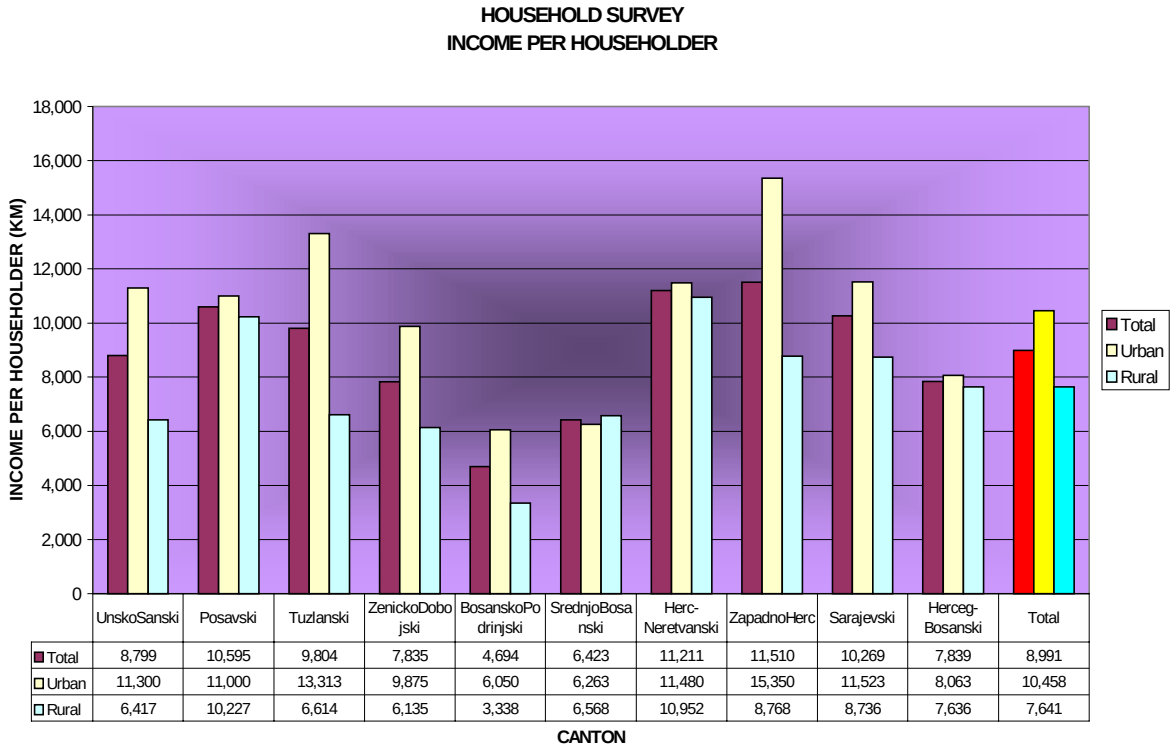


Figure 2.2 Locations of Surveyed Kantons (FBiH) and Municipalities (RS)

Table 2.6 Household Ownership of Durable Consumer Goods by Kanton (FBiH)

	CANTONS	Passenger Car	Personal Computer	Motor Cycle	Satellite Receiver	Telephone	Refrigerator	Microwave Oven	Drier	Color TV	Vacuum Cleaner	Air Conditione	Lantry Machine
1	UnskoSanski	76%	17%	0%	51%	95%	100%	17%	0%	95%	98%	0%	95%
2	Posavski	71%	10%	10%	45%	88%	98%	29%	12%	95%	93%	2%	86%
3	Tuzlanski	57%	17%	21%	31%	67%	98%	7%	0%	83%	93%	0%	79%
4	ZenickoDobojski	55%	25%	5%	50%	77%	98%	11%	5%	91%	100%	0%	98%
5	BosanskoPodrinjsk	35%	8%	8%	28%	58%	73%	13%	5%	70%	70%	0%	68%
6	SrednjoBosanski	40%	5%	5%	29%	69%	95%	10%	2%	79%	93%	2%	88%
7	Herc-Neretvanski	84%	20%	14%	43%	86%	100%	27%	2%	96%	94%	24%	96%
8	ZapadnoHerc	65%	19%	21%	38%	81%	98%	27%	21%	81%	85%	17%	83%
9	Sarajevski	73%	15%	3%	28%	88%	98%	23%	20%	88%	100%	3%	93%
10	Herceg-Bosanski	64%	17%	21%	60%	69%	100%	10%	5%	86%	95%	5%	93%
	Total	**62%**	**15%**	**11%**	**40%**	**78%**	**96%**	**18%**	**7%**	**87%**	**92%**	**6%**	**88%**

Source: The JICA Studv Team



	UnskoSanski	Posavski	Tuzlanski	ZenickoDobojski	BosanskoPodrinjski	SrednjoBosanski	Herc-Neretvanski	ZapadnoHerc	Sarajevski	Herceg-Bosanski	Total
Total	8,799	10,595	9,804	7,835	4,694	6,423	11,211	11,510	10,269	7,839	8,991
Urban	11,300	11,000	13,313	9,875	6,050	6,263	11,480	15,350	11,523	8,063	10,458
Rural	6,417	10,227	6,614	6,135	3,338	6,568	10,952	8,768	8,736	7,636	7,641

Source: The JICA Study Team

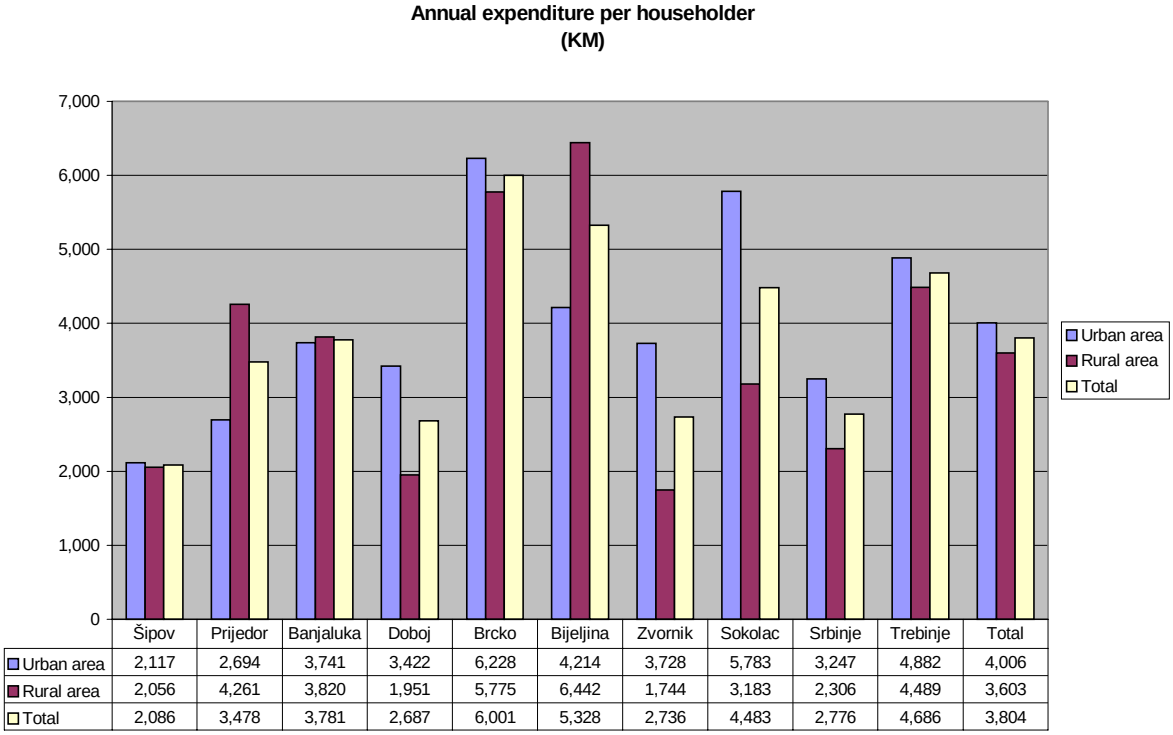
Figure 2.3 Average Household Income Distribution in FBiH

Table 2.7 Household Ownership of Durable Consumer Goods by Municipality (RS)

Source: The JICA Study Team

	Municipality	Refrigerato	Cooker	Radio	Vacuum Cleaner	Color TV	Laundry Machine	Telephone	Passenger Car	Satellite Receiver	Personal Computer	Motor Cycle	Drier	Microwave Oven	Air Condition er
1	**Šipov**	97%	92%	100%	53%	75%	61%	67%	44%	25%	0%	0%	0%	0%	0%
2	**Prijedor**	94%	94%	97%	92%	94%	89%	94%	69%	25%	8%	0%	6%	0%	0%
3	**Banjaluka**	94%	94%	94%	92%	97%	89%	94%	69%	14%	6%	0%	0%	0%	0%
4	**Doboj**	92%	83%	86%	78%	3%	75%	78%	42%	8%	3%	3%	0%	0%	0%
5	**Brcko**	97%	100%	83%	94%	100%	92%	67%	72%	6%	0%	3%	0%	0%	0%
6	**Bijeljina**	100%	100%	94%	81%	86%	81%	58%	67%	22%	0%	6%	0%	0%	0%
7	**Zvornik**	86%	58%	75%	75%	83%	53%	58%	47%	14%	14%	3%	0%	0%	0%
8	**Sokolac**	100%	100%	97%	100%	92%	97%	94%	67%	11%	0%	0%	8%	3%	0%
9	**Srbinje**	100%	100%	92%	92%	89%	89%	53%	47%	11%	0%	3%	0%	0%	0%
10	**Trebinje**	97%	100%	100%	92%	100%	89%	56%	50%	6%	3%	8%	0%	3%	0%
	GrossTotal	**96%**	**92%**	**92%**	**85%**	**82%**	**81%**	**72%**	**58%**	**14%**	**3%**	**3%**	**1%**	**1%**	**0%**

Source: The JICA Study Team



	Šipov	Prijedor	Banjaluka	Doboj	Brcko	Bijeljina	Zvornik	Sokolac	Srbinje	Trebinje	Total
Urban area	2,117	2,694	3,741	3,422	6,228	4,214	3,728	5,783	3,247	4,882	4,006
Rural area	2,056	4,261	3,820	1,951	5,775	6,442	1,744	3,183	2,306	4,489	3,603
Total	2,086	3,478	3,781	2,687	6,001	5,328	2,736	4,483	2,776	4,686	3,804

Source: The JICA Study Team

Figure 2.4 Average Household Income Distribution in RS

CHAPTER 3: PLANNING ISSUES, RATIONALES AND GOALS

3.1 OVERALL TRANSPORT PLANNING ISSUES

The transport master plan of Bosnia and Herzegovina is conducted so as to retain sensitivity toward concepts embedded in the Dayton Agreement as well as following essential policies:

- A transport master plan to contribute to an efficient economic structure of BiH. Rationale of the long-term national transport master plan will be pursued for the development of the country, considering the regional structure and necessary transport networks.

- A transport master plan to strengthen economic relations with the European Union. Neighboring former socialist countries have been changing their economy systems to the market oriented economy. Development and strengthening of transport network linkages to these countries and the EU countries will be fundamental, because BiH will, in future, ever-increasingly integrate with the international economy in general, the EU economy in particular.

- A transport master plan to build a base for market oriented economy. An efficient transport network development is essential to establish regional economies of the country competitive by rationalizing its resource usage, production systems, and market system. The plan should be made considering with the expanding participation of the private sector to the economy, seeking necessary legal regulatory and institutional improvement, and human resources enhancement which are considered indispensable to put the master plan into practice.

3.2 PLANNING RATIONALES

The underlying planning rationales to justify the transport master plan are given by several sources of implications such as:

- Institutional Implications of the Constitutional Framework of BiH;
- Polices of On-going Transport Sector Reform;
- Transport Systems under the Market-driven Economy; and
- Technical Implications from Analytical Outcomes.

(1) Institutional Implications of the Constitutional Framework

As stated in the preceding section, the transport master plan should be geared with and relevant to the basic policy framework stipulated in the Dayton Agreement, particularly Annex 4: Constitution; and Annex 9: Agreement on Establishment of BiH Public Corporation. Under the BiH Constitution, or Annex 4, it is defined that each Entity shall assume the governmental responsibilities for planning, management, and financing of transport infrastructure developments and their operations and maintenance, while the State is responsible for regulatory coordination for international and inter-Entity transportation. Thus, the master plan shall be formulated so that both Entities may perform their responsibilities and mandates to govern the total transport systems in the Entity level.

Meanwhile, Annex 9 articulates an important transport-related feature that in order to operate joint public facilities such as roads, railways and ports for benefits of both Entities, a BiH Transport Corporation is established, holding a wide extent of operational and implementing functions (refer to Sections 2.1 and 5.5 for detailed discussions). Since along with the economic recovery and its growing process, traffic demands for inter-Entity as well as international border crossing are anticipated to be accelerated, the inter-Entity and international transport issues becomes more vital. The Master Plan should be rational to address the directions for settling these issues under the institutional framework agreed by both Entities.

(2) Polices of On-going Transport Sector Reform

As for the necessary transitional process, BiH has presently been involved in partially drastic and partially gradual institutional and policy reforms in the transport sector as well as the economic sector. The Master Plan needs to be coherent with these on-going efforts.

1) The Stabilization and Association Agreements (SAAs)

It becomes a more vital concern that enhanced economic and political linkages with European and the global network should be achieved through stimulation of the market-oriented reform and facilitation of the comprehensive regional development in the Southeast Europe.

Closer integration with the EU and its institutions would be achieved through Stabilization and Association Agreements (SAAs) that would govern political, economic and trade relations between the EU and the countries of the Region. To take advantage of these closer ties, however, the Southeast Europe countries will need to undertake more systematic structural and political reforms, in particular in four areas: 1) trade and private sector development; 2) social inclusion; 3) improved institutional capacity and governance; and 4) development of regional infrastructure.

Minimum conditions for the EU to embark on a Feasibility Study, the first step in the SAA process, are currently being developed for BiH. These conditions are likely to include trade and private-sector oriented economic measures as well as measures related to governance and social inclusion. To illustrate, a first SAA with the Former Yugoslav Republic of Macedonia (FYROM) is to be negotiated in 2000 and will include enhanced regional cooperation leading (after ten years) to a free-trade area between the EU and FYROM, and increasing conformity of FYROM's legislation with that of Europe.

The Stability Pact gives the World Bank and the European Union (EU) a special mandate to coordinate a comprehensive regional approach to development in the Region. The Stability Pact provides substantial opportunity for BiH, and closer integration with Europe will influence BiH's institutional development strategy across virtually all sectors including the transport sector.

2) Economic Development Strategy (EDS)

An Economic Development Strategy (EDS) for the period 2000 - 2004 is currently being prepared by BiH authorities. A team comprising representatives from the two Entities and coordinated by the State is spearheading the EDS. The EDS is designed to replace the Priority Reconstruction and Recovery Program as the strategic basis for policy and spending decisions in BiH and serve as a framework for external development assistance.

An initial Framework Paper for the EDS sets out seven key development priorities for BiH over the course of the next several years, namely: 1) fiscal management; 2) fighting poverty; 3) developing a market-oriented economy; 4) institution building; 5) completion of reconstruction; 6) access to WTO and European integration; and 7) fighting corruption and the gray economy. The EDS builds on strategy formulation initiatives underway in the context of a Medium Term Expenditure Framework (MTEF) exercise. The EDS will also be consistent with the "road map" of actions (minimum conditions) that will lead to the SAA Feasibility Study for BiH.

Under the MTEF exercise, which is supported by the World Bank as part of the Public Finance Structural Adjustment Credit II, the Ministry of Finance in each Entity is receiving technical assistance to effectively ensure aggregate fiscal discipline within a coherent macroeconomic framework, and improve strategic resource allocation and efficient resource use. The MTEF aims to develop capacity to manage expenditures consistent with resource constraints and sector policies. This work will be a key tool in the preparation of the State-level EDS.

A recent output from the MTEF work is that each Entity has prepared and approved a Budget Framework Paper for the period 2001 –2003. Each Budget Framework Paper includes a transport sector expenditure strategy. The EDS/MTEF exercise and the formulation of the transport sector expenditure strategies are consistent with the reforms that will be required for progress towards BiH's entry into European structures. Therefore, the two transport sector expenditure strategies (FBIH and RS) are in very close harmony with each other in terms of identified actions and reforms. In this conjunction, the Master Plan should be coherent with the envisaged budgetary strategies.

3) Actions and Reforms for Transport Sector Expenditure Strategies

The strategic framework for reforms identified in the FBIH and RS Transport Sector Expenditure Strategies coincides with underlying planning directions of the Master Plan, and it provides a confirmation of focal transport aspects to be addressed in the Master Plan. These are summarized as follows:

In the FBIH:

- A transport policy that optimizes transport costs, reflects inter-modal comparative advantage, and addresses Pan-European transport policy goals;
- Provision of an enabling legislative and regulatory framework for the transport sector;
- Appropriate investment in infrastructure;
- Adequate provision for maintenance; and
- Promoting efficiency in transport operations.

In the RS:

- Improved capacity for sector policy/strategy development;
- Strengthened legislative, regulatory and institutional framework;
- Rehabilitation and development of affordable transport infrastructure;
- Improved funding and organization of maintenance; and
- Commercialization and/or privatization of transport operations.

Based on this basic framework, key actions and reforms are viewed in the areas of: 1) Legislative Issues; 2) Infrastructure Rehabilitation ad Development; 3) Infrastructure Maintenance; and 4) Transport Operations. The Master Plan shall endorse all these strategic approaches.

(3) Transport Systems under the Market-driven Economy

The entire transport system should be geared with the economic reforms towards the market-driven economy. The centrally controlled transport assignment system do/will no longer function to support the economic activities, but a competitive market mechanism works for transport modal choice. All transport modes, therefore, should be competitive in provision of transport pricing and quality.

As discussed in Section 2.3, currently the BiH freight transport cost is relatively high, thereby loosing its international competitiveness in neighboring countries as well as the European Region. This provides with significantly negative impacts on the industrial sector that needs to be recovered and restructured. As for the railway freight, because the railway system has not fully functioned in the network, the freight transport rate is ranging from **6.8** to **8.5** US cents per ton-km, depending upon shipment goods (bulk or not). This rate is extremely high, compared with 3 to 5 US cents per ton-km in Poland; 3.8 to 8.2 US cent in Croatia; and 4.3 US cents in Belgium. Meanwhile, the World Railway Industry considers 3.0 US cents per ton-km as a standard target rate.

On the other hand, the road transport cost for freights generally vary, depending on the kind, volume and distance of goods. It is reported that for instance, for the distance from Sarajevo to Banja Luka (about 230~260 km long depending on routes), the rate is **6** US cents per ton-km, while for the distance from Sarajevo to Tuzla (about 120 km), the rate is **10** US cents pre ton-km. These rates are also comparatively expensive, compared to 5.3 US cents in Poland, 6 US cents in Croatia and 5 US cents in USA for short distance. For a reference, the French Government has a transport cost guideline in 1999 that the rates ranges from 4.2 US cents per ton-km for rod transport of bulk goods (excluding petroleum products) to 8 US cents for machinery and other manufactured goods.

Thus, the freight rates in BiH are high in spite of lower labor costs and lower petrol prices than those in the Western Europe. The transport rates are determined with a variety of efficiency factors such as vehicles, drivers, management aspects, amount of demands and conditions of infrastructures of roads and railways. Innovative changes and reforms are necessary in all the factors to make the BiH transport industry more operationally rational and internationally price-competitive.

(4) Technical Implications from Analytical Outcomes

There are internationally recognized technical approach, manner of surveys, analytical technique, and logical way to discuss transport demands and planning in the transport sector. Such a technical methodology has internationally been shared as the common ground of research and planning activities. Therefore, the Master Plan needs to be technically rational with regard to the methodology; otherwise, the Plan would loose the credibility of outcomes from the international community which is looking for further technical and financial assistance. The Study Team's work is basically being conducted, based on such recognition that the Master Plan shall be endorsed by the international community as well.

3.3 OVERALL PLANNING GOALS

The planning goals of the Transport Master Plan are addressed with the following seven (7), based on the planning issues and planning rationales described in the preceding sections 3.1 and 3.2 as well as the prospective views on socioeconomic changes in the long-term up to the year 2020 as discussed in Chapters 2. These planning goals are commonly shared by the FBIH and the RS.

(1) Economically Rational Transport Infrastructure
(2) International Linkages with Neighboring and European Countries
(3) Market Competitive Intermodal Transport System
(4) European Norms-based Transport Operation and Regulations
(5) Capacity Building for Well-organized and Transparent Governance
(6) Diversification of Financial Resources Mobilization
(7) Integration with the European Union

(1) Economically Rational Transport Infrastructure

Neither over-investment nor under-investments for transport infrastructures should be made, because either one results in bearing a significant economic loss in the entire economy in BiH. It must be a simple rule that the investment requirement need to be determined, taking into account its economic feasibility and/or rationality under the market-oriented economy.

Meanwhile, investments for transport infrastructures are, in general, classified into three categories, that is, “minimum”, “basic” and “strategic”. The **minimum investments** are those for providing transport services to assure the minimum level of people’s well-being, for instance, local roads such as farm-to-market roads, school roads and community roads. This type of investments should be made by the government sector as a policy of income-distribution, even though these are not necessarily justified from an economical feasibility standpoint. A political and/or constitutional trust may be a vital factor to make a decision of these investments.

The **basic investments** are those for providing basic transport services for economic activities, depending upon demands. Since transport itself can be regarded as part of economic activities, the investment should generate a reasonable amount of economic benefits, which correspond to the improvement of transport efficiency though the investment. This type of investments, therefore, should/may be justified from a viewpoint of the economic feasibility.

While, the **strategic investments** are those for providing new quality transport services, depending on a planning and/or political concept on a long-term perspective to strategically boost the economy as well as the transport industries. An access-controlled motorway, a high-speed railway, or a new technology-based transit system is categorized in this type of investments. This always holds a risk in its investment recovery, because its demand is inherently uncertain or of probability, thereby necessitating a theoretical approach to the demand forecast. The investment, however, should/may be strictly justified both economically and financially.

The Master Plan aims to structure the transport infrastructures categorized in the basic and strategic investments in the above discussion. Thus, the economic rationality should be kept in the planning context and justification of proposed projects.

(2) International Linkages with Neighboring and European Countries

It has been broadly recognized that the enhanced economic growth needs to make sure the international transport linkages with neighboring and European countries both for the FBIH and the RS economies. A strong attention, therefore, should be paid to how the internationally integrated transport network system should be functionally and effectively formed, which is one of the significant goals of the Master Plan. This context is important in seeking sustainable development scenarios particularly for not only roads but also railway, inland water transport and air aviation systems, because these transport modes, otherwise, could not function. In conjunction with the necessity of formulating a competitive freight transport system, as described in the preceding section, a regulatory framework for transport operators to meet the international or European standards shall be a focal issue.

(3) Market Competitive Intermodal Transport System

The economy, including agricultural, industrial and service activities, always requires most efficient and economical modal choice among alternative transport modes and/or combinations of them. It is generally observed that railway is predominant for the long distance more than 300 km transport of a bulk cargo rather than road. Given a well-functioning intermodal transfer facility from railway to roads for the efficient delivery system, railway will be dominant for even shorter trip transport than 200 km, because of the comparative transport cost. This is also good for the road economy, that is, less congestion, less damage of the surface, safer traffic flows.

The similar argument can be made for intermodal relations among all transport modes. Important is that each transport mode should first be developed to provide safe and reliable transport services, and that the most economically efficient combination of transport modes should be formulated under a focal concept of "**intermodality**". Only such a functional total system supports the expected economic growth though the market mechanism, otherwise, the transport industry as well as other economic sectors would loose their growing opportunity.

(4) European Norms-based Transport Operation and Regulations

Deregulation and liberalization of trade and transport activities through encouraging unification of the member states are the most significant contemporary issues in the European Region although such a momentum of regionalization is underway in the other regions in the Southeast Asia, the South Africa and the South America. The BiH state policy as well as both Entities' transport policies need to be inevitably coherent to the basic directions of the EU policies, as part of the entire Europe.

The action program, titled "Sustainable Mobility: Perspectives for the Future" adopted December 1, 1998, by the Commission, sets out a number of initiatives that should ensure the creation of "sustainable mobility" in terms of:

- Development of the integrated transport systems, particularly the Trans-European transport network and in a later phase the **Pan-European transport network**;
- Improvement in safety and environmental protection; and
- Enhanced relations with third countries, particularly Eastern and Central Europe.

The efficiency of transport systems, however, remains as an essential success-factor for the competitiveness of Europe within the global economy.

Within this context, the action program "*Sustainable Mobility: Perspectives for the Future*" defines the major priorities up to 2004, addressing the following areas:

- *Improving market access*: focusing on two main priorities, namely rail and ports.
- *Environment*: setting up a strategy to further reinforce the integration of environmental issues into transport systems.
- *Trans-European Transport Networks*: to speed up the implementation of the priority projects defined at the Essen Summit, encouraging Public Private Partnerships (PPPs) in the priority projects.
- *Fair and efficient transport pricing*: taking into account progressive application of the principle of *charging for marginal social costs.*
- *Economic and social cohesion*: to enhance a communication on synergy between Transport and Cohesion policies.
- *Legislative rules*: to ensure that the various legislative measures are transposed and implemented collectively.
- *Safety*: taking a global approach to managing risks, covering air aviation, maritime transport and road safety.

- *Quality of transport services*: placing special priority on the improvement of passenger information and the quality of local public transport.

- *Research and development*: to carry out a number of targeted research projects aimed at improving the efficiency and sustainability of transport systems.

- *External relations*: negotiating agreements in the areas of civil aviation, heavy goods vehicles, coach services and inland waterways, as far as the Central and Eastern European countries are concerned.

The BiH transport policy issues should be coherent with these European transport policy agenda, and the Master Plan aims to provide the policy guidelines to this end.

(5) Capacity Building for Well-organized and Transparent Governance

Capacity building is the most important element and of urgent need to establish the reliable and good governance for the transport policy implementation, therefore it should be one of the most significant goals of the Master Plan. All government officials and transport operators should be aware of the importance for them to be familiar with the international and European norms in terms of the economic efficiency, competitiveness, fairness of pricing and legal aspects as well as technical and engineering standards for development, operation and management of transport facilities. The expertise is vital particularly for all those who work for the railways, air aviation, inland water transport sectors which should be operated based on international norms. To this end, an institutional and organizational arrangement to establish a body to be sustainably responsible for providing training and educational facilities and services may be a planning issue.

(6) Diversification of Financial Resources Mobilization

Strengthening of the financial capacity of the government sectors is always a crucial issue to meet the financial demands and necessity for development and maintenance of transport infrastructures. To tackle with this issue, several models have been developed for the transport sector over the world. Basically three (3) approaches are conceivable; 1) adoption of a "*user charge system*"; 2) application of the *private finance initiatives* (PFI); and 3) seeking for the Public and Private Partnership (PPP).

The user charge system is based on a concept that users who receive some economic benefits from use of the public services and infrastructures should pay money as much as equivalent to the gained additional economic benefits. This has been theoretically justified from the public financing and social welfare points of view, but need to foster the public consent. This system is effective for the public sector to obtain a sustainable revenue source for maintenance of the transport infrastructures as well as cost recovery of the investment.

The concept of PFI is in the line with a privatization scheme to encourage the private sector's involvement in provision and operation of the pubic infrastructures, and holds

several forms of the participation. The most popular model is the BOT (build-operation-transfer) scheme, given a governmental concession for a certain period, usually 25 years for the transport facilities.

While, the PPP seeks for a more consolidated tied-up financial scheme between the public and private sectors to reinforce both roles and responsibilities to make the investment more efficient. The EU Commission has also encouraged to seek for appropriate models in the transport sector to expedite the implementation of necessary infrastructure development in an efficient manner.

Besides, external concessional funds from the international community is one of the most significant resources to initiate necessary capital investments, however, important is that such capital investments are properly and sustainably managed to yield economic benefits as expected.

Thus, the Master Plan should address general policy directions on how to properly utilize these alternative methods for mobilization of available resources. It should be noted that the responsibilities and roles of the government sector, however, are never lessen with apply either alternative, eve though its financial burdens may be lessen.

(7) Integration with the European Union

In the two decades time horizon in the future, the entire BiH transport system would and/or should be functionally integrated in the Pan European Networks, and play part of significant roles to get along with the European economic growth as well as the BiH economy as a whole. As an ultimate goal, BiH shall be a member country of the EU, and the Transport Master Plan should view the goal.

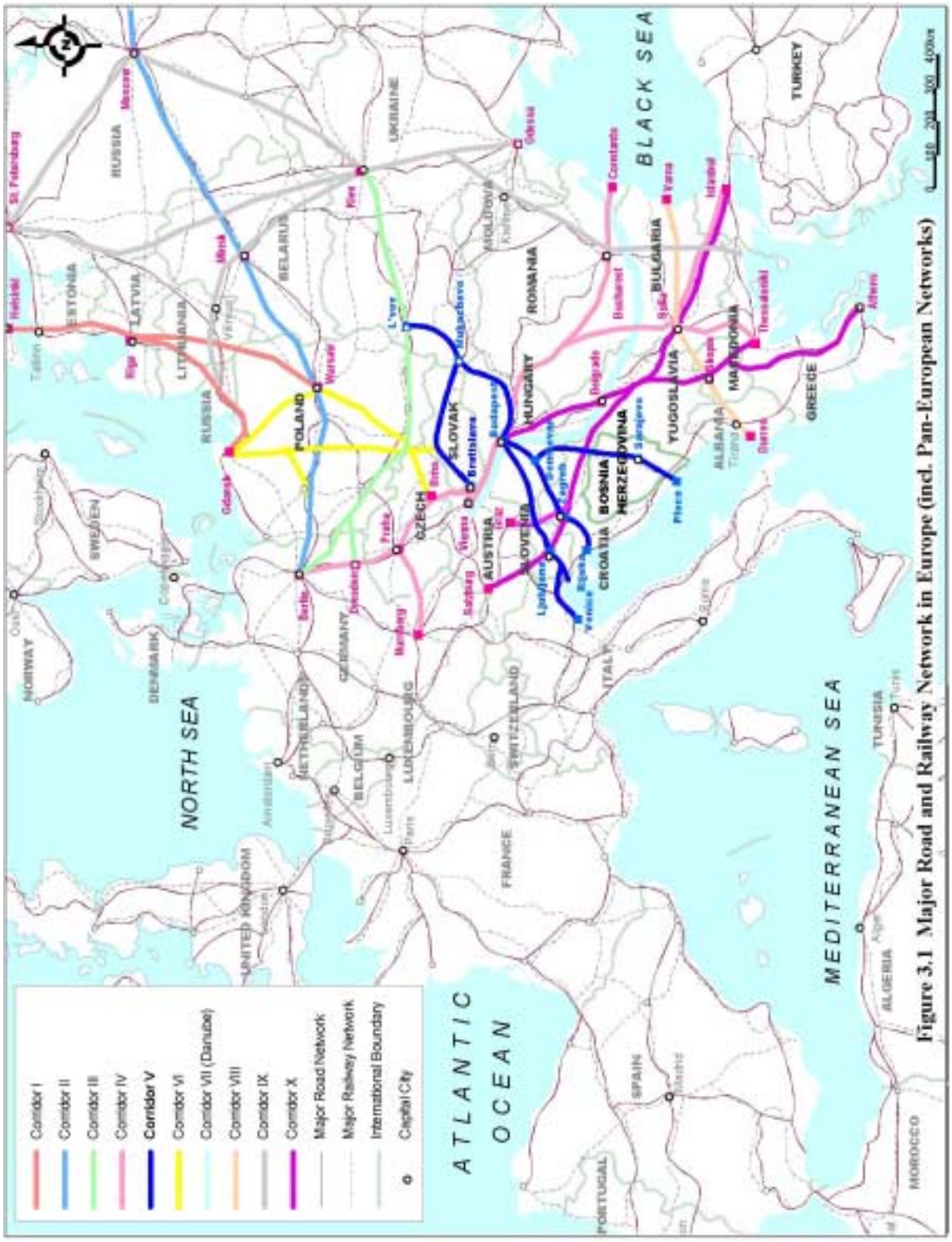


Figure 3.1 Major Road and Railway Network in Europe (incl. Pan-European Networks)

CHAPTER 4: FUTURE SOCIOECONOMIC FRAMEWORK AND DEVELOPMENT PROSPECTS

4.1 BASIC PREMISES

The purpose of this chapter is to prepare an appropriate socioeconomic framework for future transportation planning. More precisely, it is to prepare socioeconomic indexes on current and future BiH. The current socioeconomic indexes are used to develop transportation demand forecast models, while future indexes are used to forecast future transport demands.

(1) Socioeconomic Framework and Traffic Zone Division

The indexes were prepared by traffic zone. The entire BiH is divided into 41 traffic zones, and the other countries outside BiH, related to the BiH economy, are divided into 13 external traffic zones. The number of the zone division is designed to be technically good enough to discuss a countrywide transport plan, covering major transport network systems with inter-city transport relations.

The internal zone division is determined in consideration of socioeconomic centers, administrative units, locations of significant road transport inter-changes and attributes of natural configurations. On the other hand, the external zone division is determined based on identification of the economic transport corridors where the BiH transport is/will be related to. The zoning system applied for the Study is illustrated on Figure 4.1 and 4.2.

(2) Major Socioeconomic Indexes

Population and Gross Domestic Products (GDP) are major socioeconomic indexes, which are used for developing the transport demand models and for inputs for future demand forecast. Population determines the number of passenger trips under a certain level of per capita GDP, while GDP determines cargo movements, generally. Therefore,

the zonal population distribution pattern and the zonal GDP distribution pattern are regarded as basic determinants for volumes of generation and attraction of passenger and freight traffics.

Figure 4.1 Internal Zone System

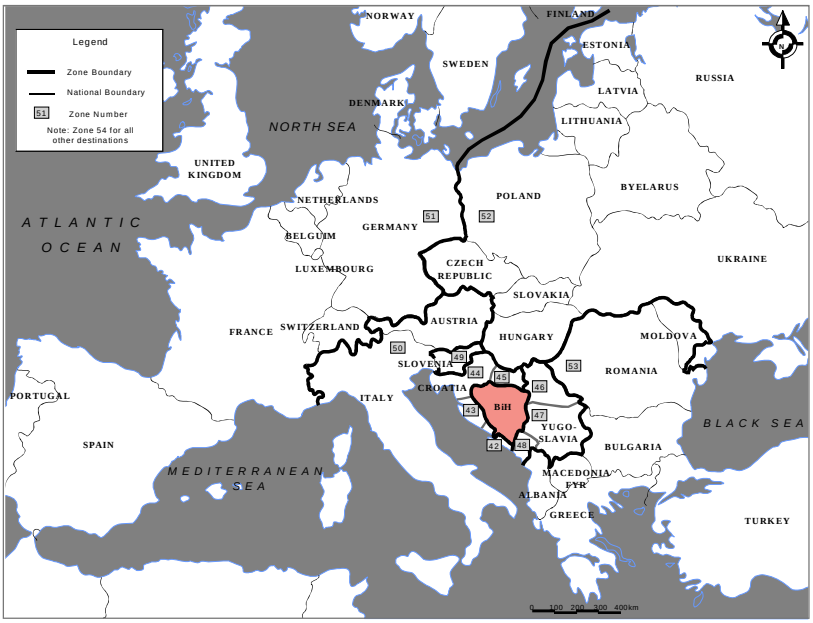


Figure 4.2 External Analysis Zone System

Further detailed socioeconomic indexes, such as production and consumption by industry and by zone, number of workers by industry and by zone, are generally used for a more detailed transport model development, should sufficient statistical data and information on those aspects be available. However, it is almost impossible to prepare such indexes for this Study under the current situation of BiH. Therefore, three major socioeconomic indexes are examined by zone as follows:

- Population;
- GDP; and
- Per capita GDP.

(3) Basic Assumptions

Prior to proceeding to the socioeconomic framework formation, it is necessary to determine the currency and pricing date. At present, major economic statistics of BiH are expressed in terms of both Convertible Mark (KM) and US$. The money term of US$ is popular in reports and documents issued by international organizations. However, the Study Team adopts KM as a currency to be used in this Study based on the following considerations, except for comparisons of figures with other countries:

- influence of exchange rates;
- succeeding economic and financial analyses;
- avoidance of complicated calculation; and
- easy understanding by local people.

In BiH, there had been no economic statistics represented in constant prices. It made difficult to discuss economic performance and actual changes with a comparison of economic indexes in time-series analyses over different years, because inflation factors are included in the nominal figures. Therefore, it was necessary to obtain economic statistics in constant prices to discuss economic growth rate, GDP in real term.

In order to convert the nominal figures to the actual term, GDP deflators were estimated by the Study Team, based on various assumptions, as shown in Appendix I-A4-1, in Volume III. All the pricing date for the constant price is determined as of the middle of 2000.

4.2 FUTURE ECONOMIC DEVELOPMENT

4.2.1 Economic Development Potentials and Constraints

(1) Transition Economies

It should be noted that BiH is different from other former centralized economies in terms of future economic development of the country. The difference is the existence of the three and a half-year war during 1992-1995. BiH should cope with the reconstruction from the war, which has been executed intensively since the Dayton agreement. At the same time, BiH has to overcome the transition from the planned economy to the market economy. In addition to those, the country consists of two Entities and one district, which are Federation of Bosnia and Herzegovina, the Republika Srpska and newly established Brcko District in March 2000. Each institution has its own administrative system. Therefore, it will take longer time for the BiH economy to ride on a sustainable development path than the other former socialist countries.

As a reference to overlook at possible economic growth potentials, the past economic performance of ten (10) Central and Eastern European countries, which are running ahead towards the sustainable market economy, are examined. Table 4.1 shows these ten countries' per capita GDP growth rates during the period between 1992 and 1999 in real term. The growth rates fluctuate by year and by country. However, it can be said that almost countries showed positive growth after 1994, after experiencing negative growths dominated in 1992 and 1993. Among the ten countries, Albania and Poland showed a constant high growth, while FYR Macedonia and Bulgaria moved violently.

Average annual growth rate of per capita GDP of Poland, which is the highest together with Albania during the period 1993 to 1999, was 5.4 %. Bulgaria suffered from the lowest with a negative growth of –1.3 % during the same period. The economic development performance in the transition economies varies with a wide different range from a successfully constant growth to a sluggish growth.

Therefore, a wide range of possible development scenarios could be conceivable, when we forecast the future economic development of a transition economy. These experiences provide a useful implication for and a practical insight into prospecting a future economic development scenario of BiH, because the BiH economy is considered to follow these Central and Eastern European countries in some extent.

Table 4.1 Per capita GDP Growth of Transition Economies (Ten Central and Eastern European Countries)

(unit:1991=100)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Albania	100	95.7	104.9	114.7	125.0	136.3	126.8	136.9	143.8
Bulgaria	100	93.8	92.4	95.2	97.2	86.6	81.6	83.6	85.3
Croatia	100	89.1	79.0	83.4	88.7	97.8	103.3	105.8	106.9
Czech Republic	100	96.7	97.3	100.4	106.8	111.0	112.1	109.1	109.1
FYR Macedonia	100	78.9	71.7	73.8	72.9	77.2	78.3	80.7	83.9
Hungary	100	97.2	96.9	100.0	101.9	103.6	108.5	114.1	118.9
Poland	100	102.3	105.9	111.2	118.9	126.2	134.6	141.0	145.3
Romania	100	92.8	94.6	98.7	105.7	110.1	103.3	95.7	92.9
Slovak Republic	100	93.5	90.0	94.5	99.1	105.6	112.5	117.5	118.6
Slovenia	100	94.5	97.1	102.3	106.5	110.0	114.2	118.8	123.3

Source: The study team based on EBRD [1999]

(2) Constraints against Economic Growth

There exist so many uncertainty and difficulties with regard to the future economic growth of BiH. The following current problems related to industrial development, are deemed to provide constrains against facilitating foreign direct investments (FDIs) as well as encourage the production activities to boost the economic growth of the country:

- Qualified labor is expensive (at least in relative terms considering the low level of GDP per capita).
- Electricity rates (per KWh) for industrial users often exceed rates in transition economies and in the OECD countries characterized by strong competition in the market.
- Water rates (per cubic meter) are close to rates observed in other transition countries.
- Cost of international communications is excessive.
- Transport cost per freight (railroad and road) are not less than in Western European countries (in spite of lower wage costs and lower automotive diesel oil prices).
- While industrial land prices and rental cost of factory space are affordable, rents of office space, in particular at prime location, are excessive (though rates are falling).
- The corporate income tax rate in the Federation is comparable to rates applied in Western Europe. So are sales taxes (both in Federation and RS).
- Payroll taxes are comparable to rates in most transition economies. Therefore, they are at higher end of the rates applied in OECD countries.

- Overall fiscal pressure is high in BiH. This state of affairs results from a) high effective taxes on labor and capital (absence of dividend relief), b) a sales tax comparable to rates applied in Western Europe, c) customs duties significantly higher than in the European Union, d) a high consumption rate (close to 100 % of GDP).

For foreign investments, in particular, several obstacles currently exist against promotion of FDIs to BiH. Regarding the costs for business running, the following are noted:

- Costs of infrastructure services and logistic services are excessive. The quality of the road network is rated poor, large trucks have difficulties to circulate. The railway service is minimal.

- Low worker motivation and productivity are rated low by the Western standards. Incentive pay is not commonly paid. Enterprises complain about a shortage of qualified engineers. The BiH economy has suffered from a huge brain drain. The younger generations do not seem to be particularly well motivated.

- Inadequacies in labor supply.

- High taxation levels are prevailing and taxes are felt to be penalizing and stifling. They encourage fraud and tax evasion: companies keep multiple sets of books. The financial police single out successful businesses.

- High lending rates.

- Corruption. To get anything done (government contracts, permits, customs clearing) requires a bribe of some sort. Truckers are systematically targeted.

- Difficulties in getting paid by clients. Reasons given are: slow turnover, speculation, barter trade, no liquidity (in particular, of State-owned enterprises), imprudent trading with customers (low creditworthiness). In the current legal environment, it is quite difficult to collect money from a delinquent customer. The judiciary system is not necessarily effective.

- Uncertain dispute resolution. Dispute resolution is not satisfactory. Legally binding, written agreements/contracts are difficult to enforce. Ownership disputes arise frequently.

- Inadequate banking system and payments system. The relationship between client and bank management is not always transparent. Fees charged by the Payment Bureaus are high, and service standards are low. Payment Bureaus are carrying out functions not compatible with a market economy environment stifling therefore financial intermediation and business development in general.

- Inadequate legal framework and implementation of laws/regulations in association with inefficient/inadequate operation of tax/customs authorities and judiciary system.

Besides, for the successful transition to the market-oriented economy, the most important is to move unfair competition and restrictions on the movement of goods. Enterprises complain about cheap imports. These results from smuggling, duty-free imports originating from Croatia, the operation of the huge Arizona market, the fact that customs official are paid off. However, cheap imports are also a relative concept in a country where domestic producers are often not competitive. Unfair competition occurs when competitors are politically connected or when the business has to deal with monopoly suppliers. The other constraints against the sound market economy are cited in terms of on-transparent public procurement and insufficient market information and export promotion services.

(3) Key Policies for Future Economic Development

The above external business and economic constraints, most of which have been more or less perceived by enterprises, should be moved through strong initiatives of policy reforms by the governments. To this end, many efforts have currently been made, as described in Section 2.2 in Chapter 2. The following key policies, however, should be further noted:

- Facilitation of the fiscal reform;
- Re-engineering of Government/Public Administration;
- Furthering legal reform and strengthening the rule of law (confirming the independence and efficiency of the judiciary system);
- Restructuring and modernization of the utilities companies and infrastructure service providers;
- Transformation and modernization of the payments system and the financial sector;
- Diversification of supply of business support services; and
- Anticipating future labor skills requirement and building a program of vocational, technological and management training around these requirements.

4.2.2 Future Economic Development Potentials

Based on analyses of the existing economic situation and in consideration of latent constraints against restructuring industrial sector, as mentioned above, the Study Team foresees future economic growth potential by industrial sector as shown in Table 4.2. Analytical insights into the sector economic growth potentials are as follows:

(1) Industrial Sector

It is clear that the current BiH economy, which had been historically structured with heavy industry-based economies, should be re-structured towards a more internationally competitive economy, emphasizing encouragement of the value-added industries.

During the first 10 years ahead, BiH will re-build up the industrial sector with new investments. Accordingly, the industrial growth on BiH will be more impressive. When the appropriate reforms are implemented in the first five years, the industrial production will increase faster during the next five years (2005 - 2009).

The industrial production will reach a saturate point after 10 years, because all the required investments will be done and the markets covered, according to the local and international markets environment and competitiveness. This level of industrial production will be difficult to maintain and will decrease as to be sustainable and stabilized. Then, there will be a slight decrease in the industrial production towards a stabilization of the economy during the next ten years. Most of the transition economies went through a similar scenario.

(2) Agriculture Sector

For the agricultural sector, BiH will benefit from the new investments brought by the private sector, especially with the agro-processing industries as well as through loans and grants from multilateral and bilateral financial assistance during the first five years. This agricultural development will be supported by the agricultural reforms implemented by the Governments.

Agricultural production in Bosnia and Herzegovina is mainly to satisfy local consumption and reduce the import of agricultural products. At the end of the first five years, the agricultural market will stabilize its production responding to the local consumption. In the following years, the growth rate of agricultural production will decrease up to 2020, because the level of production will be higher than the local consumption. Agricultural products will not be competitive on the international markets for export, due to costs for production and transport. Consequently, the agricultural production will maintain its growth of 1.70% p.a.

(3) Service Sector

The economic growth of the service sector inherently follows and depends on the productive sector's growth in the agricultural and manufacturing sectors. However, because of the multiplier effect through the market mechanism, the growth rate in the service sector is always higher than that of the productive sector. Due to such economic linkages, the growing trend of the service sector will follow more or less similar trend of development of the agricultural and industrial sectors. With the same reasons, it will reach a peak after 10 years because all the required investments will be realized and the market covered.

The development of the services will also be supported by privatization and improvements in the business-enabling environment, including reforms of banking, financial, taxation and business-related regulatory systems as well as the labor market. Then, there will be a slight decrease in the growth rate of the services towards a stabilization of the economy during the following ten years (an average of 5.10% in 2010-2014 and an average of 4.40% in 2015-2020).

(4) Mining and Quarrying Sector

The production in mining and quarrying will decline, because the sector has been strongly damaged during the war and they lost the market. The cost to rehabilitate the sector is too high to make it feasible, thereby being likely to loose foreign private investments. The cost of production is high, transport as well, and they cannot maintain their equipment because of a lack of finance.

The European firms are now buying their mining products in Eastern Europe (mainly in Poland, Hungary or Czech Republic) because the products are competitive on the international market and the cost of transport is low because the nearness of these countries. Only enterprises like GRANIT in Jablanica can attract foreign investors because the quality of finished products.

Table 4.2 Future Industrial Growth Potential by Sector

Industrial Sector \ Year		2005	2010	2015	2020
Manufacturing	Annual Growth (%)		5.9	4.4	4.1
	Growth Speed		High	Moderate	Stabilized
	Assumptions		Reform Investment Privatization	Market saturation	Balanced Supply and demand
Agriculture	Annual Growth (%)		2,9	1,9	1,7
	Growth Speed		Moderate	Stabilized	Stabilized
	Assumptions		Reform	Satisfy Local Market	Balanced Supply and demand
Service	Annual Growth (%)		7.3	5.1	4.4
	Growth Speed		High	Moderate	Stabilized
	Assumptions		Reform Investment Privatization	Market saturation	Balanced Supply and demand
Mining & Quarrying	Annual Growth (%)		0.5	-1.3	-1.5
	Growth Speed		Low	Decline	Decline
	Assumptions		Lost Market Damaged No Investment	Not Competitive quality cost	Not Competitive quality cost

Source: The JICA Study Team

4.2.3 BiH Countrywide Economic Framework

The Study Team firstly formulated a countrywide economic development framework in terms of GDP, followed by breakdown to those by the Entities/Brcko and by the traffic zones.

(1) General Methodological Procedure

Figure 4.3 shows a methodological procedure to build the countrywide GDP framework. For the short-term forecast until the year 2004, the Study Team adopted an economic development forecast made recently by WB/IMF. The growth projection after 2005 was made, based on the study results on the industrial sector analysis, which was mentioned in the preceding section, referring to the experiences of the Central and Easter European countries in the past ten years after the transition.

Two economic development scenarios were elaborated for the medium- and long-term forecast, namely, 1) **Base Case**; and 2) **High Growth Case**. The Base Case scenario denotes a most likely future scenario, derived from industrial studies, while the High Growth Case scenario represents a potential high growth, which was achieved by Poland in the past.

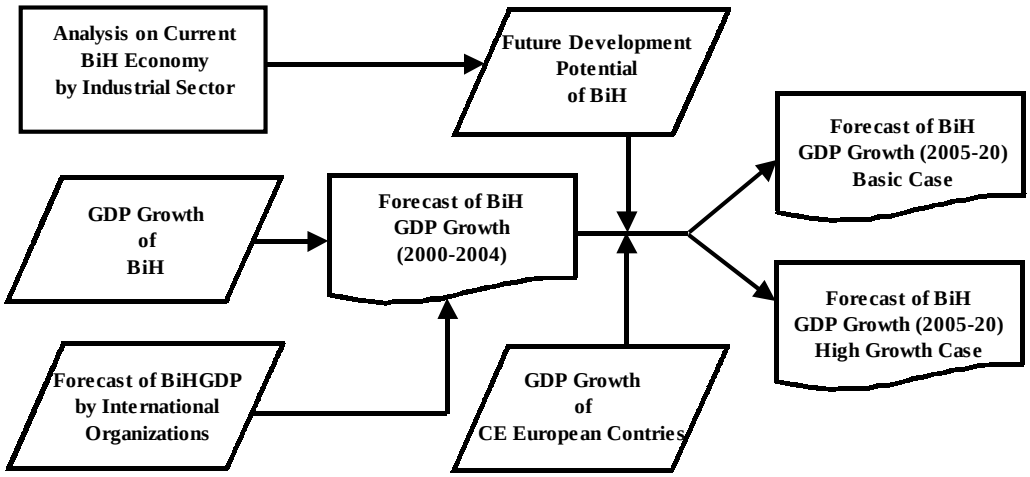


Figure 4.3 Countrywide GDP Forecast Procedure

(2) Forecasts by International Organizations

International organizations published various forecasts of the economic development of BiH, as shown in Figure 4.4. Although the forecasts are made only for the short-term period, they provide valuable insights into and/or professional views on evaluation of the BiH economic potentials, under limited information relevant to the BiH's economy.

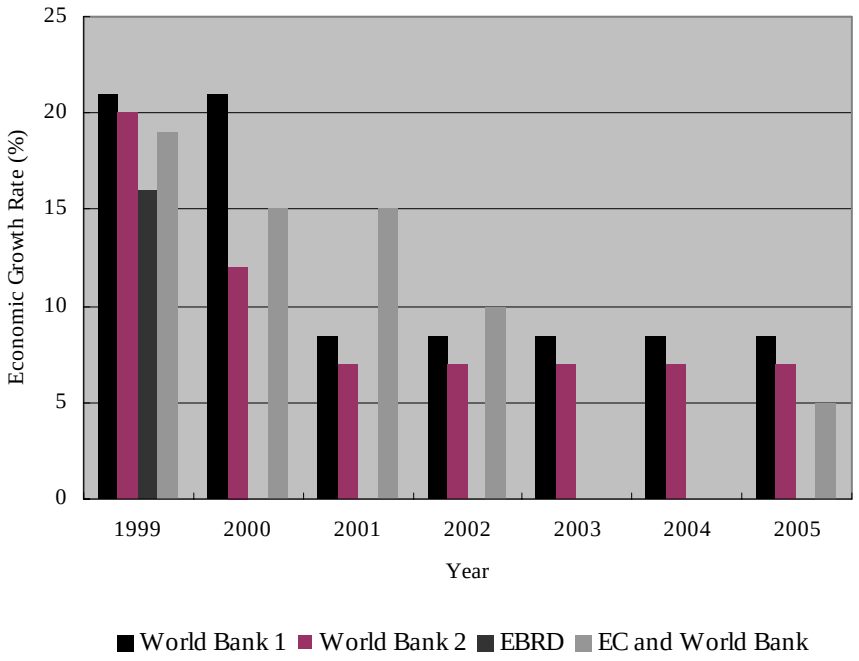


Figure 4.4 Economic Development Forecasts by International Organizations

These forecasts of economic growth rate vary in some extent. However, the range is considered not so large. In consideration of the actual performance in recent years, the World Bank/IMF made another forecast up to the year 2003. Thus, the forecast changes from time to time by various institutions. Since the latest one is deemed to be rational, the forecast by World Ban/IMF was adopted as the short-term project for the Study, as shown in Table 4.3:

Table 4.3 GDP Growth Forecast by WB - IMF (% p.a.)

	2000	2001	2002	2003
IMF-WB estimates	14	14	10	5

Source: USAID [2000]

(3) Alternative Economic Growth Scenarios of BiH

Figure 4.5 shows alternative future economic development scenarios of BiH in terms of per capita GDP in US$, based on the above discussions.

As the **High Growth Case** (Optimist Scenario), the Study Team adopted a growth rate as experienced by the Polish economy in its transitional period. Poland is one of the fastest runners of the economic recovery race in the Central and Eastern European transitional economies. The average annual growth rate of the economy was 5.4 % between 1993 – 1999. By the High Growth Case (Optimist Scenario), per capita GDP of BiH will reach to more than US$3,200 in the target year 2020.

On the contrary, the Study Team showed a growth curve as an example of the **most pessimistic scenario**. This curve is tracing the Bulgarian experience, that is, the Bulgarian economy has been stagnant in these six years. The average annual growth rate was negative, –1.3 %, during the same period.

The Study Team denotes the **Base Case**, which is thought to be the most-likely scenario for the future economic development of BiH. In this scenario,

The study team considers that a period by 2005 is "Reconstruction," and that a period after 2005 is "Potential Development", because the reconstruction would be finished by the end of 2005.

During the reconstruction period, damaged and destroyed economic infrastructure will be recovered. It should be noted that this period would not only be "Reconstruction" but also "transition period."

The study team considers that progress of "privatization" and "foreign investment" is a key factor to determine the future economic development of BiH. During the reconstruction period, the study team assumed that major changes would happen in the institutional field such as financing and taxation.

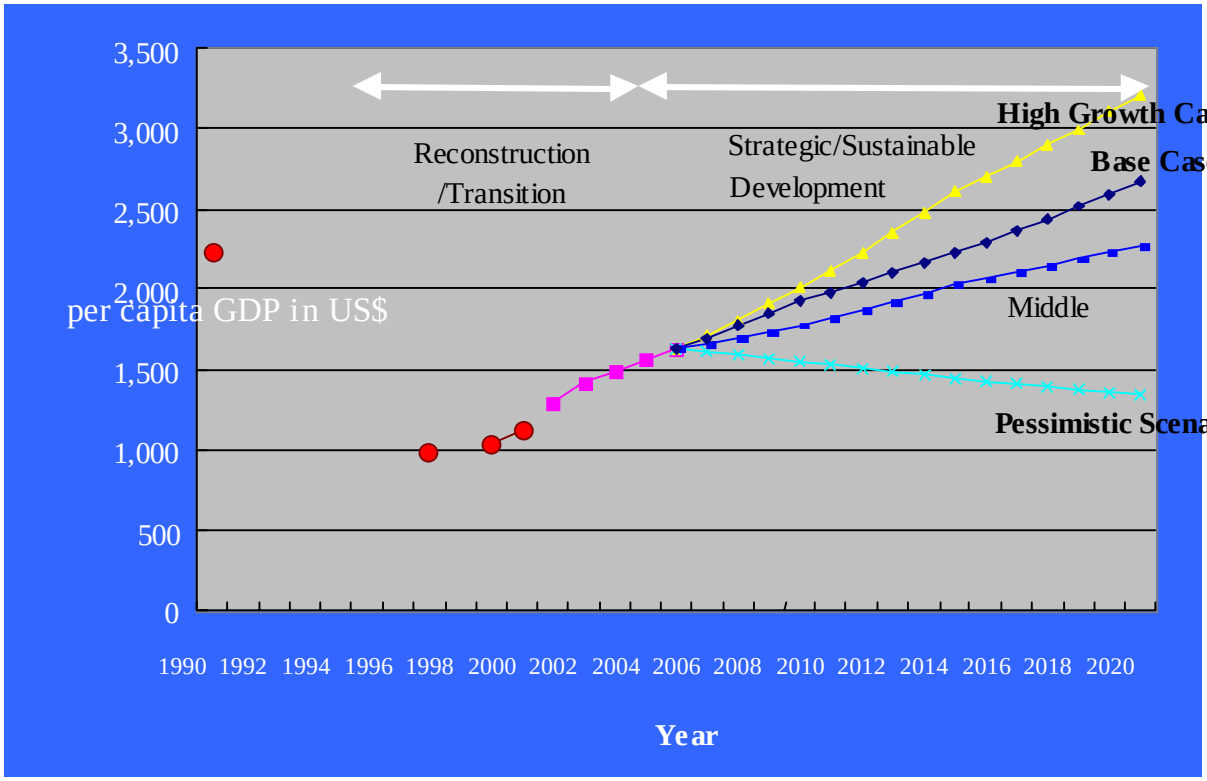


Figure 4.5 Future Economic Development Scenarios of BiH

4.3 POPULATION

4.3.1 Growth Potential of the BiH Population

(1) Past Population Growth and Changes by the War

Figure 4.6 illustrates population changes in census years before the war, together with after the war progress. Population grew from 3,277 thousand in 1961 to 4,377 thousand in 1991. Average annual growth rates of the population were decreased from 1.34 % between 1961 and 1971 to 0.97 % and 0.60 %, between 1971 and 1981, and between 1981 and 1991. It can be said that the population had grown continuously but that the growth rate showed a decreasing trend as same as the other counties.

According to UNDP [1998], 258,000 inhabitants of BiH died or missing during the war. The number is 269,800 by the other estimates. Displaced persons were 1,000,000 in 1995, 845,000 in 1996, 816,000 in 1997, 836,500 in 1998, and 809,500 in 1998 (UNHCR [2000]). Refugees are estimated as 1.2 million from BiH at the end of the war. It is estimated that 544,000 of the total number of refugees have found permanent solutions abroad and that 306,000 refugees are still without permanent solutions (UNHCR [2000]).

(2) Current Population Estimates

With regard to the current population, statistic offices of BiH and international organizations announce different figures as shown in Figure 4.6. No population census has been conducted since the 1991 census. Therefore, the accurate number of the current population of BiH is unknown.

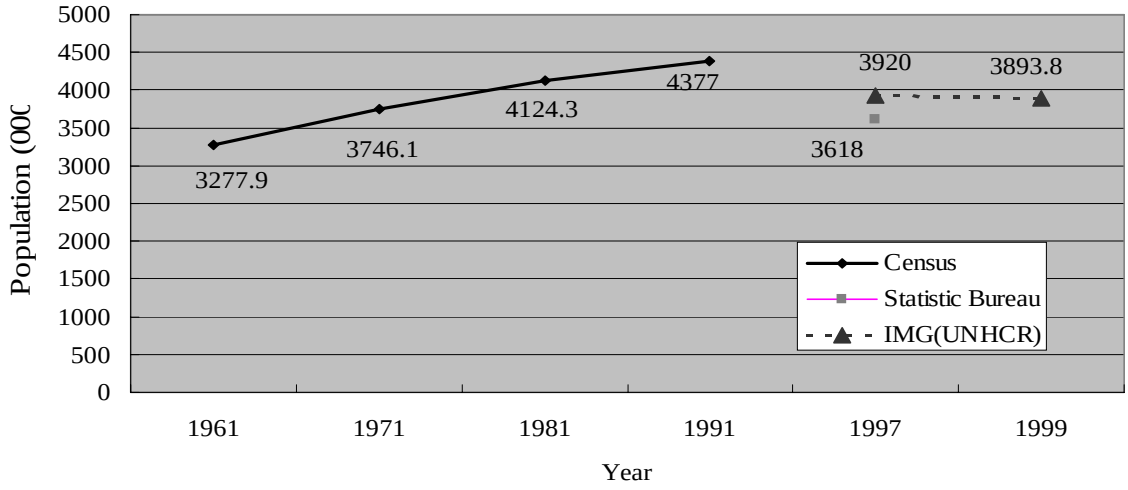


Figure 4.6 Population Change of BiH in Past Years

The Federation Statistics Bureau estimated 2,244 thousand in 1998 and 2,276 thousand in 1999, while Institute of Statistics of Republika Srpska estimated the RS population as 1,410 thousand in 1997. The UNHCR estimates on the total population of BiH were 3,920 thousand and 3,894 thousand in 1997 and 1999, respectively.

As shown above, the BiH population is growing according to the Federation estimates, while the UNHCR estimates show a decrease in the same period. Both population estimates were based on municipality information.

Populations in most transitional economies are decreasing. This tendency is same in BiH as seen before. Therefore, the study team judged that the future population growth potential would follow the other transition economies. However, the refugee return should be considered appropriately, because the number of refugee abroad is relatively big compared to the population of BiH.

(3) Refugee Return

The refugee return issue is considered as one of the important aspects to estimate the future population of BiH. According to the UNHCR [2000], 306,000 refugees are still in abroad without permanent solutions as mentioned earlier. The study team made following assumptions on the future refugee return:

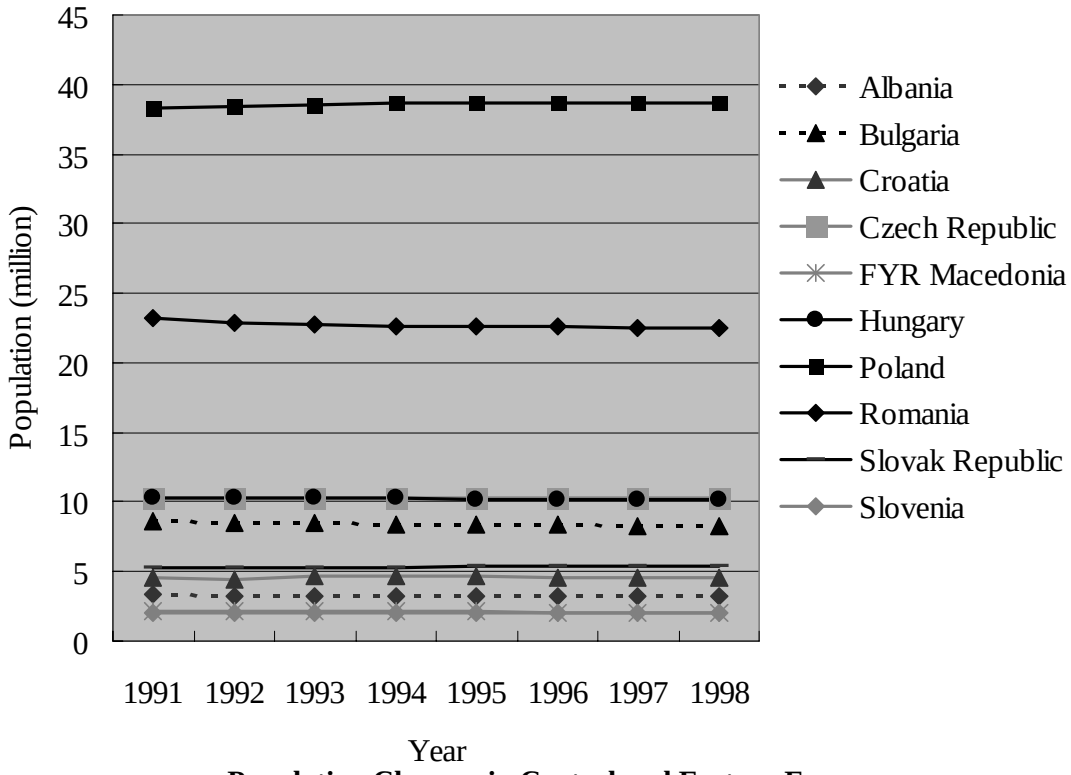
- About a half of the refugees (150,000) who have without permanent solutions will return to BiH, the remaining will stay abroad by finding permanent solutions there;
- The refugees will return to BiH in ten years beginning from 2001;
- In the first five years (2001 – 2005), 20,000 refugees will return to BiH every year; and,
- The rest (50,000) will return in the remaining five years (2006 – 2010). Expected number will be 10,000 per year.

However, if the employment were not secured, it would not be possible for the refugees to return, even if their houses are prepared at the original places. Needless to say, the economic development progress will be a key to promote the refugees' return to BiH.

Box: Population Growth of Central and Eastern European Countries

Population changes of ten Central and Eastern European countries since 1991 are presented below. Among the ten countries, five countries recorded negative population growth and two countries recorded zero growth in average. Only three countries recorded positive population growth. Those are Slovak Republic, Poland and Croatia, with the average annual growth rates of 0.27%, 0.15% and 0.06% p.a. respectively.

Several reasons are conceivable behind such a stable population growth propensity commonly observed in the Central and Eastern Europe: low crude birth rate and out-migration due to the transitional restructuring process in the economic sector. The BiH, as part of the same region, is likely to follow more or less the same trend, taking into the similarity of the on-going transitional economic reforms.



Population Changes in Central and Eastern Europe

4.3.2 Countrywide Future Population Forecast

(1) Methodology

Based on the above discussion, the study team formulated a future countrywide population framework as shown in Figure 4.7.

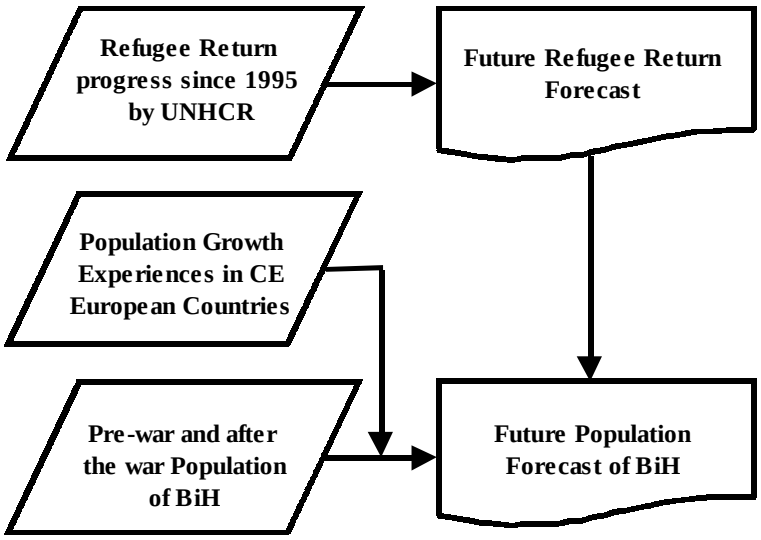


Figure 4.7 Population Framework Formation (Countrywide)

Based on statistics reports, the study team forecast future countrywide population of BiH. Past population growth experiences of the Central and Eastern European countries were a base for the forecast, while the refugee return progress information was also important.

(2) Forecasted Future Population of BiH

Figure 4.8 shows the results of the countrywide population framework formation results. During the year 2000 to 2005, population of BiH was assumed to stay as same level as in 1999. For, population increases by natural population growth and by the refugee return will be canceled by emigration to abroad under the current employment condition.

From 2006 to 2015, annual average population growth was assumed as 0.06 %, which is equivalent to the experience of Croatia as shown before. In addition to the population growth, the refugee return is expected during this period. Economic development and labor market improvement are expected.

After 2015, annual average population growth was assumed as 0.15%, which is equivalent to the past population growth of Poland. Economic development of BiH is expected.

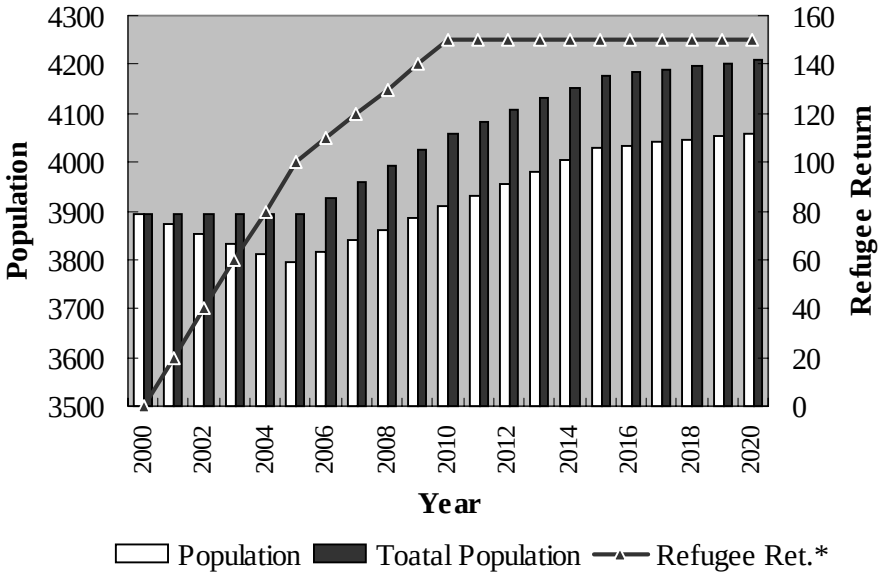


Figure 4.8 Countrywide Population Framework

The resulting population framework is shown in Table 4.4. The population of BiH will be 3,893.8 thousand, 4,059.0 thousand and 4,208.0 thousand in 2005, 20010 and 2020, respectively. It is noted that the base year date of the 2000 population was estimated, based on the UNHCR estimate for 1999.

Table 4.4 Future Population Framework

(000)

	2000	2005	2010	2015	2020
Population	3,893.8	3,793.8	3,909.0	4,027.7	4,058.0
Refugee Ret.*	0.0	100.0	150.0	150.0	150.0
Total	3,893.8	3,893.8	4,059.0	4,177.7	4,208.0

Souce: The study team

* : accumulated total

4.4 ENTITY SOCIOECONOMIC FRAMEWORK

4.4.1 Urbanization

Figure 4.9 shows locations of major urban centers of BiH. The blue circles denote municipality populations in 1991, while red circles represent the population in 1999.

Large metropolitan cities of BiH are Sarajevo, Banja Luka, Tuzla, Mostar, Zenica, Bijeljina, Doboj, and Bihac. Those large cities are located in the West-East axis in the northern area and the North-South axis. **Urbanization** will be anticipated to accelerate along with the progress of the market economy, while maintaining this spatial pattern in the future as well.

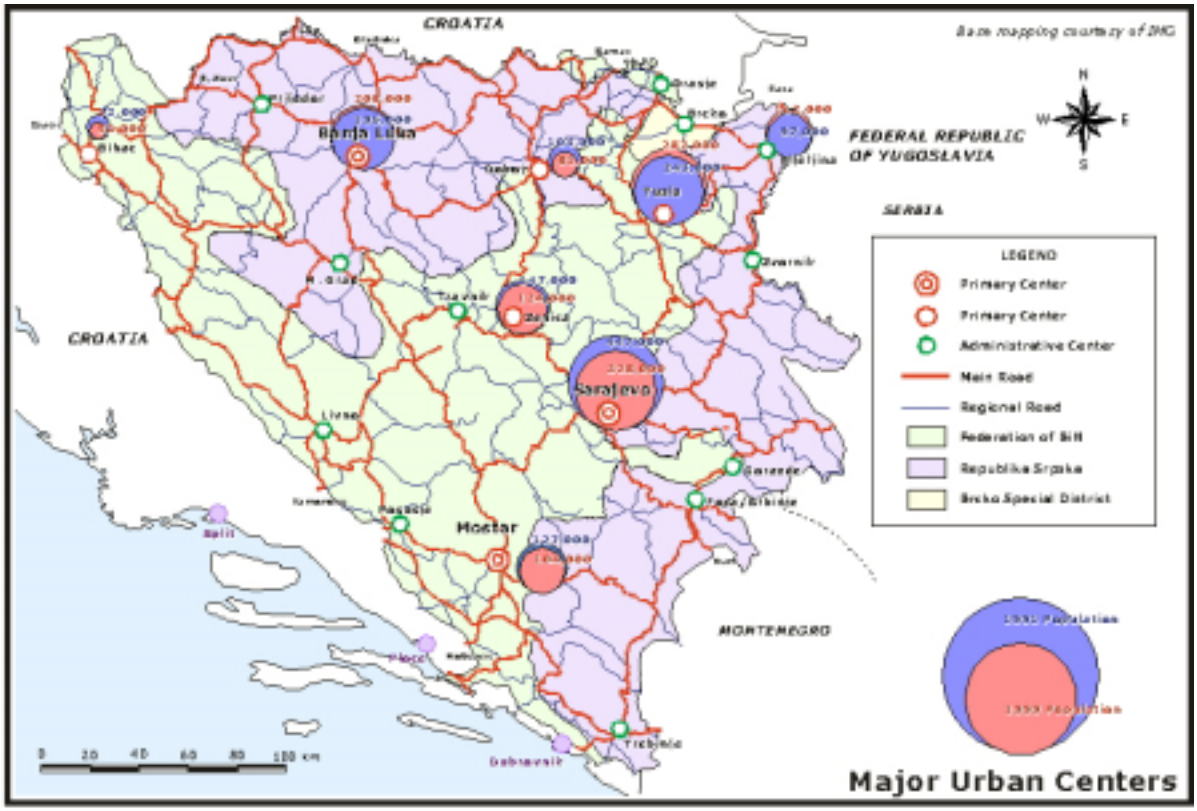


Figure 4.9 Major Urban Centers in BiH

As discussed in Chapter 3, the Study Team proposed a hierarchical human settlement system with three levels of city centers. The first category is "Primary Centers," which are considered as the centers with countrywide administrative, financial, commercial, and industrial functions, and seven cities are classified in this category, namely, Sarajevo, Mostar, Tuzla, Zenica, and Bihac in FBiH, and Banja Luka and Doboj in RS. Urbanization will take place predominantly in these potential cities.

The second category is "Administrative Centers," which are considered as local administrative centers with the importance of commercial and service functions for their hinterland areas. Those are Kanton capital cities in FBiH and major municipal cities in the Republika Functional Regions in the Srpska, where urban population will increase, attracting rural-to-urban migration.

Table 4.5 Classification of BiH Cities

City Type	Cities
Primary Center	Sarajevo, Banja Luka, Mostar Tuzla, Zenica, Doboj, Bihac
Administrative Center	Bijeljina, Brcko, Gorazde, Livno, Mrkonjic Grad, Orasje, Posusje, Prijedor, Foca/Srbinj Travnik, Trebinje, Zvornik

4.4.2 Entity Socioeconomic Framework

(1) Brcko District

During the course of the study, new administrative unit was introduced into BiH in March 2000. It is Brcko Administrative District. The study team formulated the socioeconomic framework considering the new Brcko District in the level of Entity socioeconomic framework.

(2) Population

Table 4.6 shows population statistics by Entity/District. The population of the Federation was some 2.7 million in 1991, which shared about 62% of total population of BiH. On the other hand, the population of the Republika Srpska shared about 36% of the total with some 1.6 million in 1991.

The latest population estimates by UNHCR revealed that the population share by Entity has not changed drastically. The Federation of BiH shared about 61%, while the Republika Srpska shared about 37% in 1999.

Table 4.6 Population Changes of BiH by Entity/District

	1991	1997	1999
Federation of BiH	2,728,068	2,426,008	2,381,496
Republika Srpska	1,562,058	1,426,547	1,432,020
Brcko District	86,927	67,398	80,324
Total BiH	4,377,053	3,919,953	3,893,840

Source: UNHCR

However, with regard to natural increase of population of the both Entities are shown in Table 4.7 indicates a great difference between the Entities.

The natural growth rates of population of the Federation of BiH in 1997 and 98 were about 0.6%, while the rates of the Republika Srpska in 1996 and 97 were about 0.1%.

To estimate future realistic population framework by Entity, the study team had to cope with this great difference of the natural growth rates between the Entities.

Table 4.7 Natural Growth of Population by Entity

	Population	Birth	Death	Natural Growth(%)
Federation of BiH*				
1997	2,426,008	31,582	15,628	0.658
1998	2,206,509	29,067	15,518	0.614
Republika Srpska**				
1996	1,391,593	12,263	10,931	0.096
1997	1,409,835	13,757	11,755	0.142

Source: * The Republika Srpska Institute for Statistics, "Demographic Statistics No.1", Banja Luka 1999
** Agency for Statistics of BiH, "Statistical Bulletine 2", 1999

Figure 4.10 shows the Entity population framework formation procedure.

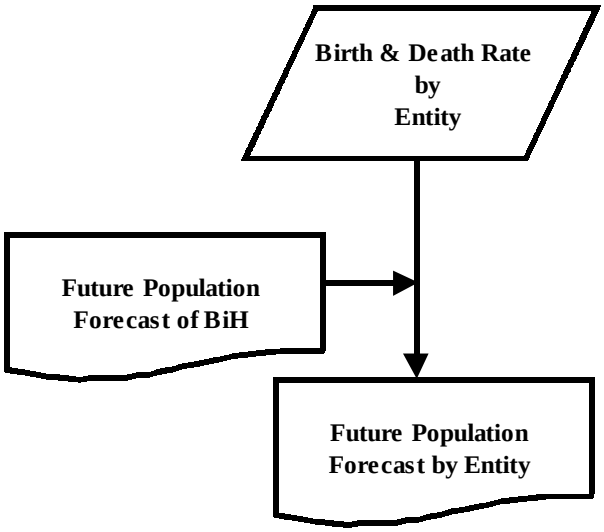


Figure 4.10 Entity Population Framework Formation

The study team made an assumption that future population growth rate of the Republika Srpska will be 30% of that of BiH, and that for Brcko, it would be as same as that of BiH.

The resulting population framework is shown in Table 4.8. Average annual population growth rates of BiH, the Federation of BiH, the Republika Srpska, and the Brcko District in 20 years were 0.39%, 0.55%, 0.12% and 0.39% including the refugee return respectively.

Table 4.8 Population Framework by Entity/District

(000)

	2000	2005	2010	2015	2020
BiH	3,893.8	3,893.8	4,059.0	4,177.7	4,208.0
Annual Growth rate (%)	-	-	0.83	0.58	0.14
Federation	2,382.3	2,382.3	2,526.1	2,629.7	2,656.2
Annual Growth rate (%)	-	-	1.18	0.81	0.20
Srpska	1,431.0	1,431.0	1,449.0	1,461.6	1,464.8
Annual Growth rate (%)	-	-	0.25	0.17	0.04
Brcko	80.5	80.5	83.9	86.4	87.0
Annual Growth rate (%)	-	-	0.83	0.58	0.14

Source: The BiHTMAP Study Team

(3) GDP

According to the Statistics (refer to Appendix A3.3), GDP of the Republika of Srpska has been around 25% of total BiH GDP. In terms of population, the Republika Srpska shares about 36% of the total population. Therefore, difference of per capita GDP between the Federation of BiH and the Republika Srpska is big.

The per capita GDP of the Federation of BiH is estimated as 1.7 times higher than that of the Republika Srpska, currently. In other words, per capita of GDP of the Republika Srpska is 68% of per capita GDP of BiH.

However, the gap is considered to become smaller in future, because both Entities will cooperate each other for future economic development of the country. The study team assumed that the gap would be decreased gradually as shown below. The gap would not stay as same as the existing, or that the gap would expand under such scenario. Lower economy offers cheaper labor cost and cheaper resources in general. Higher economy utilizes the lower resources including labor in general, if there is not any strong restriction on the usage. The gap is considered to become smaller, as a result.

- per capita GDP of the Republika Srpska will be 70% of that of BiH in 2005;
- 75% in 2010;
- 80% in 2015; and,
- 85% in 2020.

The Entity GDP framework formation procedure is shown in Figure 4.11.

Based on the future per capita GDP framework and the assumption on per capita GDP by Entity described above, the study team estimated future per capita GDP by Entity. And, by using future population by Entity/District, future GDP by Entity/District was formulated. Future GDP of BiH was used as control totals.

Figure 4.12 shows the resulting per capita GDP growth by Entity. The Republika Srpska grows faster than the Federation of BiH, because that the gap would decrease in the future. However, the gap will still remain even in 2020. Absolute GDP per capita will be 5,851KM and 4,593KM in 2020 for the FBiH and RS respectively.

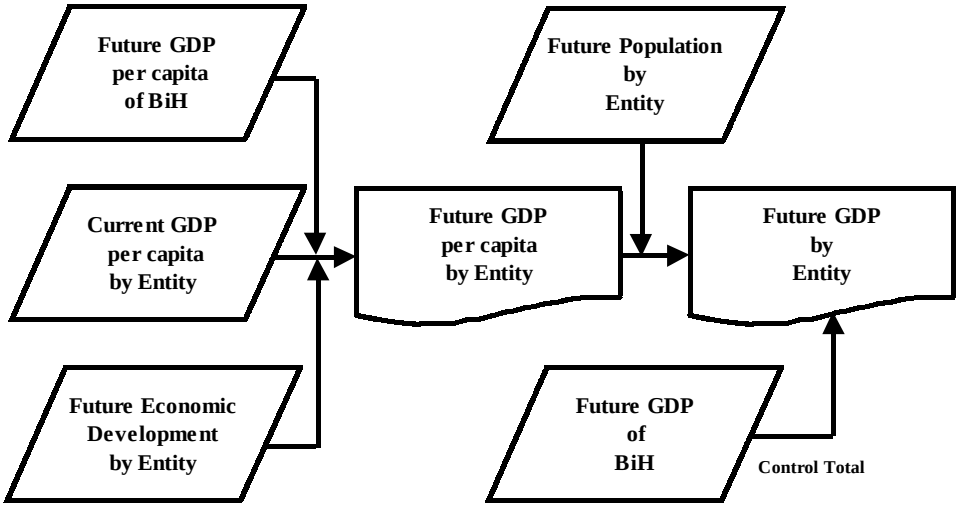


Figure 4.11 GDP Framework Formation by Entity

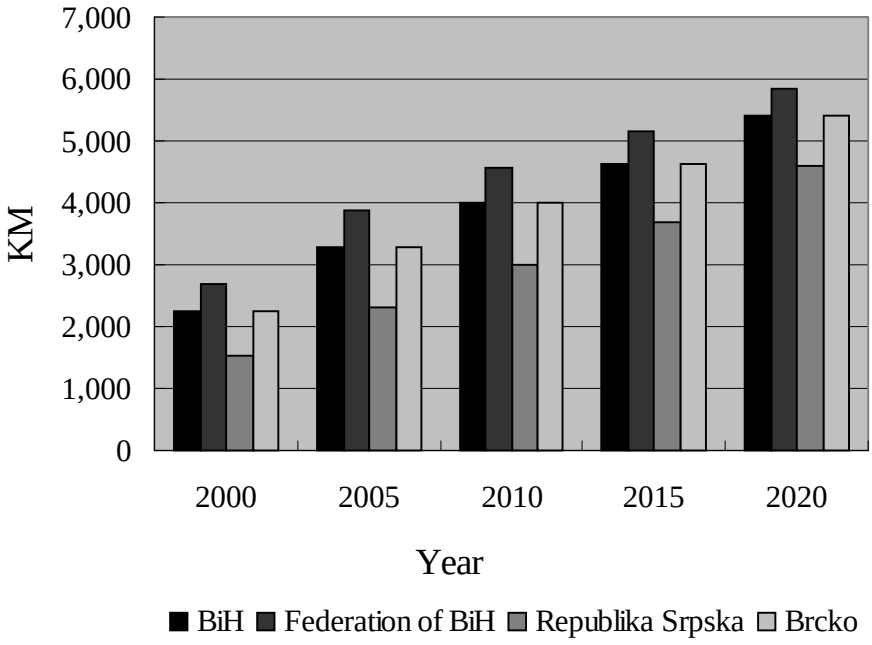


Figure 4.12 Per capita GDP Growth by Entity

Tables 4.9 and 4.10 show summary tables of the socioeconomic framework of BiHTMAP study for the Basic Case and the High Growth Case.

Table 4.9 Socioeconomic Framework of BiHTMAP Study (Base Case)

		2000	2005	2010	2015	2020
BiH	GDP	8,803,000	12,803,319	16,245,957	19,332,349	22,739,779
	Av.Growth Rate(%)		7.78	4.88	3.54	3.30
	Population	3893.8	3,893.8	4,059	4,178	4207.9716
	Av.Growth Rate(%)		0.00	0.83	0.58	0.14
	GDP p.c.	2,261	3,288	4,002	4,628	5,404
	Av.Growth Rate(%)		7.78	4.01	2.94	3.15
Federation	GDP	6,432,251	9,244,955	11,560,471	13,521,826	15,541,444
	Av.Growth Rate(%)		7.52	4.57	3.18	2.82
	Population	2,382.3	2,382.3	2,526.1	2,629.7	2,656.2
	Av.Growth Rate(%)		0.00	1.18	0.81	0.20
	GDP p.c.	2,700	3,881	4,576	5,142	5,851
	Av.Growth Rate(%)		7.52	3.35	2.36	2.62
Srpska	GDP	2,189,430	3,293,719	4,349,681	5,410,923	6,728,303
	Av.Growth Rate(%)		8.51	5.72	4.46	4.45
	Population	1,431.0	1,431.0	1,449.0	1,461.6	1,464.8
	Av.Growth Rate(%)		0.00	0.25	0.17	0.04
	GDP p.c.	1,530	2,302	3,002	3,702	4,593
	Av.Growth Rate(%)		8.51	5.46	4.28	4.41
Brcko	GDP	181,958	264,645	335,805	399,600	470,032
	Av.Growth Rate(%)		7.78	4.88	3.54	3.30
	Population	80.5	80.5	83.9	86.4	87.0
	Av.Growth Rate(%)		0.00	0.83	0.58	0.14
	GDP p.c.	2,261	3,288	4,002	4,628	5,404
	Av.Growth Rate(%)		7.78	4.01	2.94	3.15

Note: GDP: thousand KM in constant 2000 price
Population: 000
GDP per capita: KM in constant 2000 price

Table 4.10 Socioeconomic Framework of BiHTMAP Study (High Growth Case)

		2000	2005	2010	2015	2020
BiH	GDP	8,803,000	12,827,660	17,393,806	22,867,260	27,356,102
	Av.Growth Rate(%)		7.82	6.28	5.62	3.65
	Population	3,893.8	3,893.8	4,059.0	4,177.7	4,208.0
	Av.Growth Rate(%)		0.00	0.83	0.58	0.14
	GDP p.c.	2,261	3,294	4,285	5,474	6,501
	Av.Growth Rate(%)		7.82	5.40	5.02	3.50
Federation	GDP	6,432,251	9,262,531	12,377,270	15,994,285	18,696,457
	Av.Growth Rate(%)		7.57	5.97	5.26	3.17
	Population	2,382.3	2,382.3	2,526.1	2,629.7	2,656.2
	Av.Growth Rate(%)		0.00	1.18	0.81	0.20
	GDP p.c.	2,700	3,888	4,900	6,082	7,039
	Av.Growth Rate(%)		7.57	4.73	4.42	2.96
Srpska	GDP	2,189,430	3,299,981	4,657,006	6,400,308	8,094,193
	Av.Growth Rate(%)		8.55	7.13	6.57	4.81
	Population	1,431.0	1,431.0	1,449.0	1,461.6	1,464.8
	Av.Growth Rate(%)		0.00	0.25	0.17	0.04
	GDP p.c.	1,530	2,306	3,214	4,379	5,526
	Av.Growth Rate(%)		8.55	6.86	6.38	4.76
Brcko	GDP	181,958	265,148	359,531	472,667	565,452
	Av.Growth Rate(%)		7.82	6.28	5.62	3.65
	Population	80.5	80.5	83.9	86.4	87.0
	Av.Growth Rate(%)		0.00	0.83	0.58	0.14
	GDP p.c.	2,261	3,294	4,285	5,474	6,501
	Av.Growth Rate(%)		7.82	5.40	5.02	3.50

Note: GDP: thousand KM in constant 2000 price
Population: 000
GDP per capita: KM in constant 2000 price

4.5 ZONAL SOCIOECONOMIC FRAMEWORK

4.5.1 Population

To consider future population framework of BiH, the study team referred to the future spatial structure, which was described earlier. Economic development goes with urbanization, in general. The study team assumed that traffic zones that include the "Primary Centers" and the "Administrative Centers" would grow faster than the other zones in terms of population.

Both Entities have a policy of balanced population growth dispersed throughout the country. The Study Team recognizes that most countries have such policies. Overpopulated and underpopulated areas are always considered problematic. However, metropolitan areas in BiH are considered not overpopulated now. The biggest city is Sarajevo with less than 400,000 inhabitants. It is true that determination of an optimum

population level is difficult, although metropolitan areas tend to move toward obtaining benefits of concentration. The Study Team considers that more concentration would be necessary for efficient economic development in the case of BiH. So, the Study Team assumed likely population concentration. It was so moderate, however, that the resulting forecast of population by zone did not show any overpopulated areas. Small zones did not lose populations as a result.

Figure 4.13 shows the procedure for the zonal population framework formation. Based on the municipality population statistics in 1999, the study team estimated population growth by zone, assuming the growth rates would be different according to the city category. The estimates were adjusted by target year Entity population total. Figure 4.14 illustrates a map of population density by zone in 2020.

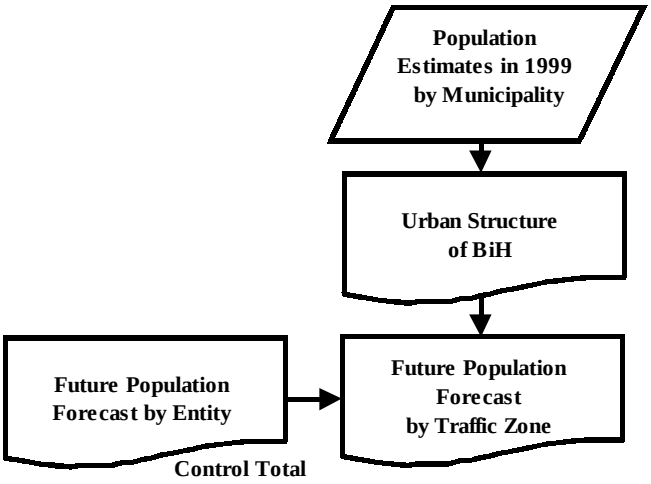


Figure 4.13 Zonal Population Framework Formation

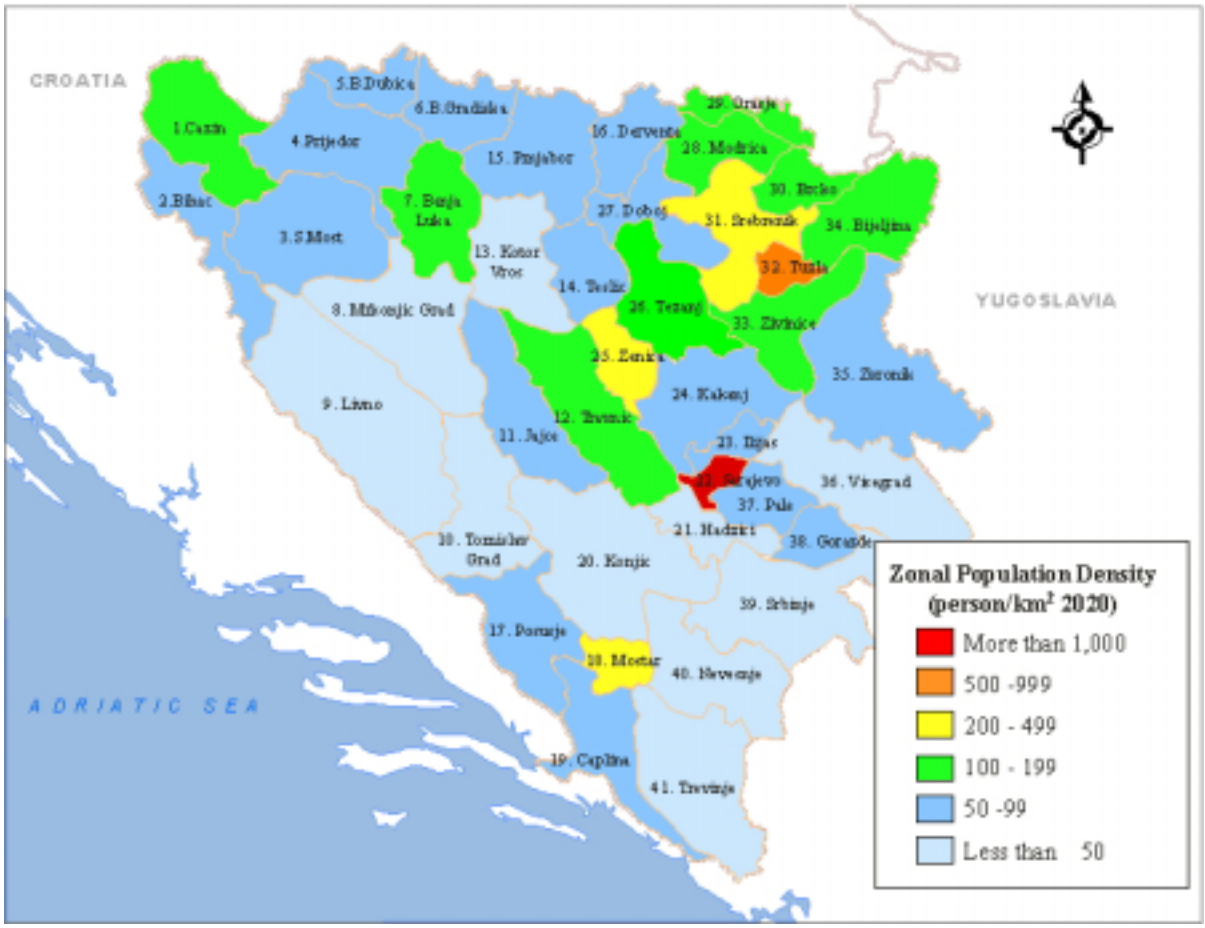


Figure 4.14 Population Density by Zone in Year 2020

4.5.2 GDP

The only regional GDP index was GDP by Kanton in the Federation of BiH. Therefore, as shown in the Figure 4.15 the study team analyzed the relation between the Kanton GDP and Kanton population to obtain some formula, which can distribute macroscopic GDP into the traffic zones.

Generally speaking, urbanization brings higher income. In the analysis, the study team focused on a relation between per capita GDP and population density by Kanton in that sense. The per capita GDP does represent the income level. The population density explains a level of urbanization.

Based on the analyses, the study team obtained the following formula to explain Kanton GDP per capita by Kanton population density.

ln (per capita GDP) = a + b * (population density per square km)

Future per capita GDP by zone was estimated by using this formula. Future GDP by zone was calculated by multiplying future zonal population against future zonal per capita

GDP. The calculated future GDP by zone was adjusted by the future GDP by Entity total.

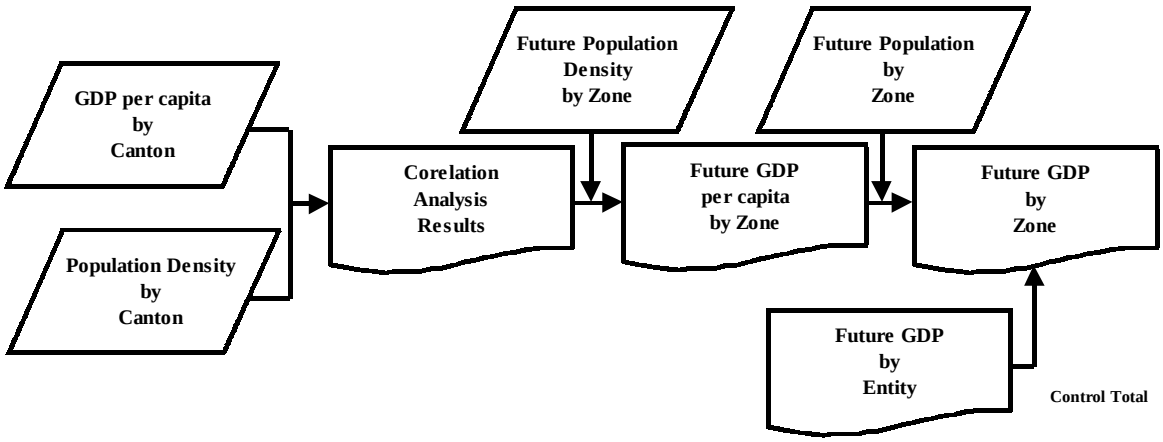


Figure 4.15 Zonal GDP Framework Formation Procedure

Figure 4.16 illustrates a map of the per capita GDP by zone in 2020. Sarajevo, Mostar and Tuzla zones showed the highest GDP per capita level with more than KM 7,000 in 2020. The orange area, including Sarajevo - Mostar corridor area, shows higher per capita GDP with more than KM 6,000. Banja Luka and Brcko zones are ranked as the third area with more than KM 5,000.

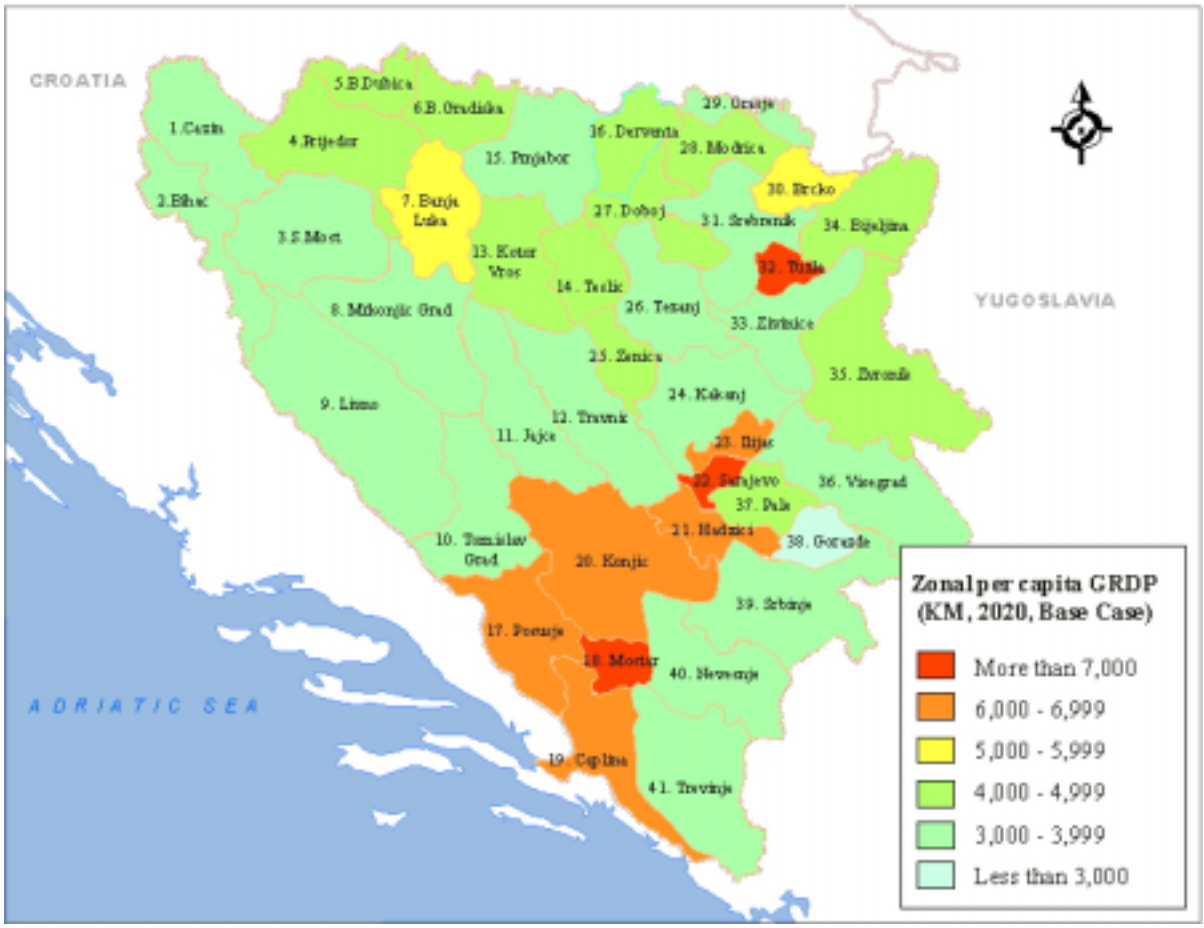


Figure 4.16 Zonal per capita GDP in 2020

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CHAPTER 5: TRANSPORT DEVELOPMENT PLAN

5.1 OVERALL TRANSPORT DEVELOPMENT CONCEPT

5.1.1 Overall Stage-wise Development Scenario

The Transport Master Plan views the two decades time horizon up to the year 2020 staring from the base year 2000, in relation with the economic development and institutional development. The transport system development scenario is considered in a three (3) phased period: Phase 1 (short-term: 2000 ~ 2005); Phase 2 (medium-term: 2006 ~ 2010); and Phase 3 (long-term: 2011 ~ 2020). The main theme for the economic development, enhanced strategy for transport development and focused institutional development for each phase are tabulated in Table 5.1.

As for Phase 1, in the short-term, all the country's efforts need to be concentrated in making the recovery from the war damages and restoring the status quo up to the post war level as much as possible, through expediting the implementation of the committed rehabilitation programs. The current performance level of the rehabilitation programs, according to the IMG report, has not necessarily been so sufficient as expected. Therefore, further efforts should be made for the time being to recover the transport functions in roads, railways, and inland water transport system. This must be the main theme of the economic development, and the institutional reforms needs to be coherent and concomitant with such an enhanced scenario. Some of the actions and reforms embodied in the approved FBIH and RS Transport Sector Expenditure Strategies should be implemented in this period.

In Phase 2, in the medium-term, more emphasis of the economic development should be intensively shifted towards restructuring of the economic and industrial basis from the heavy industry-based to the more value-added industry-driven economy, through encouraging FDI (foreign direct investment) and human resource development. For this purpose, the transport sector should be reliable and price-competitive in freight transport and functionally linked with the European and international markets. In this sense, stabilization and functionalization of the entire transport system must be a focal strategy. At the same time, this phase will, therefore, require massive investments to structure the

infrastructure system. Definite legislative policy guidelines to mobilize alternative financial resources need to be provided to attract more private investments.

Once Phase 2 could be successfully done, the BiH economy will be able to take a growing pass in Phase 3, then, this phase can be regarded as a challenging period for BiH to prepare to play a significant role as part of the integrated European economy. In order to support this stable economic growth, the intermodal transport system should be well functioning in the Pan European Network System, and being operated with the European norms and standards. The institutional enhancement in association with capacity building is further required.

This phased scenario is given as a common basis of planning thoughts for all the transport sub-sectors, although the time division may be slightly different, depending upon the progress of recovery programs.

Table 5.1 Phased Scenario for Economy, Transport and Institutional Development

Phase	Main Theme of Socioeconomic Development	Enhanced Strategy for Transport Development	Focused Institutional Development
Phase 1 (2000 ~ 2005)	**Economic recovery** of and transitional reforms	**Rehabilitation and Re-functioning** of Existing Infrastructures	Initialization of the planned institutional and policy reforms in the transport sector
Phase 2 (2006 ~ 2010)	**Restructuring** and innovation of the productive basis	**Stabilization** and Full-functionalization of the Entire Transport System	Institutionalization for sustainable resource mobilization
Phase 3 (2011 ~ 2020)	**Further challenging** and shifting towards an internationally competitive economy	**Structuring** and **Progress** of the integrated European Network	According with the European norms and standards

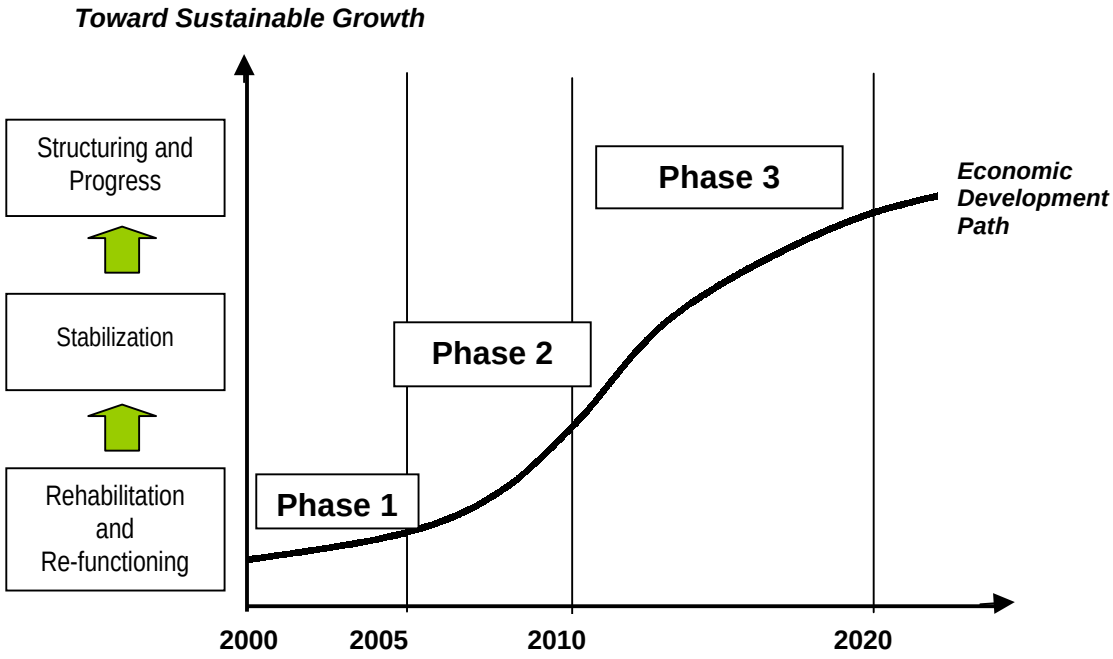


Figure 5.1 A Proposed Concept of Stage-wise Development Scenario

5.1.2 Spatial Framework and Human Settlement System

As mentioned earlier, the master plan study shall be countrywide in nature, that is, address transport needs within each Entity, between Entities and between the country and her European neighbors. This key objective forms the foundation upon which planning efforts are based.

The transport services should be provided for all socioeconomic activities as much as they need and at levels as sufficiently as they require. For this purpose, a spatial structure to network strategic urban centers to accommodate and encourage major industrial, commercial and business activities should be depicted as a basis of considering the entire country-wide transport network structure. Urban centers or human settlement centers, which are agglomerations of socioeconomic activities, are regarded as transport nodes where traffic demands for freights and passengers generate from and attract to. The urban centers are also regarded as distribution centers to serve their hinterland activities.

A hierarchical system with several functional levels of urban centers is considered as a planning premise, taking into account the following factors:

- Magnitudes of current economic agglomerations and growth potentials;
- Economic importance as major industrial centers and/or distribution centers for hinterland economies;

- Strategic importance as administrative centers; and
- Strategic importance of locations as gateways for international trade and cross-border transport activities with neighboring economies;

Consequently, three (3) functional levels of urban centers are proposed, namely, 1) Primary Centers; 2) Administrative Centers; and 3) Main Border Centers, as illustrated on Figure 5.2. These hierarchical urban centers are connected wit each other with different levels of transport means, mainly roads. The primary centers are required to functionally link with major cities in Europe as well as neighboring countries such as Beograd and Zagreb through Euro-transport network. The administrative centers are required to be connected with each other as well as the primary centers in an integrated road network system at the country level. The main border centers are regarded as strategic gateways to structure the international linkage with neighboring countries.

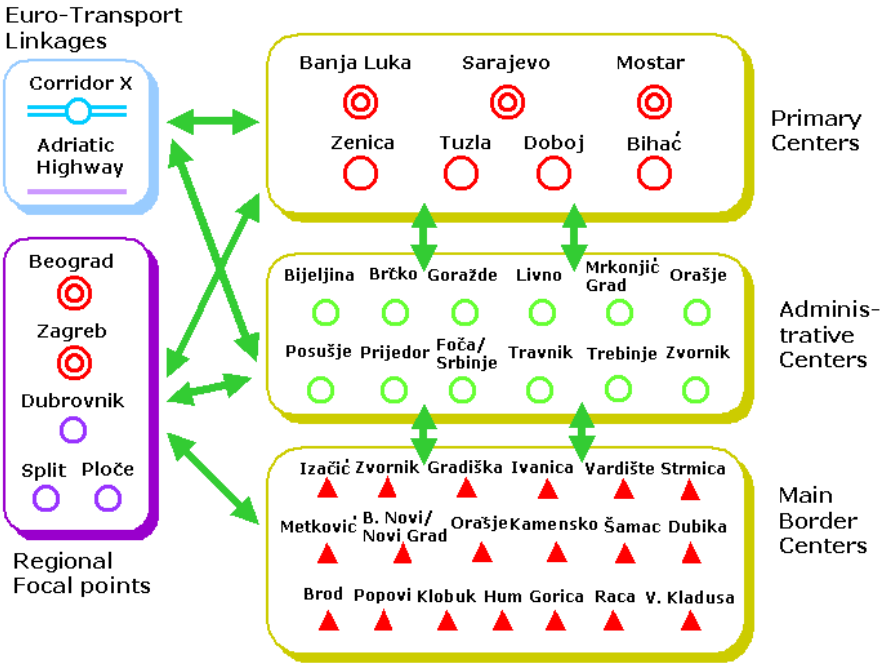


Figure 5.2 Hierarchical Urban Centers System (Proposed)

5.2 INTERMODAL TRANSPORT DEVELOPMENT PLAN

It must be a key planning concept to formulate a functional intermodal transport system in the entire BiH with which each Entity's economy can be activated while assuring free and smooth traffic movements of freights and passengers within Entity, for inter-Entity and in international linkages with neighboring countries.

The sector plans are demonstrated in Volume II in the Interim Report: 1) Road and Road Transport; 2) Railways; 3) Inland Water Transport; and 4) Air Transport. The detailed discussions for each mode can be referred to Volume II. Each sector plan, of course, is

given sufficient emphasis on the modal integration with the other transport mode. This section extends policy concerns on how to organize the intermodal system, with briefing the major parts of planning thoughts for each transport sector.

5.2.1 European Context of Intermodality

(1) Definition of Intermodal Transport

"Intermodal transport" is not a new transport technique but became a real topic only during the past decade, mainly as a result of the aggravating road congestion and the increasing awareness to protect the environment. Also technological and technical innovations offer substantial potential for intermodal transport development. But when discussing intermodal transport, it is imperative that the concept is clearly defined to avoid confusion. Intermodal transport is defined in the European context as follows:

"Combined transport means the transport of goods between Member States where the lorry, trailer, semi-trailer, with or without tractor unit, swapbodies, or container of 20 feet or more uses the road on the initial leg or the final leg of the journey and, on the other leg, rail or inland waterway or maritime services where this section exceeds 100 km as the crow flies and make the initial or final road transport leg of the journey;

- *between the point where the goods are loaded and the nearest suitable rail loading station for the initial leg and between the nearest suitable rail unloading station and the point where the goods are unloaded for the final leg, or;*

- *within a radius not exceeding 150 km as the crow flies from the inland waterway port or seaport of loading or unloading."*

Another definition is made by the "Task Force Transport Intermodality" of the European Union as:

"a transport system that combines and integrates different modes of transport in view of offering customer oriented door-to-door services".

The UIRR (International Union of Rail-Road Transport Companies) argued that

"Intermodal transport can be defined as the combination of at least two modes of transport in a single transport chain, without a change of container for the goods, with most of the route traveled by rail, inland waterway or ocean-going vessel, and with the shortest possible initial and final journeys by road."

The intermodal transport chain, according to the definition of Prof. Muller, can be divided into five different chain levels:

- The regulatory chain structures the environment in which logistics systems are developed. The regulations are mode-specific or common to all modes and can be international (global, European), national or regional;

- The organization chain organizes the physical flow of cargo from door to door. Given that no concrete cargo is moved, this chain is virtual but essential for the efficiency of the chain. The organization of the chain includes interconnectivity elements, the (on-line) transfer of information (communications and telematics) and the contractual and control aspects, related to the physical transport of goods;

- The physical chain is the level where the cargo is transported. The chain originates at the production level (supply chain transport) and leads to the final destination (final distribution). The transport can be uni-modal (not using transit points) or intermodal (using one or more modes and requiring one or more transit points between point of origin and point of destination). To enable the physical transport of goods, there is a concrete need for infrastructure related to both the physical transport of goods and the virtual transport of the accompanying information

- The product handling and control chain is an important aspect of intermodal logistics efficiency. Increased efforts towards standardization and unitization as well as more complex requirements of the packaging material, including the prevention of damage make this an important aspect of logistics;

- Finally, there is the service chain, supporting the concrete realization of the physical transport. On the one hand, there is the financing and assurance sector where complex logistics requirements generate the need for innovative techniques and concepts. On the other hand, there is the continuous expansion of logistics integration in the industrial processes (outsourcing non-core business) that created a new sector of third party logistics, specialized in VAL and integrated logistics as catalysts for logistics efficiency and quality.

Analysing intermodal transport from the 5 level chain perspective offers the best opportunity to evaluate the needs for BiH to develop intermodal and combined transport (the latter being a special type of intermodal transport). Furthermore, this integrated approach enables the integration of EU transport objectives into account.

(2) New Transport Policy Framework in Europe

The European Commission sets forward three main focal points in their transport policy, summarized in Figure 5.3.

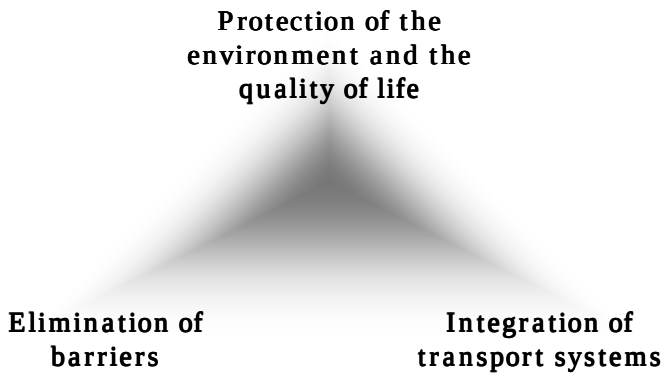


Figure 5.3 Focal Points of the Common Transport Policy

The first focal point is **the elimination of remaining barriers**, via the facilitation of border crossings, reduction, and standardization of document flows (including the use of paperless communication) and the development of international networks (Trans European and Pan European Networks).

The second important target is the **protection of the environment and the quality of life** for citizens. The main policy tools in this respect are the introduction of emission standards, the creation of a citizen's network and the promotion of environment friendly transport modes. Finally, the third important point of attention is the improvement of transport systems where the attention is focused on the transit points and the use of modern technology.

The realization of these objectives is possible through the implementation of the **intermodal transport system** approach. Intermodal transport systems will ensure that a passenger or a consignment arrives safely, switching, if necessary, from one mode of transport to another in such a way that at each stage of the journey he or it uses the form of transport, which is the most efficient and best suited to the purpose. This approach will also contribute to fair pricing in transport, with the user paying for what he actually uses-which is not what happens today.

(3) Enhanced Transport Issues for European Policy Context

1) Trans-European Network for Transport (TEN-T)

At the European Council meeting of December 1994 in Essen, it was decided to give priority to the implementation of fourteen (14) large Trans-European Network (TEN) Transport projects. The development of *Trans-European-network*s for transport (TEN-T) for the different transport modes constitutes an important part of the implementation of the Commission's Common Transport Policy (CTP). The Trans-European transport network should be established gradually **by the year 2010**, by integrating land, sea and air transport infrastructure networks throughout the Community.

The TEN-T network for roads is covering the entire Europe and several important TEN-T connections run through the region from north to south and east to west. A priority objective of the TEN-T policy for roads is to increase the interoperability of national networks. The TEN-T for rail transport will connect in time all important industrial sites in Europe, being serviced with daily block-trains linking the railway infrastructure to the other transport modes in the region. This is one of the two priority objectives of the TEN-T for the railway sector (excluding the high speed train network). The TEN-T for the inland waterway transport links waterway network and inland ports because from North to South and from East to West and interconnects with the Trans-European routes of the other transport modes.

2) Pan-European Transport Network

Around 2010, by which time the priority projects for the Trans-European Transport Network be complete, a far larger European Union expanding eastwards may emerge. Five countries in Eastern Europe, Poland, the Czech Republic, Hungary, Slovenia and Estonia, plus Cyprus, are currently negotiating the terms of their accession to the Union. The European Commission has long recognized the imperative of improving transport infrastructure between the Union and Central Europe after five decades of neglect.

There will not really be open borders and free movement of persons and goods unless the roads, railways, airports and ports in these countries are modernized. The Commission therefore called for a continent-wide European transport network to meet the needs of the 21st century, and announced a five-point action plan aimed at building a continent-wide transport network, covering the countries of central and eastern Europe, the European countries of the former Soviet Union and the EU's partners in the Mediterranean. The Commission would put forward a multi-country program for extending Trans European transport networks (TENs) to Eastern Europe via the establishment of a Pan-European Network Partnership, to bring together all those with a role to play in developing the network: the Union, Member States, the other countries concerned, the international financial institutions and the private sector.

In the run up to the Pan-European Transport Conference in Helsinki in June, and as the Union prepares for enlargement, it is important to consider how transport links should develop. The Commission has highlighted five themes for action:

- Fixing the Pan-European Corridors and Areas as a framework for ensuring efficient transport services with all EU neighbors. The Commission will continue to encourage all European countries, the international financial institutions, and the private sector to make every effort to complete the corridors and will now look to achieving a similar practical approach to transport investment in the Mediterranean Basin.

- Preparation for extension of the Trans-European Transport Networks to the applicant countries as part of the pre-accession process.

- A common European approach to transport technology throughout the Pan-European network

- The encouragement of intelligent transport technologies (e.g. the application of computer technology, automatic signaling) throughout the network

- Closer cooperation on research and technology.

Action is currently based on nine (9) transport corridors in Central and Eastern Europe. International financial institutions have supported efforts to finance transport infrastructure development along these corridors.

So far, mainly for pragmatic reasons, the corridors have principally covered road rail and, to a limited extent, waterways (the Danube). But it is clear that the corridor concept is not entirely appropriate for areas such as the Black Sea and its connections to the Aegean, the Arctic region of Europe or the Mediterranean Basin. These areas need special attention in order to determine the optimal mix of links, shipping and aviation facilities.

In 1996 the Commission already started a process of Transport Infrastructure Needs Assessment (TINA) to oversee and coordinate the development of an integrated transport network in 11 applicant countries (the six listed above plus Bulgaria, Latvia, Lithuania, Romania and Slovakia). The idea is to co-ordinate infrastructure projects in these countries with those implemented in the EU, with a view to extending the Trans-European Transport Network to the new Member States in future. In June 1998 the TINA group (comprising top officials from the 26 countries involved in the project - the 15 EU Member States plus 11) agreed an outline network and approved this in its final report a year later in June 1999. This network comprises:

- 18,030 kilometers of roads
- 20,290 kilometers of railways
- 38 airports
- 13 sea ports
- 49 river ports

The cost of the work will be about € 90 billion between now and 2015. The Commission is already giving assistance to the countries of Central and Eastern Europe under the PHARE programme, € 1 billion to date for transport projects in those countries. The European Union's instrument for pre-accession aid (ISPA), created to help these countries bring their systems up to EU standards before they join, will give them € 500 million or so a year to develop their transport infrastructure, and the European Investment Bank will also increase the loans it provides to this end.

3) Standardization

The Common Transport Policy (CTP) aims among others, to increase the participation of railways in European transport. The Community shall embark upon any activity which may prove necessary in order to ensure network **interoperability**, particularly in respect of the **harmonization of technical standards**.

In 1985, the heads of state and government of the European Community's Member States launched a huge undertaking that was designed, by 1 January 1993, to eliminate all remaining obstacles to freedom of movement between them and so finally complete the grand design of the Single European Market that took so long to achieve. In technical terms, Europe's transport sector had to standardize standards, which were often incompatible. Harmonization was also needed in social, environmental and safety matters to minimize the risk of distorting competition (more control on safety and environment costs more in terms of equipment and workforce than in situations where far less stringent rules apply). The harmonization process is still on-going and the Commission continues to put proposals on these matters to the Council of Ministers.

The efforts in standardization concentrate on the technical aspects of transport, including the standardization of information exchange within and between transport modes. While the technical aspect is "easy" to solve and substantial progress is made, the problem of standardized information exchange proves much more difficult to find sustainable solutions. All parties involved in (intermodal) transport today have their own information (operating) systems. These are used for operations, and include communications systems such as Internet, fax, and telephone. So that transport can in future be more efficient, and qualitatively better, two important conditions need to be fulfilled:

- First, the fixed reference data of the transport vehicle have to be automatically integrated into the existing operating systems; and

- Second, the transport vehicle has to notify accurately its position automatically or on demand. In other words, unaccompanied objects such as railcars or UTIs have to be provided with an artificial intelligence. This is a prime condition for the realization of a systematic intermodal solution.

Information systems for unaccompanied cargo increasingly occupy a central position in the overall concept of **traceability** (on-line information regarding the position and conditions of the cargo). They are the basic precondition that real-time error-free information can be supplied for integration into superior level systems for processing and communication.

Basically every user is free to adopt the system and technology preferred. In open transport systems, it should, however, be remembered that railcars and UTIs need to be recognized in the same language at every relevant location. When using high-frequency radio systems, the use of standard systems according to UIC (rail), ISO (container, trailer) or CEN (for swap bodies) is therefore to be recommended.

In intermodal transportation, satellite based locating systems will come into use for monitoring of wagons, locomotives, special loads, and road haulage vehicles. In closed circuits, the user is naturally free in his choice of systems and technologies. An important element is the examination of economics that could be made using these systems.

4) Environment Protection Policy

If current trends and policies continue, CO^2 emissions generated by road transport and aviation in particular will continue rising, making it very difficult to achieve the objectives of the 1997 Kyoto summit. Road transport is the biggest source of CO^2 with private cars responsible for some 50% of road transport emissions and road haulage for about 35%. While progress has been made in many sectors, transport, however, demonstrates a continued increase in CO^2 emission levels. Although innovative technologies such as hybrid cars and alternative fuels can contribute to reduce emission levels, action remains needed at this time. The European Commission published in March 1998 a report detailing measures that could enable CO^2 emissions from transport to be halved between now and the year 2010. The measures cover four basic topics, namely:

- Measures for possible fuel savings by private cars;
- Fair and efficient pricing in transport;
- Increase rail transport efficiency; and
- Measures aimed at better integration of the various modes in intermodal transport systems for both passengers and freight.

5) Fair Pricing Policy

According to two landmark documents of the Commission (the Green Paper "Towards fair and efficient pricing in transport policy" December 1995 and the White Paper "Fair payment for infrastructure use: a phased approach to a common transport infrastructure charging framework in the EU" July 1998), transport efficiency and integration can only be achieved, if infrastructure is utilized more rationally and efficiently. In practice, this means that transport infrastructure users should pay for that use and this payment should realistically reflect the impact on the environment of that transport mode (internalization of external costs). According to Commission statements, the policy does not intent to penalize any one mode of transport in particular but to charge a vehicle differently for a given distance travel, depending on the place, time, vehicle weight, pollution levels obtaining at the time, fuel consumption, etc. ("polluter pays" principle).

6) Social Protection Policy

The Council of Ministers adopted Directive 93/104/EC on 23 November 1993, organizing certain aspects of the organization of working time to protect employees'

health and safety, endangered by what the Commission considers excessively long working times, inadequate rest periods and irregular patterns of work. The directive also includes a number of other provisions on the health and safety of night and shift workers and stipulates measures to ensure that work obeys the general principle of adapting work to the worker and not the other way round.

The Commission repeatedly noted that the continuing absence of rules on working time in the transport sector constitutes a serious danger to health and safety and to fair competition in the single market. The European Commission thus put forward a comprehensive set of proposals on 18 November 1998 aimed at bringing these workers into the scope of the working time directive.

5.2.2 Intermodal Transport Development in BiH

(1) Planning Issues and Targets

In the long-term, the transport system in BiH will have to evolve towards an integrated system that efficiently links all transport modes, using a combination of combined and intermodal transport solutions. A critical development will be the creation of efficient **transit points** and the application of state of the art information technology to meet the European standards and norms.

An additional important focus point for transport development in BiH is the **Transport Acquis,** part of the Acquis Communautaire. The Transport Acquis is prepared by the staff of the Transport Directorate General of the European Commission and gives a detailed overview of the current EU transport legislation as of January 1999. Following a brief description of each transport sector, the relevant legal instruments are presented, together with subsequent amendments or modifications, giving detailed information on their objectives, scope, and key elements, with precise references. The Guide to the Transport Acquis is aimed primarily at facilitating the understanding of the Transport Acquis by the public authorities of the candidate countries.

The transport market in BiH will, at that time, see intermodal operators competing with each other across modes and increase their market share. In addition to operators specialized in carrying goods on certain modes of transport (the traditional operator), a new generation of integrated operators will provide transport services on a door-to-door basis. These operators will have a neutral view of the different modes. They will try to find the most cost-effective combination of modes and services, in such a way that it adds the most value to the entire supply chain. Their services will be tailored to respond to the needs of the end user, and will include a full control of the operations and management of the information on the goods transported from door-to-door.

In order to achieve this control, the integrated operator will either have to operate the vehicles in which the goods are carries (carrier-type) or ensure the control through the effective organization of the chain and management of the relevant information (freight forwarder-type).

Intermodality will become a quality indicator of the level of economically efficient use of the different transport modes and infrastructures, as well as a social indicator to manage the best use of environmental and social resources. The economic basis for intermodality is that transport modes, which display favorable intrinsic economic and operational characteristics, can be integrated with a comprehensive transport chain in order to improve the overall efficiency of the transport system in the competitive market mechanism.

Such transport integration between modes needs to take place at the levels of infrastructures and other hardware, including loading units, vehicles, telecommunications, operations and services and functional transit facilities. The total system to be aimed to achieve is conceptually depicted in Figure 5.4.

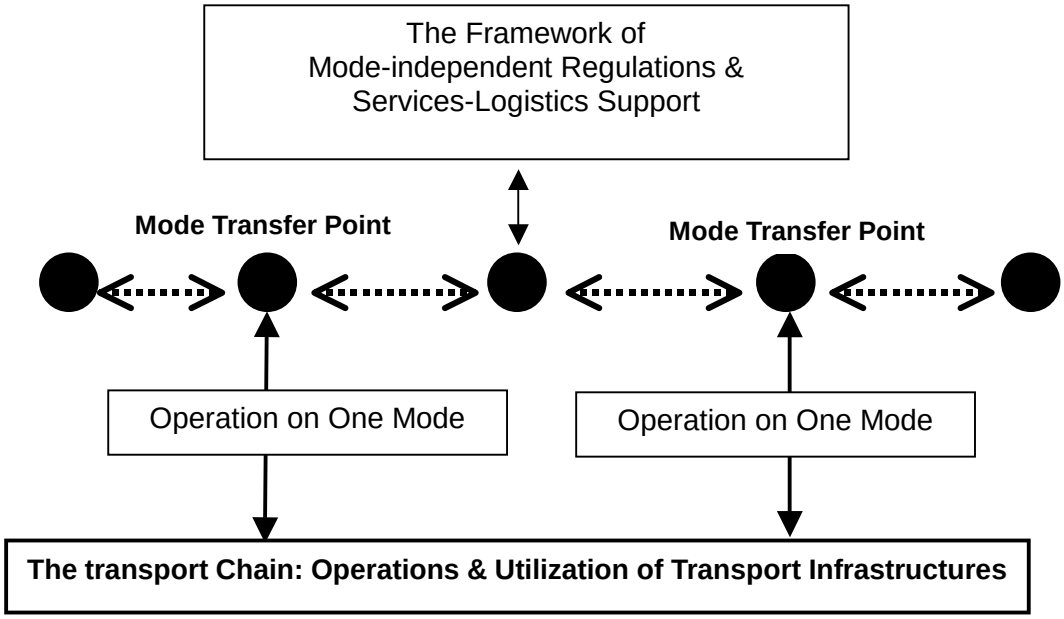


Figure 5.4 A Conceptual System for Intermodal Transport Integration

(2) Structure of Intermodal System in BiH

The development of intermodal and combined transport in BiH is thus not bound to certain transport modes. It is a trading and mobility issue in which rail, water, air and road are called on to contribute to the optimization of the whole, where they are operating new services, information and communications technologies to improve/optimize the utilization of the existing infrastructure capacity. Intermodality clearly is not about a specific modal split. However, by improving the connections between all modes of transport and integrating them into a single system, intermodality allows a better use of rail, inland waterborne transport and short-sea shipping which, do not allow door-to-door delivery by themselves, in many cases.

Based upon the analyses conducted in the framework of the Transport Master Plan, a set of locations can be identified where combined transport terminals (CTTs) and intermodal transport terminals (ITT) can be developed, as show in Figure 5.5. In a definition, the combined transport terminals, which are denoted by red circles, function to link road and rail transport on the major land-based corridors, while the intermodal transport terminal (blue circles) will link road, rail and river transport.

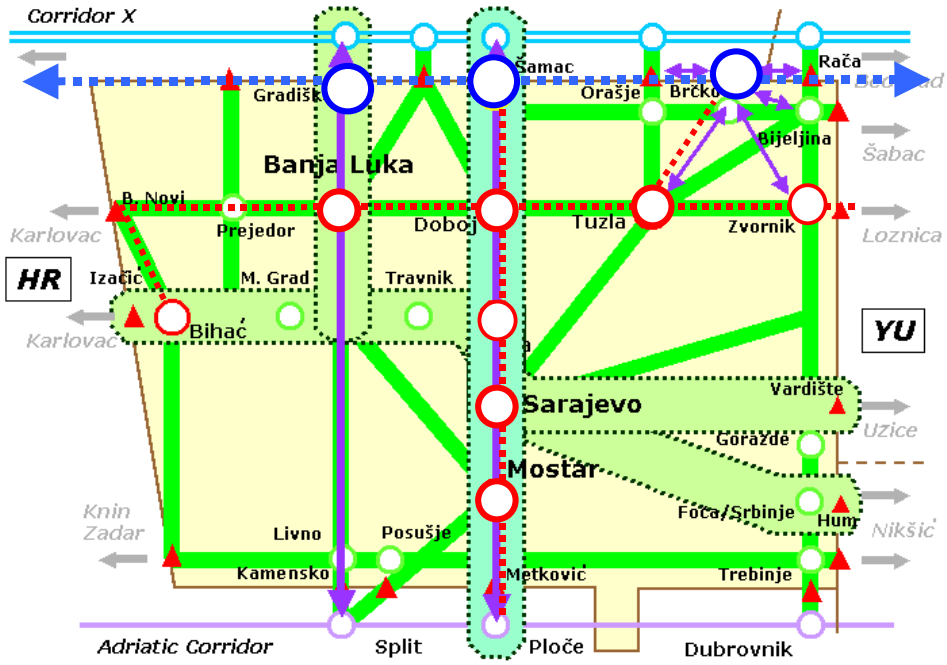


Figure 5.5 Intermodal Transport Network with Transfer Terminals of BiH

The intermodal concept for BiH will focus on intermodal transport development along the Sava River with three major intermodal transfer points, notably the ports of Brcko, Samac and, if economic development demands, the port of Gradiska (see for more details on the port functions, Chapter 5: Inland Waterway Transport, Volume 2, the Interim Report).

The second focus is on combined transport, efficiently linking the road and rail infrastructures on major connections, both north-south and east-west, namely, Mostar, Sarajevo, Doboj, Banja Luka, Tuzla, Zvornik, and Bos Novi.

On an international perspective, the intermodal transport system will be inter-connected with the three relevant pan-European transport corridors, namely Corridors VII, X and Vc. In line with these European linkages, three (3) intermodal transport sub-systems should be noted, namely:

- The Save River intermodal transport sub-system (as an East-West Axis);

- The combined transport Corridor Vc Sub-system (as the eastern North-South axis); and
- The combined transport Kamenska – Gradiska sub-system (as the western North-South axis).

These three intermodal transport sub-systems shall function as enhanced distribution axes for international and domestic freight movements in maximum use of the vested transport infrastructures.

(3) Development of Terminals and Transit Points

At the major transit points identified above, any form of transport terminals is recommended to be developed to meet requirements for transshipment activities being rendered in Europe.

In the current modally-oriented transport system, any change of mode within a journey involves a change of system rather than just a technical transshipment. This creates friction costs, which can make the intermodal transport less competitive in comparison with uni-modal haulage. Friction costs are a measurement of the inefficiency of a transport operation. They are expressed in the form of:

- Higher prices;
- Longer journeys, more delays, or less reliability on time;
- Lower availability of quality services;
- Limitations on the type of goods;
- Higher risk of damage to the cargo; and
- More complex administrative procedures.

In order to make intermodal transport attractive for the user, friction costs must be identified, quantified, qualified, and reduced to a more competitive level. At the same time, logistics services within the intermodal transport chain will need to provide added value in order to allow a level of friction costs. Terminals and transfer points in networks are particularly well suited to offering services such as warehousing, information management or product customization. The market must be able to identify and exploit these opportunities, and intermodal and terminal policy must eliminate any bottlenecks, which may operators from realizing such opportunities.

To be competitive in the intermodal freight transport market, terminals of the future must fulfill the following conditions:

- Simple, fast transshipment;
- High flexibility concerning capacity, storage capacity, terminal functions;
- Economically efficient transshipment performance;

- Integrated IT; and
- Optimal land usage.

According to the request at the terminals these can be differentiated into the following four (4) operating modes:

- Hub Terminal (Road – Rail)
- Gateway Terminal (Road – Rail)
- Transshipment Terminal (Rail – Rail or Road-Road)
- Line Terminal (Road – Rail)

Transshipment capacities as well as maximum transshipment performance further differentiate the terminals. In Europe transshipment capacity is grouped as follows:

- Small < approx. 20,000 transshipments/year
- Medium approx. 100,000 transshipments/year
- Large > approx. 250,000 transshipments/year

Several European companies have presented various terminal technologies, which, in direct competition to standard conventional technologies, can cover the demands of intermodal traffic of tomorrow. The stage of development of these technologies varies

Although there is no definitive conclusion on the "optimal" intermodal terminal, several studies indicated that the new terminals prove to be highly efficient as compared to traditional terminals. In particular, the "Compactterminals," developed by Tuchschmid (Switzerland) have demonstrated optimistic results. An example of such terminal is provided in Figure 5.6.

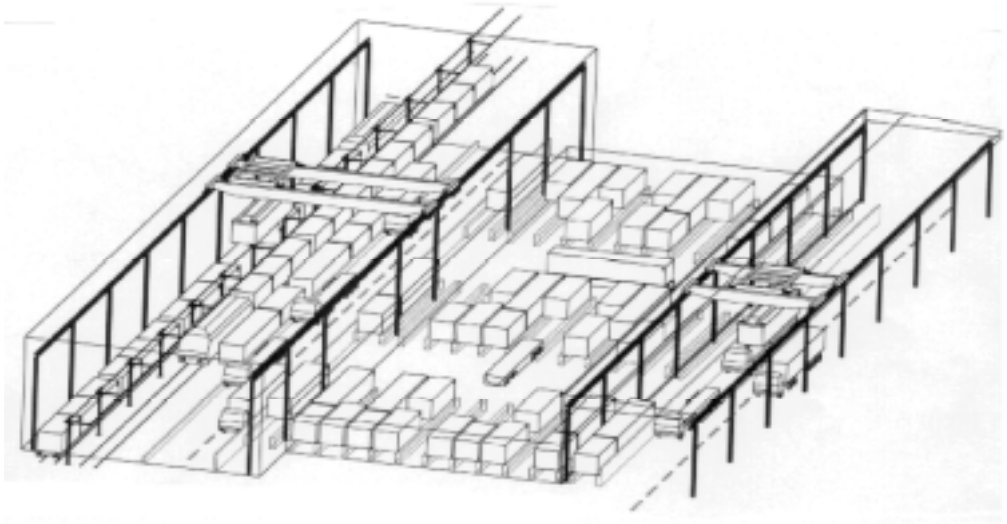


Figure 5.6 Transshipment System of the COMPACTTERMINAL

The Compactterminals achieves the objectives of competitive intermodal service with:

- Modular construction;
- Cost reduction in transshipment operations;
- Minimal container handling during process;
- High level of automation;
- Optimal use of space;
- Direct rail-rail/rail-road;
- Integrated rail wagon/load unit identification system;
- Damage elimination with vertical transfer in place of rail shunting;
- High availability by use of proved and tested components; and
- Weatherproof operation at all hours with reduced noise levels.

However, even modern intermodal terminals cannot carry all the weight of intermodal transport development, if the existing transport infrastructure for the various transport modes do not form truly effective parts of a strategic network.

5.2.3 Modal Share Structure in BiH

An accurate feature of the transport modal share structure in BiH in the past years is difficult to obtain, due to the limitation of data availability. The present situation in BiH cannot provide useful implication or practical insights into the future modal structure, because railways and inland water transportation modes have neither fully functioned, nor been normalized. Available clues for considerations, therefore, are only the 1990 situation before the war, past experiences in European countries and the road traffic

surveyed data conducted by the JICA Team in 1999. The transport demand analyses were made for each transport sector based on several assumptions and the projected socioeconomic framework.

The Study Team, based on these clues and the demand analysis of each sector, envisaged the modal share structure in the future.

(1) Modal Share of Freight Transport

Before the war, the railway-driven transport system had been organized and functioning well. For the freight transport in 1990, the railway carried a massive volume of cargo of 4,000 million ton-km. The inland waterway also functioned at ports along Sava River, carrying approximately 5.2 million ton annually to/from 5 major ports in the same year. The 1990 modal split for freight transport held a structure with road of 60.8%; railway of 34.2%; and inland waterway of 4.0%. The present and future features are depicted as shown in Table 5.2.

Table 5.2 Modal Shares of Freight Transport in BiH

(Unit: % of ton-km)

	Road	Railways	Inland Water	Others	Total
1990[*1]	60.8	34.2	4.0	1.0	100.0
2000	95.2	3.7	0	1.0	100.0
2010	83.8	12.2	3.0	1.0	100.0
2020	67.2	28.8	5.0	1.0	100.0

Source: The JICA Study Team

Notes: *1: Estimated by the JICA Study Team, based on the report from Port Master's office, Bosanski Samac HQ

At the present, as of 2000, it is envisaged that the share of railway falls down at 3.7%, while the road plays a prime function with a more than 95% share. In 2010, along with the progress of the rehabilitation of the railway system, the share of railway will rise up to 12%. Should the recommended urgent projects be done to revitalize the inland waterway, its share will resume up to 3.0%.

In the 2020, it can be assumed that the share of railway will rise up to 28.8%, while that of road will be 67.2%. It should be noted that even the road share decrease, the transport volume by roads will never decrease, but increasing at a higher rate of the GDP growth rate.

This modal split structure in BiH can be compared to the European experiences which are seen in Table 5.3, showing its historical change, and Table 5.4, showing some of selected countries. The share of railway has been gradually decreasing since 1970 in Europe, and came down to a more or less 15% level recently. The countries with the highest railway share are France at 16.9%, followed by Germany, 16.2%. Germany and Belgium have achieved a balanced intermodal share structure among road, railway, and inland waterway.

The target share of railway in BiH in 2020, that is 28.8%, seems considerably high, compared with those in other countries in Europe. However, the target is anticipated to be achievable, taking into account the following conditions:

- Most of socioeconomic activities in BiH, say, more than 70%, are located in the railway corridors. This means that the BiH economy is endowed with the preferable accessibility to railway. Even though the railway transport demands for raw material-based heavy industries be decreasing along with the industrial restructuring, new industrial activities will still locate in the railway corridors.

- Given a functional intermodal transfer system linking railways with roads and ports, freight movements will be operated with a more economic modal choice. The railway may bring its comparative advantage in the intermodal system. The road traffic survey, conducted in 2000 by the Study Team, revealed that out of all commodities being transported, about 40~50% are bulky goods such as solid minerals, petroleum products, ore sand, metal waste, crude minerals and building materials, etc., for which the railway is functionally advantageous.

- The railway transport costs/tariff structure, however, should become rational and internationally competitive through assuring the financially and commercially efficient operation management.

Table 5.3 Changes in Freight Transport Modal Split in Europe

(Unit: %)

	Road	Railways	Inland Water	Pipelines	Total
1970	47.9	32.6	11.9	7.6	100.0
1980	56.4	25.8	9.6	8.2	100.0
1990	68.0	18.6	7.9	5.5	100.0
1997	73.2	14.5	7.2	5.2	100.0

Source: Eurostat, European Union

Table 5.4 Freight Transport Modal Split in Selected European Countries

(Unit: %)

Country	Road	Railway	Inland Waterway	Pipelines
Spain	84.2	10.1	-	5.7
France	74.3	16.9	1.9	6.9
UK	84.3	9.3	0.1	6.2
Portugal	85.7	14.3	-	-
Ireland	98.1	1.9	-	-
Germany	67.1	16.2	13.8	2.9
Netherlands	47.1	3.6	43.0	6.3
Belgium	70.4	14.6	12.0	3.0

Source: Eurostat, European Union

(2) Modal Share of Passenger Transport

The future passenger's modal split was examined in a comparison only between road and railway, because the other modes such as waterway and airway are marginal, or less than 1%.

As seen in Table 5.5, the road transport will be significantly predominant in passengers, or 93% in terms of passenger-km in 2020, while the railway shares more or less 7% after the railway is adequately rehabilitated. For a reference, the average railway passenger transport share in Europe is more or less 6.0%.

Table 5.5 Passenger Modal Share between Roads and Railways

(Unit: % of passenger-km)

	Roads	Railways	Total
2000	94.6	0.6	100.0
2010	92.9	7.1	100.0
2020	93.2	6.8	100.0

Source: The JICA Study Team

5.2.4 Functionally Structured Road Network

(1) Assessment and Issues of the Existing Road Network in BiH

The public road system in BiH is formed under the three categories: (1) main roads; (2) regional roads; and (3) local roads. The main road network, which consists of 3,788 km in total, covers the entire BiH with basically a grid pattern. Even though it has severe topographic constraints, the network was formed to efficiently cover urban areas, local towns and villages. The regional road network is also efficiently formed to complement the main road network.

The objective of the road sector master plan for future BiH road system, therefore, is not for primitive level of network construction, but for how the existing network should be utilized, improved and strengthened to satisfy the future demand. It includes development of limited new road sections, yet, such new road sections should be considered as extended improvements of the existing links due to traffic congestion and topographic constraints.

(2) Present Road Traffic Demand Pattern 2000

Based on the Road Traffic Survey conducted by the JICA Study Team, the present road traffic demand pattern, as of 2000, was examined. The final number of calibrated internal vehicle trips aggregates to 88,700. If external trips are also included, the overall total number of trips for all vehicle classes in the final year 2000 matrix is 125,200 vehicle

trips indicating that 29 percent of all trips made in BiH are external (of these external trips, 45 percent are to or from Croatia and 41 percent are to or from Yugoslavia).

Of the total 125,211 vehicle trips calculated as occurring on a typical day, some 88 percent of that are by passenger cars (110,417 trips), two percent by buses (2,682 trips) and ten percent by trucks (12,112 trips) as summarized in Table 5.6.

Table 5.6 Final Internal and External Year 2000 Vehicle Trip Totals

Vehicle Type	Trip Type			Percent of Trips	Average Trip Length (km)
	Internal	External	Total		
Car	77,597	32,820	110,417	88.2	92.1
Bus	1,907	775	2,682	2.1	97.1
Rigid Truck	7,104	984	8,088	6.5	108.5
Articulated Truck	2,093	1,931	4,024	3.2	125.1
Total	88,701	36,510	125,211	100.0	94.3
Percent of Trips	70.8	29.2	100.0	*	*

Source: The JICA Study Team

(3) Future Road Traffic Demand Pattern

Applying the conventional and internationally recognized methodology and technique, the future traffic demand analysis was made to examine changes in the road traffic demand pattern in the future. The final compilation of future modal demand involves two components (a) internal trips spawned by socio-economic changes in the study area (synthesized top down and bottom up processes) and (b) external trips with at least one trip end outside of the study area.

1) Internal Trips

Future year zonal trip ends for internal trips (both trip ends within the study area) were derived utilizing the trip generation model presented in the previous report section. The future element of the macro-economic frame includes population and GRDP forecasts which reflect future land-uses and development within the study area. Two economic growth scenarios were selected for road demand testing: the base case and the high economic growth case. Economic growth (GDP), totaling 8,800 million KM in year 2000, is forecast to increase to some 22,700 million KM and 27,400 million KM by year 2020 under the base case and high growth scenarios, respectively. GDP per capita would correspondingly increase from 2,300 KM in year 2000 to 5,400 KM and 6,500 KM by year 2020 under the base case and high growth scenarios, respectively (all monetary values in terms of constant year 2000 KM).

Population and GRDP forecasts were initially entered, stratified by zone, into the "bottom-up" regression equations. This approximates a relative shift in trip making among study area zones based on changes in residential distributions as well as economic

evolution. Subsequently, "top down" controls based on European vehicle ownership-income relationships were applied to superimpose an absolute change on trip-making propensity based on forecast levels of vehicle ownership. The results of the future internal trips with the high growth scenario are summarized in Table 5.7.

2) External Trips

A recently study examined in detail existing, and forecast, levels of passenger and cargo activity in eastern Europe[1]. Forecasts in traffic levels to year 2015 considered economic growth (low, moderate, high); infrastructure development; and, speed of harmonisation of transport markets. In summary, growth in international (as opposed to domestic) demand was estimated at around 5-6 percent per annum.

External traffic is important in the context of the BiH road transport. However as well as the external influences, domestic considerations will be important in determination of external traffic. The proportional split in external traffic is therefore linked to the growth in domestic potential for development.

External trips are shown as increasing from 36,500 in year 2000 to 71,600 and 96,000 trips in 2020 under base and high growth economic scenarios, respectively. Thus, total internal plus external trips are forecast to reach 305,000 per day in year 2020 under the high economic growth scenario, as shown in Table 5.8.

In a comparison, the number of daily vehicle trips in 2020 will become 2.4 time as large as that in 2000, growing at a 4.6% per annum.

[1] *Traffic Forecast of the Ten Pan European Corridors of Helsinki*, for European Commission, by NEA Transport Research and Training, et. al., August, 1999.

Table 5.7 Forecast Internal Trips by Vehicle Type: High Growth Scenario

Vehicle Type	Precinct	Internal Daily Trips by Year			
		2000	2005	2010	2020
Car	FBiH	45,528	65,742	83,295	109,949
	RS	29,666	39,485	48,014	71,599
	Brcko AD	2,404	3,387	4,248	5,582
	Total	77,598	108,615	135,557	187,130
Bus	FBiH	1,130	1,136	1,209	1,283
	RS	745	747	759	775
	Brcko AD	35	35	37	39
	Total	1,910	1,918	2,005	2,096
Rigid Truck	FBiH	4,151	5,214	6,387	8,424
	RS	2,762	3,569	4,447	6,310
	Brcko AD	191	242	298	401
	Total	7,105	9,025	11,131	15,135
Articulated Truck	FBiH	1,172	1,670	2,109	2,753
	RS	880	1,165	1,419	1,844
	Brcko AD	42	59	73	97
	Total	2,094	2,894	3,602	4,693

Source: The JICA Study Team
Notes: totals may differ from earlier presentations due to rounding.

Table 5.8 Road Traffic Demand Forecast: Total Trips

Trip Type	Vehicle Type	Daily Vehicle Trips by Year				
		2000	2005	2010	2020	2020 High
Internal	Car	77,598	106,619	126,753	156,148	187,130
	Bus	1,910	1,918	2,003	2,087	2,096
	Rigid Truck	7,105	9,018	10,673	13,489	15,135
	Artic Truck	2,094	2,846	3,377	4,145	4,693
External	All	36,513	49,288	58,330	71,616	96,014
Total		125,218	169,687	201,136	247,485	**305,068**

Source: The JICA Study Team

(4) Functional Road Classification

The road network classification of main, regional, and local roads is regarded as a administrative or jurisdictional classification, which focuses on responsibility of maintenance and development of the roads. In contrast, the road classification by function is the indicator of importance of roads for planning/design purposes.

The functional classification of roads typically consists of four major categories: 1) Primary Arterial Road; 2) Secondary Arterial Road; 3) Collector/Distributor Road; and 4) Local Road. As a countrywide transport master plan, BiHTMAP will put higher focus on primary arterial road network.

The primary road system in BiH has two important functions. The first is to ensure the social and economic development in each of the Entities. The second is to ensure the freedom of movement of persons, goods services and capitals throughout BiH without any impedance, which is a requirement of the Constitution. These two functions must be included in both inter-Entity connections and intra-Entity connections. The policy to satisfy these functions must be kept in the analysis of primary road network identification.

The primary arterial network was sub-divided into two categories, Primary I and Primary II for highlighting their roles and to identify efficient primary arterial system for entire BiH region. Primary Arterial I (International Routes) are defined as coinciding with the existing E-Roads and **Corridor Vc** designations.

(5) Establishment of Priority Corridors

To efficiently connect the hierarchical urban centers, priority transport corridors were identified as shown in Figure 5.7. The thick green lines show the category of **Primary I (International Route)**, and the thinner green lines show **Primary I** category for entire BiH. Primary I (International Routes) corridors consist of three major east-west links and three major north-south links.

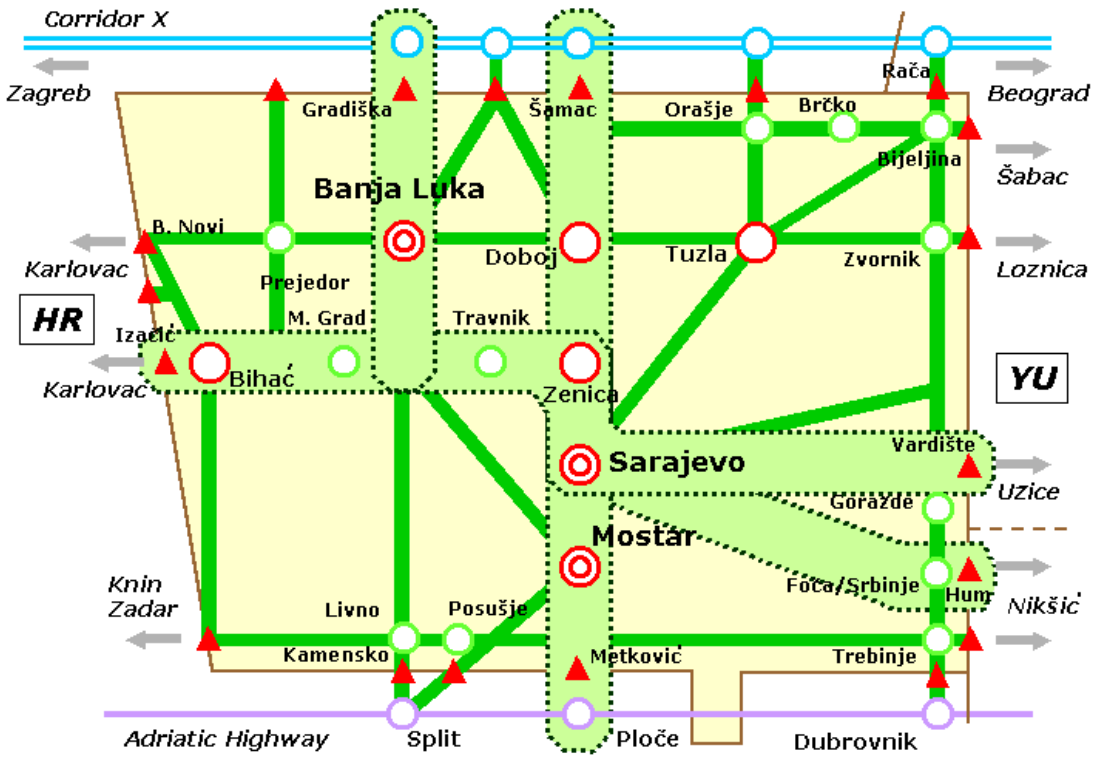


Figure 5.7 Priority Transport Corridors

Figure 5.8 shows Primary I (International Routes), Primary I and Primary II corridors on the actual network. On the actual network these corridors will share some part on the existing roads.

(6) Governmental Administrative Responsibility

Article III of the Constitution provides that the regulation of inter-Entity transportation is the responsibility of the state-level institutions of BiH. It also provides that all governmental functions and powers not expressly assigned in the Constitution to the state-level institutions of BiH shall be those of the Entities. In the respect of these provisions it is clear that economic development and its planning authority in the territory of each Entity remains in each Entity governments. Since road network is an important tool for the economic development, the authority in road development and maintenance is the right and responsibility of the Entities in this respect.

Figure 5.9 shows the proposed governmental administrative responsibilities for the functionally classified road system.

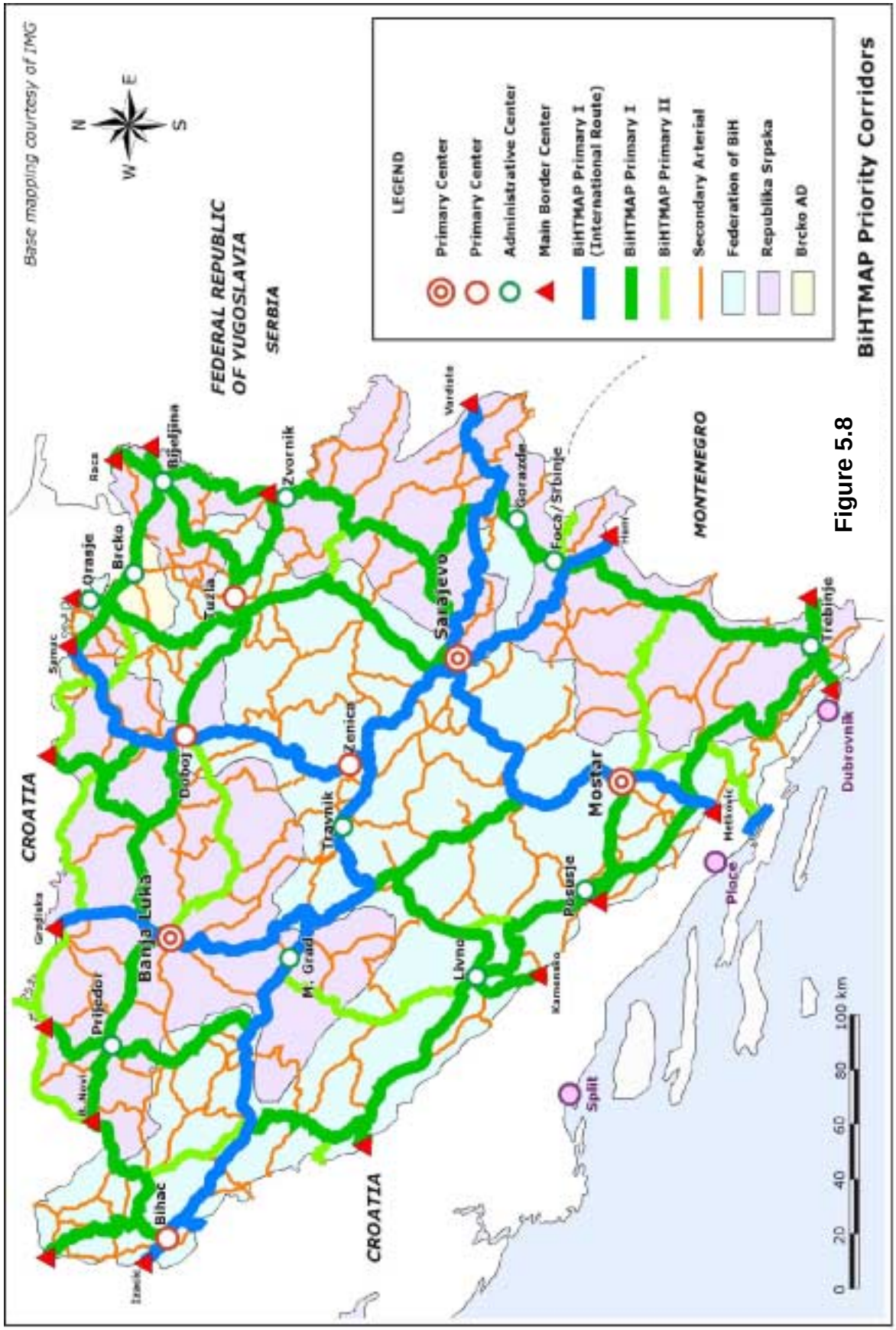

BiHTMAP Priority Corridors
LEGEND
Primary Center
Primary Center
Administrative Center
Main Border Center
BiHTMAP Primary I (International Route)
BiHTMAP Primary I
BiHTMAP Primary II
Secondary Arterial
Federation of BiH
Republika Srpska
Brcko AD
Base mapping courtesy of IMG
N
S
W
E
FEDERAL REPUBLIC OF YUGOSLAVIA
SERBIA
MONTENEGRO
CROATIA
CROATIA
Sarajevo
Banja Luka
Mostar
Zenica
Tuzla
Doboj
Travnik
Bihac
Prijedor
Bijeljina
Zvornik
Foca/Srbinje
Trebinje
Dubrovnik
Ploce
Split
Posusje
Livno
M. Grad
Orasje
Brcko
Gradiska
Raca
Vardiste
Gorazde
Hum
Kamensko
0
20
40
60
80
100 km

Figure 5.8

	Current Administrative Responsibility		Proposed Responsibility and Function				
	Main Road	Regional Road	Primary I (Int'l Routes)	Primary I	Primary II	Secondary	Border Facilities
State/ Public Corp.			◎	○	○		○
Entity (RS)	◎	◎	◎	◎	◎	◎	◎
Entity (FBiH)	◎		◎	◎	◎		◎
Canton (FBiH)		◎				◎	

Source: JICA Study Team

◎: Responsibility
○: Coordination for Inter-Entity Connections (Design Standard, Improvement Timing, etc.)

Figure 5.9 Proposed Administrative Responsibility

Table 5.9 shows the length of Primary I and Primary II for each responsible Entity.

Table 5.9 Length of Primary Arterial Network by Entity

	FBiH	RS	BR	Total
Primary I (Int'l. Routes)	526 km	469 km	---	995 km
Primary I	981 km	943 km	29 km	1,953 km
Primary II	517 km	578 km	---	1,095 km
Total	2,024 km	1,990 km	29 km	4,043 km

Source: JICA Study Team

5.2.5 Efficiently Modernized Railway System

(1) Planning Issues

The railway system in BiH has not been functionally recovered yet from the critical war damages in terms of its infrastructures, facilities and equipment and operational systems. Since the Dayton agreement in December 1995, the peace has been maintained and the reconstruction and rehabilitation works in the transport sector started over the entire country, however, the railway system has been left unable to meet the demands for passenger and freight transportation. As an essential transport mode incorporated into the entire intermodal transport system, the railway transport should be first rehabilitated

and re-functionalized, then innovated in such a manner that the railway can be sustainably operated at a commercial basis, as part of the European railway network.

The railway shall assure more economically feasible transport services for each Entity, between Entities and among the countries and her European neighbors, strengthening trade relations with neighbors and other areas of Europe, and provide a base for market-oriented transport activity. Hence, the planning issues of the railways are summarized as follows:

- The railways shall contribute to recover an efficient economic structure of BiH, thereby strengthening economic relations with customers in and around BiH.
- Development and strengthening of transport network linkages with EU countries will be fundamental, because BiH will be, in the long run, integrated with the international as well as the European economy
- The railway operation system shall be restructured in the medium-term to be competitive in the market-oriented economy.
- Viewing the longer-term beyond the target year 2020, the railway activities and its traffic demands are influenced more greatly by the European economy. At the same time, the operational system of the railways shall be further technically modernized so as to meet the European standards and norms.

(2) BiH Railway Network and Strategic Corridors

The BiH railway network with a total of 1,031 km long is connected with the strategically important seaport of Ploce and the river ports of Samac and Brcko along Sava River, thereby providing the north-south trunk railway corridor linked with the Mediterranean Europe and the Southeast Europe along the Danube River. This corridor is recognized as "**Corridor 5c**". Another East-West railway trunk corridor is, so called **Parallel 10,** provides transport linkages with the Croatia and Yugoslavian economies. Thus, the most important trunk lines are:

- Corridor 5c: Samac-Doboj-Sarajevo-Mostar-Capljina-Ploce (the Port Ploce at the Adriatic Sea in the Republic of Croatia);
- The Parallel Corridor 10; the transversal railway line Zvornik-Tuzla-Doboj-Banja Luka - Novi Grad Bos. Novi - the Republic of Croatia;
- Banovici-Tuzla-Brcko; and
- Dobrljin – Novi Grad, Bos. Novi-Bihac-Martin Brod-Knin, the Republic of Croatia North South direction.

The route of the lines is predominantly hilly, with 174 tunnels (the total length of 50.5 km), 399 bridges (the total length of 15.3 km), and many sharp curves and steep gradients.

Under the centralized planned economy, the railway had historically been functioning as a predominant transport mode to support the heavy industries as well as the mining and quarry industry. These activities are mostly located along the railway corridors. These industrial activities, eventually, encouraged urbanization process in major urban centers along the railway corridors. It is estimated that more than 70% of the total human settlements are located in the railway corridors. Thus, the BiH railway network structures the backbone of the BiH economy.

(3) War Damage and Reconstruction

Since the end of the former Yugoslavia era, the railway system had been deteriorated due to lacks of investment for the procurement, renewal and maintenance. During the war period of 1992 – 1995, most of the important bridges were pulled down, the railways tracks were mined, railway building were demolished, and the greater part of rolling stocks were either destroyed or severely damaged, including essential facilities and equipment for assuring the safe operation. A total of 14 bridges have been destroyed, of which the most important are those over the Sava River near Brcko, Bosanski Samac, and Bosanski Brod.

Moreover, fatal damages were on business buildings, railway station buildings, storehouses, management buildings, workshops, and the other building. A total of 311 construction facilities have been completely destroyed or damaged. According to the information from RPC, the aggregated value of direct damages by the war is estimated at US$1,000 million.

Since the end of hostilities, transport improvement programs have focused on the immediate alleviation of physical war damages and the reactivation of basic transport services and facilities. To this end, significant improvements to transport infrastructure have been achieved, mainly within the framework of the Emergency Transport Reconstruction Project with supports provided by the EBRD, the World Bank, the European Union, SFOR and other bilateral donor institutions.

(4) Future Railway Transport Demands

The result of the railway freight transport demand forecast indicates that the railway freight transport demand will be 2,049 million ton-km in 2010, which is as about a half of the transport volume as in 1990. The demand will be 4,437 million ton-km in 2020, which is about 10 % bigger than the 1990 level. Figure 5.10 shows a comparison between the former projected potential demands and the most-likely realizing demands. This gap will appear up to 2020, due to the practical rehabilitation and improvement period until its full operation.

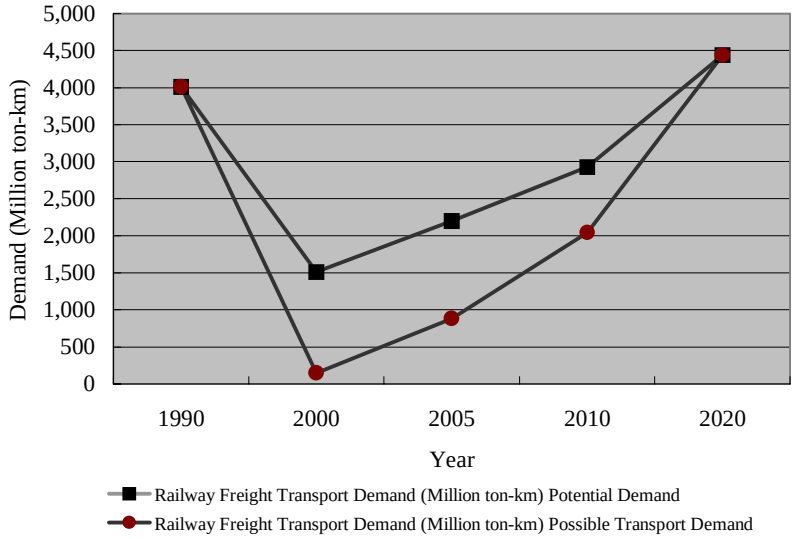


Figure 5.10 Future Railway Freight Transport Demand

With regard to passenger transport, it was assumed that railway passenger demand would recover to the 1990 level in 2020, should appropriate improvement of the railway service be made. In 2005 and 2010, the recovery ratios would be 40 % and 70 % respectively.

Table 5.10 Future Railway Passenger Transport Demand

	1990	2000	2005	2010	2020
Railway Passenger Transport Demand (Million pax-km)					
Potential Demand	1,382	51	1,382	1,382	1,382
Realization Ratio	-	-	40%	70%	100%
Possible Transport Demand	1,382	51	553	967	1,382

Note: Railway passenger-km in 2000 represents the number in 1999.

(5) Concepts of Railway Transport Development

1) Necessity of Integrated Approach

The railway transportation is an integrated system with three essential elements: 1) the network connection; 2) the safety system; and 3) the proper operation. Without either one out of the three elements, the railway system could not healthily function. The current condition of the railways in BiH is assessed to be far from the healthy condition. They lack their continuity, communication systems, signal systems, level-crossing security systems, and necessary maintenance backup. Because of lack of such an integrated approach to rehabilitation, despite that tracks are physically operable, they have extremely low capacity of traffic operations and a low running velocity of trains from 30 to 70 km/h, which cannot bring the benefits of the railway transport, thereby resulting in less demands.

2) Better Operation with Railway Connection with Neighboring Countries

The Railways in BiH are physical connected with the neighboring countries, the Croatian and Yugoslav railways. For better operation of the railway network, the following technical considerations need to be taken with special emphasis:

- Rehabilitate railway bridges over Sava River nearby Bosanski Samac as the most significant connection between the BiH and Croatian Railways;
- Put into operation line Bihac-Knin-Split (over Bosanski Novi (Novi Grad));
- Increase the level of track and rolling stock maintenance that requires procurement of necessary machinery;
- Facilitate relevant activities to the gauge renewal in critical sections;
- Carry out rehabilitation of the signaling-safety and communication systems;
- Operate and manage border stations for Croatia and Yugoslavia individual operations.

(6) Phased Development Scenarios

There still remain a tremendous number of works to fully recover from the current damaged railway system and to functionalize it as one of essential transport alternative modes to meet the economic development in BiH. To this end, enhanced efforts should be made in a phased manner with three stages as follows:

- Phase I (up to 2005) is recognized as "*the normalization period*", when all efforts should be made to recover from the current deficient situation and normalize its entire system.
- Phase II (2006 ~ 2010) is regarded as "*the transportation recovery period*", when the credibility of the railway transport is resumed, thereby exploiting more passengers as well as freight traffic demands.
- Phase III (2011 ~ 2020) is conceptualized as *"the functionally strengthening period"*, when the BiH railway system should be further strengthened in its technical, operational and managerial facets in such a way that the railways in BiH can play a significant role as part of the Pan European Network System, sharing the European norms, regulations and standards for the commercial operations.

A general task flowchart of the railway infrastructures, facilities, and equipment is proposed based on the phase scenarios discussed in the preceding section, as shown in Figure 5.11. The flowchart shows necessary task items, timing of the implementation and functional relationships between items. Since the railway system is a total technical system, each element of the tasks can be neither separable nor independent. Therefore,

those works for the improvement should be implemented with keeping the mutual linkages.

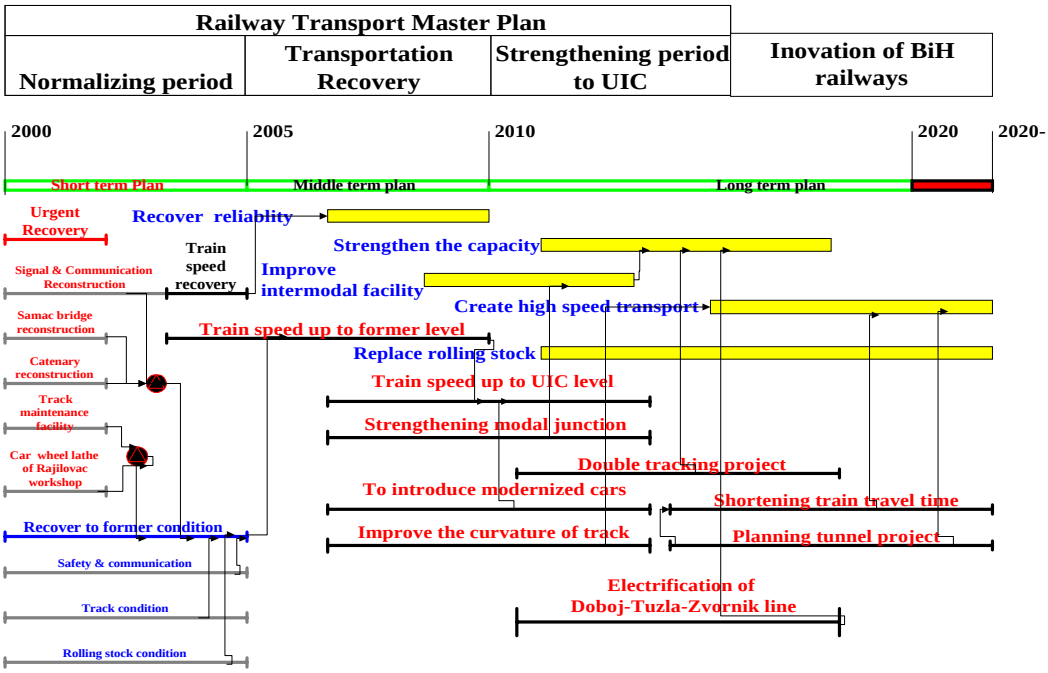


Figure 5.11 Task Items of Reconstruction and Improvement

(7) Urgent Improvement Program

The urgent program is the most important step affecting the progress in all the phases. Figure 5.12 presents an overall picture with crucial work components to be undertaken in the urgent program and their mutual relations.

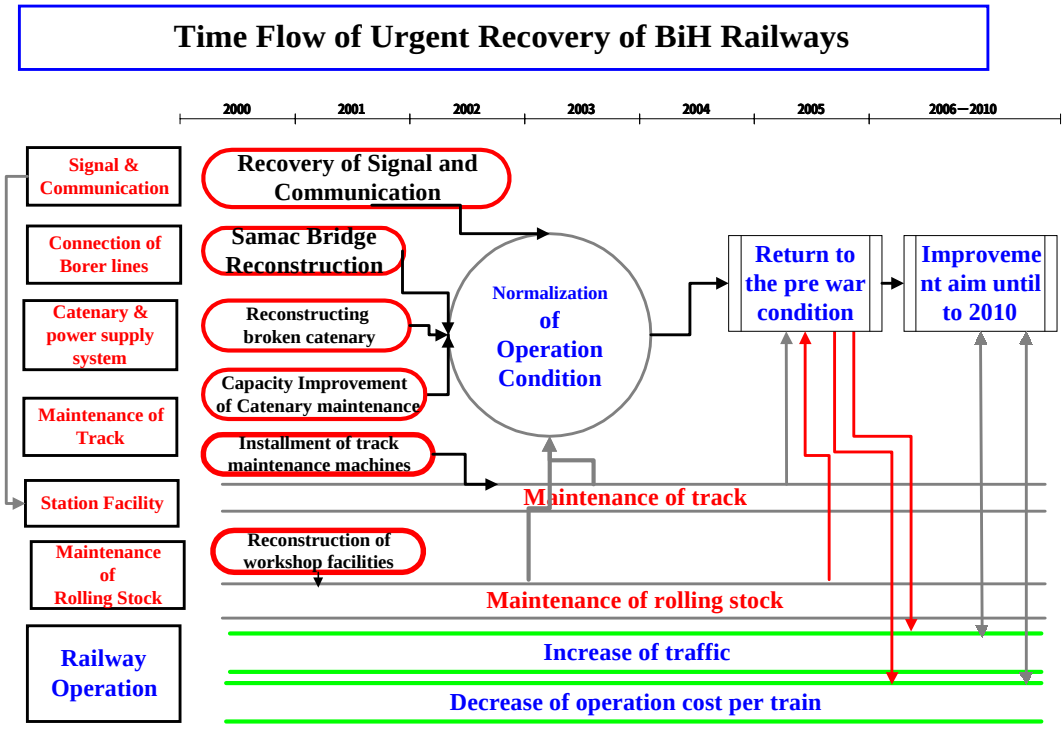


Figure 5.12 Urgent Recovery Flowchart of the Railways in BiH

Out of the urgent program, the following actions for the rehabilitation need to be immediately undertaken.

- Reconstruction of Signal and Communication Systems
- Samac Bridge Reconstruction
- Recovery of Disconnected Catenary System
- Installation of machineries required for maintenance of track and rolling stock

(8) Institutional Issues to be Tackled

Several institutional aspects still remain in order to restore the railways in BiH. The following issues are particularly important to be addressed.

1) Strengthening of Absorptive Capacity

Massive investments will be required to rehabilitate and further improve the entire railway systems, including not only the infrastructures but also maintenance facilities and equipment. For this, concessional loans and/or grant funds need to be accepted from international donor organizations. It must be a focal issue whether or not the BiH railway organizations will be able to implement the projects/programs smoothly and properly as planned and expected. Therefore, important is to strengthen the BiH railway organizations' absorptive capacity to reply for those funds.

2) Structuring of a Commercial Based Operation System

The railway needs to be operated on a commercial basis, as a reliable and economically advantageous transport mode both for freight and passenger movements. The entire transport system should be geared with the economic reforms towards the market-driven economy. All transport modes, therefore, should be competitive in provision of transport pricing and quality. The railway is the most important case. Innovative changes and reforms are necessary to make the railways in BiH more operationally rational and internationally price-competitive.

3) Raising up transport speed and increasing the efficiency

From the both aims of increasing customers and decreasing operation cost, transport speed and rotation efficiency should be aimed for. By shortening the transport time, freight and passenger can be increased as shown in the world railways. At the same time, the rotation of rolling stock and operation staff can be improved including terminal treatment of loading/unloading and cleaning services, etc. They will contribute to the reducing operation cost directly.

4) Integrated Operation for Borderless and Seamless Transportation

In order to strengthen the competitiveness of the railways, it should be operated in such an efficient manner that the railway's strength can be activated, namely the longer haulage, the more cost-advantageous. European experiences suggest that the railway transport demand is considerably stable for the service with more than 1,000 route-km operation. For the commercial operation point of view and taking into account the importance of international transport relations with neighboring countries, the railways of ZBH and ZRS should be collectively operated in an integrated manner to provide borderless and seamless transport services.

5) Integration of Developing Railway Technology

Technological development for the modernization should be further pursued at the same level for both ZBH and ZRS. The both railways need to gradually apply the European technical standards for infrastructures, facilities and equipment for the safety system with the same timing.

6) Pursuance of Privatization Policy

As a measure for more efficiently commercialized operation of the railway based on market mechanism, some models of privatization schemes should be further explored for services such as passenger services, cargo handling services, maintenance of facilities and rolling stock, station building management, communication services and other rail-related and off-rail business. Several alternatives can be conceivable for the model schemes such as a BOT type and a concessionaire system.

7) Education and Training

An enhanced education and training function should be restored and/or re-strengthened for the railway staffs and management. Without a well-organized continuing education and skill refreshment training system, the railways could not be operated and managed as a reliable transport mode.

At the same time, integrated technical faculty should be enforced to be settled. Nowadays fundamental technical problems and new projects will appear for innovation of railway transportation in BiH.

It is recommended that this most important task needs to be attached to the Railway Public Corporation (RPC).

5.2.6 Internationally Standardized Air Transport System

(1) Planning Issues

The last decade has seen an increasing trend of privatization and deregulation taking place within the European aviation sector. This has led to increasing competition between airports as they seek to attract airlines to use their facilities. Furthermore, competition has increased over shorter distances as transport links have been improved for other modes. At the same time, there has been an increasing demand for passenger air travel as countries get more affluent and the price of airfares has reduced, in real terms.

Bosnia and Herzegovina has four (4) main airports, all of which serve international air traffic. In addition, there is competition from neighboring countries i.e. the airports of Zagreb, Belgrade, Split, and Dubrovnik. Accessibility to airports is also important. Figure 5.13 shows a series of concentric rings, between 100 and 300 km in radius, around the four airports of BiH. This illustrates the competition for air traffic within the country. The proximity of the main airports to each other, and the relatively small size of the country, will mean that there are unlikely to be significant levels of domestic air traffic.

Figure 5.13 Airports in BiH and Location Density

(2) Historic Traffic Rates

Total passenger volumes for BiH as a whole, in 1999, were approximately 340,000. In the same year, Sarajevo catered for 304,000 passengers (or 89% of the total), and it's average over the last four years was 280,000. This is as a direct consequence of its historic role as a secondary airport in the former FYR and it's present role as the capital of BiH.

The situation in the remaining airports is a little more complex. Historically, these airports have served a lesser role. Banja Luka and Tuzla are former military airfields and, thus, are new entrants into the international air market. Evidence from Mostar shows something different with volumes of almost 100,000 passengers recorded, mainly religious pilgrims in the early 1990's. It is noted, however, that all flows at the three smaller airports have been partly constrained due to air navigation equipment and other limitations.

(3) Future Passenger and Cargo Flows

Forecasting future air traffic growth is difficult because of the transition process that has taken place and because some of the airports are only now beginning to commence civilian operations. Possible growth trends for BiH will depend, in particular, on it's greater integration within Europe as a whole.

Based on air traffic flows for other Eastern Europe countries, the total passenger volume for BiH as a whole, in 2020, was forecast. GDP per capita forecasts for BiH, made by the JICA Study Team, were utilized and price elasticities were also taken into account. It was estimated that the total volume of air passenger traffic, in the year 2020, will be approximately **1.55 million** in the high economic growth case. For the base case economic growth forecasts, the total passenger volumes forecast, is 1.01 million in 2020.

Based on known traffic at Sarajevo Airport, and after deducting traffic relating to current military and humanitarian agency personnel, reasonable traffic growth rates and income elasticities were applied to produce a passenger forecast for the year 2020, for Sarajevo Airport. The remaining traffic for the country as a whole was split by other airport on the basis of approximate population catchment areas, taking into account accessibility to Sarajevo Airport.

For both Tuzla and Sarajevo Airport, growth rates based on worldwide indicators were applied to base 2000 cargo flows to produce forecast flows for the year 2020. Some account was taken of current levels of military and humanitarian agency cargo flows. For Banja Luka, the forecast figure for the airport's own master plan was adopted for this study. A similar figure was used for Mostar. The resulting forecast passenger and cargo flows are shown in Table 5.11.

Table 5.11 Forecasted Passenger and Cargo Flows by Airport, 2020

	2020 passengers (low growth)	2020 passengers (high growth)	2020 cargo (tons) (low growth)	2020 cargo (tons) (high growth)
Sarajevo	660,000	1,000,000	5,000	28,750
Banja Luka	150,000	250,000	1,800	3,250
Mostar	100,000	150,000	1,800	3,250
Tuzla	100,000	150,000	7,500	43,000
Total	**1,010,000**	**1,55,000**	**16,100**	**78,250**

Source: The JICA Study Team

In order to consolidate its position, Sarajevo Airport needs to organize and develop an alternative airport within Bosnia Herzegovina. The most logical choice would be Mostar Airport, which was an alternative during Winter Olympics of 1984. Visoko Airport, which is nearer, should be considered in the long-term, when economic conditions greatly improve and after cost-benefit studies are carried out.

(4) Air Navigation Services

With respect to the air navigation services for BiH, reference is made to the summary of discussions of the Second ICAO Meeting on Air Navigation Services for Bosnia and Herzegovina on 13 and 14 September 2000. The meeting was attended by all parties

concerned i.e the BiHDCA, the Croatian Civil Aviation, the Federal Republic of Yugoslavia Civil Aviation, EUROCONTROL., IATA, ICAO, OHR and SFOR.

On the basis of the above meeting, it is considered that all air navigation services issues have been solved in principle for the long term. Implementation constraints (of the agreed airspace / ATC services) with respect to civil/building, equipment, training, licensing, etc, requirements to be left in the capable hands of specialized international organizations such ICAO as subject matters are highly specialized. Funding of projects to implement the recommendations is considered as a priority project in the air sector plan.

(5) Infrastructure Plan and Priority Investment Projects

The major observation from site investigations is that the main infrastructure elements at airports are now in place. However, moderate investments would increase the operational **capacity** of airports and improve **safety**, which is of utmost importance. These limited improvements concern, primarily, navigational aids and, for example, the provision of an aircraft apron at Tuzla to increase its operational capacity.

The investigations indicate that most of the airports have sufficient capacity, after some moderate improvements, to cater for these volumes, although some additional investment may well be required, towards the latter part of the master plan time horizon, particularly at Sarajevo and Banja Luka Airports.

At the master plan level, the issue of developing smaller airports is of lesser relevance. The Study did not make an extensive survey of the requirements of all small airports within the country. However, it is recommended that a feasibility study should be carried out to identify the airports needing investment, in order to ensure safe general aviation operations, and to stimulate regional commitment and development.

Training is considered to be a priority issue within the aviation sector, with respect to air navigation services, crash/fire/rescue (CFR), meteorological staff, and management of such.

The indicative cost for priority projects for the BiH airports are estimated to be KM 79.2 million at the 2000 prices, including the training costs of KM 9.0 million. Further discussions of the priority projects are made in Chapter 6 in this volume.

5.2.7 European-linked Inland Water Transport

(1) Planning Issues

At present, there is limited commercial traffic on Sava River. The Water Resource Management Company "Sava Gradiska" is excavating/dredging approximately 200.000m^3 of gravel per year from Sava riverbed and transport by river along the bank, from Raca to Brcko. This volume is 15% of the total fleet capacity of 1.2 million tons.

The location of the relevant industrial centers in Bosnia and Herzegovina and their (relative) connection to the ports is envisaged hereafter. Future inland water transport will predominantly be generated by these industrial centers.

Figure 5.14 Industrial Production Centers Relevant to Transport over Sava River

The functional role of Brcko is in the first place to serve its natural hinterland in the larger Tuzla region. Samac will have its natural hinterland oriented towards the Republika Srpska and in addition benefit from its location on Corridor Vc. Supposing that waterway traffic will take a 1.3% share of total road traffic (average share of river transport in CEEC), the total traffic volume at the kick-off would be equal to **421.096 tons per year transported by river.**

From 2005 on, the **Corridor Vc** location of Samac and the road and rail improvements to connect the major industrial centers with Corridor Vc will influence the traffic distribution between both ports. While Samac will know a constant increase of capture traffic, the market share of Brcko will gradually reduce, also because other terminals and loading/unloading facilities will become operational along Sava river. Brcko will be focussed on the natural hinterland that predominantly includes Tuzla, Bijeljina, as well as a part of the production at Zenica, Doboj, and Sarajevo. From a logistics perspective, the majority of industrial facilities in the Republika Srpska will concentrate their river traffic in Samac Port in new loading/unloading facilities along the river. This assumption is based upon the future accessibility of Samac for class IV vessels (similar to Brcko). In case this important investment is not realized in the second phase of the development, the difference between the two ports will remain negligible.

(2) Waterway Transport Demand and Development Scenarios

The traffic evolution on Sava River for the BiH is summarized according to the different development scenarios, as shown in Figure 5.15. Traffic to and from Brod is included in these numbers.

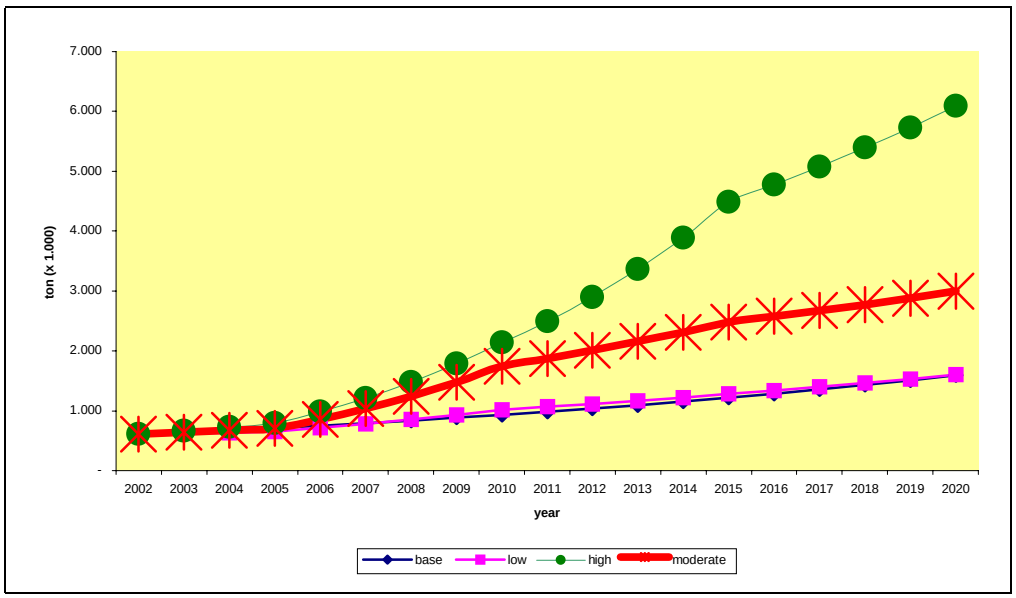


Figure 5.15 Traffic Forecast by Scenario (total traffic on Sava river)

According to the results in above forecast, the **high growth scenario** would generate 6 million tons of traffic on river Sava. Although this number is feasible, it requires full industrial growth, in particular in the sectors that will use river transport for an important share of their transport needs. The **low growth scenario** and the base scenario follow the opposite approach. According to both scenarios, industrial development will be moderate (as compared with services and manufacturing) and the share of river transport will remain low in total transport needs.

This is a very pessimistic view and contrary to the European development in river transport where the share of this mode increases with higher than minimum growth rates. In Europe, river transport is capturing new markets such as container transport, ro/ro traffic, and high end products. Furthermore, recent research has demonstrated that efficient intermodal applications can reduce the cost effective length of transport modes such as rail and road. The **moderate scenario** is a probable scenario according to which river transport will develop in the near future. In this scenario, total river traffic will be at pre-war levels again around 2020 at latest, to further grow the next 10 years at moderate rates.

The share of river transport will grow because of its logistics benefits for the industry. It will also grow because there is a further increase in industrial development and the expansion of cross border transport. It will be up to the river transport operators and port managers to maximize the potential benefits generated by these evolutions. Modal

integration and the development of new markets will be a core success-factor to reach the optimistic levels of transport growth.

At present, no (relevant) investments have been made in the rivers of BiH. Two IMG studies have been made to estimate the total costs for urgent rehabilitation and at present, OHR has commissioned a study to assess the potential of the port of Brcko and to determine the infrastructure rehabilitation needs. In this sector plan, two types of projects are considered. The *urgent reconstruction projects* are projects that need to be implemented in the short-term future in order to have as soon as possible an operational river transport sector in BiH. The *phased development projects* are infrastructure investments that are necessary in the medium- and long-term to guarantee the necessary sustainability in the conditions for river transport on the Sava River and to upgrade the transport system to EU levels.

(3) Urgent Reconstruction Projects

The following actions need to be undertaken urgently to revitalize the inland water transport system which will be properly operated in part of the European water system.

1) Navigation Channel on Sava River

Several sources indicated that approximately 95% of the river is at that standard and that 5% of the river length (16,500 m) needs to be dredged. According to this information, a total volume of 990,000 m^3 needs to be dredged. The cost estimates vary according to the source contacted between KM 3.9 million and KM 9.9 million.

2) Urgent Rehabilitation of Port of Brcko

Loading and unloading facilities are a necessity for utilizing the benefits of river transport. Port of Brcko is one of two important facilities along Sava River that offers the industry access to the benefits of river transport. Urgent repairs are necessary to ensure minimum operations. The total estimated investment is KM 5 million.

3) Urgent Rehabilitation of Port of Samac

Port of Samac is the second important facility along Sava River in addition to Brcko port. Urgent repairs are necessary to ensure minimum operations in the port area. Total urgent investments amount to KM 7.8 million. The proposed investments are mainly for new building. They are important but not mandatory to starting port operations. To start operations, the crane and quay investment (totaling KM 4 million) is mandatory. Other investments can follow once the port has started up its activities.

(4) Phased Development towards Transport Integration and Intermodality

The further development of river transport is related to the economic and industrial development that will determine the future need for river transport as a part of the entire transport system. Therefore, emphasis should be strategically placed on the intermodal integration of the river transport system in the medium- and the long-term.

For the medium-term (Phase 2), the development plan includes:

- Stabilization of Sava River Accessibility
  - Further dredging of the Sava river (class IV from border to Samac)
  - Hydrolic engineering to avoid further silting of the river
  - River bank improvements
- Further Development of the Ports
  - Improvement of road and rail access to the ports of Brcko and Samac
  - Preparation of development plan for Gradiska port

For the long-term (Phase 3), the development plan includes:

- Stabilization of Sava river accessibility
  - Maintenance dredging of the Sava river
  - Hydrolic maintenance
  - River bank maintenance
- Integration of River Transport
  - Intermodal platform Samac
  - Intermodal platform Brcko
  - Intermodal platform Gradiska

The objective of the two phases is to gradually integrate river transport in the entire transport system of BiH, as conceptually demonstrated on Figure 5.16. The integration is necessary to achieve sustainability in river transport and to maximize the return on the port investments.

(5) Regulatory Framework

Clear and coherent regulations for navigation on the Sava River are a priority condition to generate traffic in the future. This will need cooperation at different levels such as inter- and intra-Entity level, tri-country level (BiH, Croatia and Yugoslavia) and international level. The basic regulatory concept and related responsibilities is demonstrated in Figure 5.17. There exists the need for the **Waterways and Ports Public Corporation,** as part of Transport public Corporation, to cooperate between the Entities on relevant issues of river transport. In a further stage, organization of the Sava River

Management Board (to cooperate with Republic of Croatia and the Federative Republic of Yugoslavia) is vital, because Sava River is running through all 3 countries.

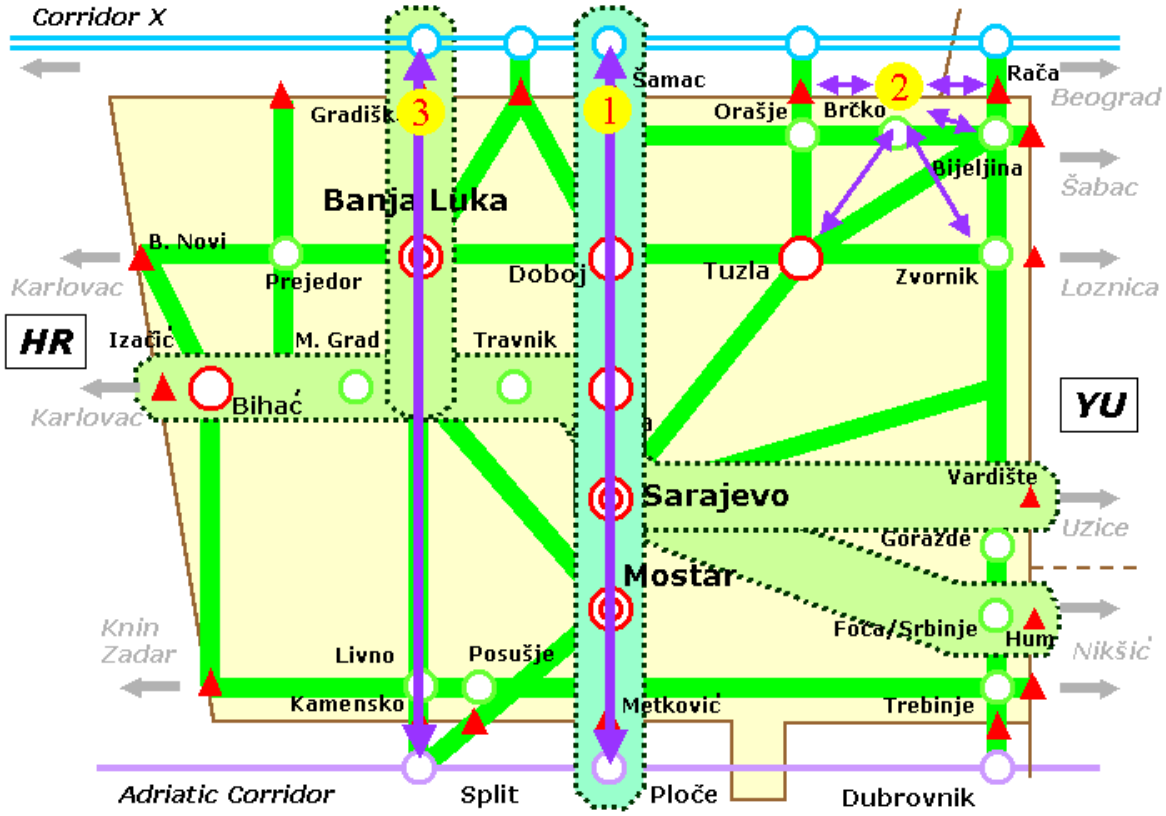


Figure 5.16 A Conceptual Approach to River Transport Integration

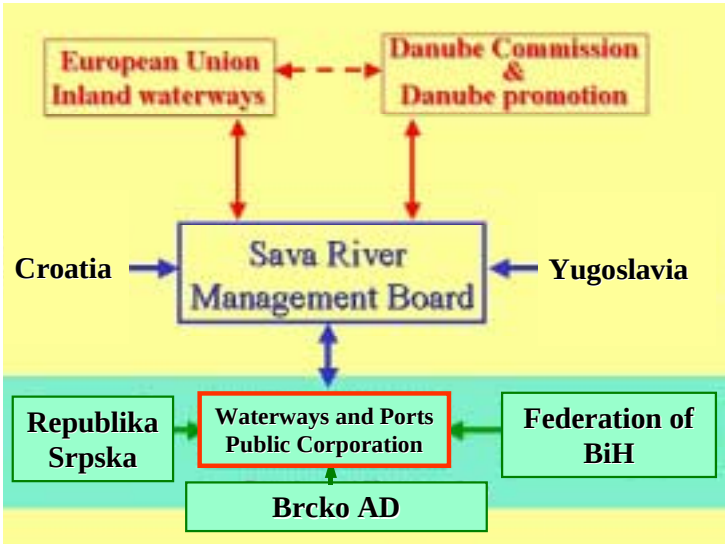


Figure 5.17 Proposed Regulatory Framework for Rivers and Ports

5.2.8 Road Transport Operators

A review was conducted of road transport operators, that is, inter-city and long distance bus as well as truck activities. Complete detail is presented in Chapter 2 of Volume II of the Interim Report. The interested reader is urged to consult following sections of Volume II in this regard:

- Section 2.3.1, Trucking Activities: Main topics include organizational and operational overview, operator interviews, trade tendencies, traffic simulation results as well as the European perspective. The latter examines historic experiences of European nations regarding cargo movements, as well as likely future developments of this mode.

- Section 2.3.2, Bus Services: Main topics include international lines, inter-Entity lines, Federation inter-Kantonal lines, Republika Srpska inter-Municipal lines, Federation Kantonal services, operator interviews, traffic simulation results as well as the European perspective. The latter examines historic experiences of European nations regarding bus passenger movements, as well as likely future developments of this mode.

- Section 2.3.3, Sector Improvement Strategies: Discussions address regional transport initiatives, European integration as well as sector modernization concepts whose underlying theme is privatization and operations founded upon market mechanisms.

(1) Planning Issues

Principal conclusions of the review of long distance and inter city bus as well as truck operations are:

- The administrative system is complex and cumbersome. Various jurisdictional hierarchies ranging from municipal to Kantonal, Chambers of Commerce, Entity, and State are involved. This can be very intimidating, confusing, and contradictory for even knowledgeable operators, not to mention possible new external private sector participants.

- A clear segregation among the various truck and bus service hierarchies is virtually impossible to define as different operators tend to service different types of routes with their available fleets. Thus, operating statistics are intermingled; in case of buses, for example, passenger data is largely not available, or where quoted, is understood to be unreliable. Likewise, performance measures considered standard in the international bus industry (route kilometers, seat kilometers, passenger kilometers, revenue kilometers) appear not to be routinely calculated or available. Even the most basic of information, such as which inter-city domestic route is operational at what level of service, is not known with certainty. While a comprehensive service schedule exists, there is a consistent lack of knowledge as to

which routes are actually servicing their licensed schedule and route on a consistent basis, and which are not.

Cargo transport in BiH falls into two general categories: international and within BiH. Unfortunately, for intra-BiH truck transport, virtually no structured data exist regarding type of services, cargo carried, and operator performance. In case of international operations, more robust information is available since, in most cases, permits must be obtained for BiH trucks to journey abroad.

- Licensing for international operations is accomplished largely on the State level. In case of trucks, there is little technical evidence to support the current practice of bilateral permit distribution with one-third going to Republika Srpska, and two-thirds going to the Federation. It is understood that precedence is the basis of this allocation; however, from a trade perspective, this ratio is totally insensitive to market mechanisms, trade patterns of local operators and fleet composition.

  Various procedures exist leading to the allocation of international licenses to local operators. However, in general, the process is not very transparent, nor do robust technical (fleet, operator) and trade considerations appear to play a central role in this practice.

- Buses and trucks are inspected regularly, but the system can be contradictory. Monthly inspections are needed in Republika Srpska, while in the Federation annual inspections are required under the Ministry of Internal Affairs, and three-month inspections under the Ministry of Transport and Communications. It is understood the latter inspection is more technical in nature and focuses on operational reliability of the vehicle (however, attempts to stem the introduction of old, second-hand buses acquired from other European countries have so far not been successful)[2]. Thus, two sets of inspection certificates are required in the Federation, and it is not uncommon to have a pass – fail situation. It is unclear at present as to which inspection result takes priority.

- Privatization is, in line with existing directives, on-going. While some successes are noted difficulties persist. These relate to not only finding willing buyers (in some cases employees are becoming owners), but also legal questions, answers to which remain nebulous under existing statutes. While ownership of rolling stock is, for example, a direct issue, ownership of other assets (such as depots, terminals, ticket sales offices, stations) is not. Other complexities arise in sharing arrangements between the various BiH ethnic communities.

- The current (controlled) fare and tariff structures are understood to be adequate to cover operating costs, but not fleet replacement. Thus, the typical BiH bus and truck is 10-20 years old, and is likely to be, in essence, a used vehicle from western Europe.

[2] It is understood that regulations are being considered at present which would limit the import of vehicles more than seven years old.

Exceptions exist in that element of the fleet employed in international operations; in case of trucks, for example, even though the overall fleet is dominated by "traditional" vehicles, trucks with Euro1 and Euro 2 engines are needed as part of bilateral permit procedures.

- Cargo transport is heavily influenced by the "negative" economics of BiH; that is, varying taxation structures, high local costs, visa requirements and extensive border delays (BiH is not a member of the TIR group of nations).

- European data would, in case of bus operations, suggest that viable inter-city, and international, bus services will continue to fill an important role in the movement of persons. While growth in bus passenger demand can, on a relative basis, be expected to be less than that of private transport, the modest unit national income levels suggest that a sizable market, in absolute terms, will remain for some time.

- European precedence and statistical evidence has, in case of trucks, clearly confirmed that the role of road-based cargo vehicles will become increasingly important in future. It may readily be accepted that inevitable changes in the size and nature of demand as reforms take hold in BiH's economy will be increasingly shouldered by the road transport system. Over time, these changes will cause a significant shift in market share to road transport. Reliability, speed and predictable service will become more important to customers than movement of large volumes at low cost in response to pre-determined plans – as was the case in the Yugoslav pre-war economy. Further, expanding privatization will offer extensive opportunities for small-scale ("mom and pop operators") to quickly enter the new economy by purchasing (or leasing) a commercial vehicle and providing cargo transport services.

South Eastern Europe is on the crossroad between Europe and Asia. Six out of ten multi-modal transport corridors included in the Helsinki and TINA Networks[3] go through South East European (SEE) countries. The collapse of the Soviet Union and the break-up of the Yugoslav Federation has led to radical changes in the direction of traffic flows, disruptions along the transport corridors, and the creation of new states. Performance of the border control agencies have been unsatisfactory: traffic has been subject to long waiting times, raising the cost of transport services and making them unpredictable; customs revenue collection has fallen short; and smuggling and corruption are understood to have become widespread. These deficiencies amount to bottlenecks to trade, with macroeconomic effects similar to those of protectionist trade

[3] The TINA (*Transport Infrastructure Needs Assessment*) process was launched in September 1995. Its mandate was to identify the transport investment projects in the accession countries along the pan-European Transport corridors as defined by the 2nd Pan-European Transport Conference (Crete, 1994) and update at the third Pan-European Transport Conference (Helsinki, 1997). At the Helsinki Conference the concept of Pan-European Investment Partnership was endorsed to promote the connection of the Trans-European Transport Network (TEN) on the EU territory with the TINA Network of the accession countries, the Pan-European corridors on the territory of the NIS and the four Pan-European Transport Areas of the maritime sea basins and the Euro-Asian links, i.e., the TRACECA corridors.

polices; they undermine incentives to improve competitiveness; and deter foreign direct investment.

Recent wars are not the only cause for the generally poor availability and quality of transport infrastructure and services in the SEE region. Though the countries in the region are significantly different, institutions and polices in the transport sector are generally weak. These weaknesses have led to decades of inadequate maintenance; continuing over-regulation of the sector; dependence of transport enterprises on subsidies; and insufficient progress towards commercialization and privatization of transport services (although, in the latter case, recent progress is encouraging). As a result, low quality of transport infrastructure and services, and relatively high transport tariffs limit international competitiveness of SEE countries.

BiH is not an island. Thus, a knowledge of, sensitivity to, and participation in regional transport initiatives will be an important stepping stone toward closer trade and passenger activity with national neighbors and other parts of Europe. In a broader sense, as indicated previously in this report, regional integration, in both strategic and tactical terms, is identified as an important element in the path to EU membership.

(2) Activity Estimates

The trip matrixes developed as part of the road transport model, and described in Section 2.1 of Chapter 2, *Volume II* of the *Interim Report*, provide a surrogate measure for gaining insight into vehicle and, based on average occupancy factors, passenger trip patterns. Several observations may be made for year 2000 inter-zonal vehicle trip demand. A total of 125,211 vehicle trips are recorded as occurring on a typical day during year 2000. Some 88 percent of that are by passenger cars (110,417 trips), two percent by buses (2,682 trips) and ten percent by trucks (12,112 trips). This relationship is compatible with official vehicle registration data which, for BiH, suggests that some 90 percent of registered vehicles are passenger cars, nine percent trucks and one percent buses.

The combination of current patterns established via the roadside origin-destination filed surveys, and forecast demand projections, permits an estimation of daily passengers carried by cars and buses[4]. At present, an estimated 267,100 passengers are transported daily including 221,300 by cars (83 percent) and 45,900 by buses[5]. These totals are expected to grow to about 418,800 passengers per day by year 2010, and 618,000 passengers per day by year 2020,as shown in Table 5.12. Over time, therefore, the relative share of passengers travelling by bus vis-à-vis by car are expected to decrease.

As is the case with buses, the combination of current patterns established via the roadside origin-destination surveys, and forecast demand projections of the road transport model,

[4] Based on year 2000 occupancies of 2.0 persons per car and 17.1 persons per bus. As bus service efficiency increases, there is also a likelihood that the number of bus trips will be impacted.
[5] In modeling terms, base calculations reflect inter-zonal trips traveling on internal network links.

permits an estimation of daily tonnage moved by trucks[6]. At present, an estimated 88,700 tons are transported daily including 33,800 tons by rigid trucks and 54,900 tons by articulated trucks[7]. This is expected to grow to about 159,000 tons per day by year 2010, and 288,000 tons by year 2020, as shown in Table 5.13.

Table 5.12 Estimated Daily Passenger Transport by Car and Bus Years 2000, 2010 and 2020

Vehicle Type and Year	Passenger-Kilometers (000)	Total Passengers Carried
Car		
2000	19,637.0	221,258
2010	29,158.4	362,154
2020	44,472.5	546,358
Bus		
2000	4,806.7	45,879
2010	5,755.2	56,687
2020	7,241.8	71,632
Combined		
2000	24,443.7	267,137
2010	34,913.6	418,841
2020	51,714.3	617,990

Source: JICA Study Team

Table 5.13 Estimated Daily Cargo Transport by Truck Years 2000, 2010 and 2020

Truck Type and Year	Ton-Kilometers (000)	Average Load (tons) per Truck	Total Tons Carried
Rigid			
2000	3,683.1	4.2	33,803
2010	6,438.2	5.3	65,996
2020	11,142.6	6.5	115,213
Articulated			
2000	6,563.3	13.6	54,944
2010	10,121.5	14.8	92,992
2020	17,224.5	16.1	172,543
Combined			
2000	10,246.4	7.3	88,747
2010	16,559.6	8.5	158,988
2020	28,367.0	9.7	287,756

Source: JICA Study Team

[6] It is assumed that, over time, the current inefficient backload pattern will gradually moderate, reducing ultimately to 20 percent for rigid and 30 percent for articulated vehicles. As truck efficiency increases, there is also a likelihood that the number of truck trips will be impacted.
[7] In modeling terms, base calculations reflect inter-zonal trips travelling on internal network links.

(3) A Regional and European Perspective

In a synoptic sense, in order to become a Member State of the European Union, acceding countries must align their national laws, rules and procedures to the entire body of Community legislation ('acquis communautaire') in such a way that the relevant EU law is fully incorporated in the legal system. This obligation continues after accession. The transport acquis[8] includes all the Directives, Regulations, and Decisions adopted on the basis of relevant provisions in treaties. It furthermore includes all the principles of law and interpretations of the European Court of Justice, all international transport agreements to which the European Community is a party, as well as the relevant declarations and Resolutions of the Council of Ministers.

While the transport acquis do indeed provide sector-specific information, it becomes immediately obvious that broader perspectives other than transport will likely play a leading role in the gradual transition of BiH and being selected for accession to the EU. In that sense, liberalization and harmonization policies, while by nature being country-specific, remain as the foundation for guiding policies of the EU. There are five areas that appear to be of a high priority:

- Private sector development, especially through liberalization of trade, improvement of the business regulatory environment, and strengthening of the financial sector, particularly banking regulation and supervision;

- Poverty reduction and social development, especially through policies to foster social cohesion and inclusion;

- Institutional development and governance, especially strengthening public administration, improving financial control mechanisms and improving legal and judicial systems;

- Infrastructure and transport policies, especially streamlining and commercialization, thus fostering a wider role for the private sector; and

- Environmental policies, especially protection of valuable natural resources and remedying the consequences of recent conflicts.

BiH has adopted liberalization and privatization as a basic policy for its economic transformation; these tenets must also flow to the transport sector. However, there currently exist a variety of constraints that hinder the immediate implementation of these policies and related measures; for example, existence of traditional systems and a shortage of funds. It is indispensable to develop a staged implementation program by taking priorities and constraints into account. Short-term priorities should be given to removing non-capital intensive bottlenecks, for example, elimination or improvement of legislative and jurisdictional barriers. Medium and longer-term priorities should be given

[8] *Guide to the Transport Acquis*, Directorate General of Transport, The European Commission, October 1999.

to improvement or development of strategic measures to encourage harmonization. During this period, a tactical focus should be rationalization strategies and industry modernization in terms of accelerated replacement of the aged transport fleet and supporting facilities so as to enhance the competitiveness of the BiH transport industry. Related measures include:

- Improvement of border crossing facilities in terms of procedures and facilities (refer Chapter 5 of this report, intermodality section, for further detail in this area).

- Derivation of uniform, consistent and transparent fiscal, taxation and banking structures, considerations of vital importance to providers of both domestic and international cargo and passenger services.

- Transition of government's role from that of being a provider of services to one being a supervisor of services; that is, sort of a "watch dog" and facilitator.

- Development of an efficient and integrated multi-modal transport system, in line with recommendations promulgated by the current study.

- Accelerated upgrading of primary road segments and corridors.

- Replacement of aged fleets of trucks and buses, with an emphasis on energy efficiency and environmental protection as part of the EU standards for these vehicles.

- Introduction of user pay principles, to include "fair share" contribution for road maintenance, in accordance with the practices of EU countries.

Trade practices remain an economic cornerstone of international relationships and, as indicated previously, an important element in European integration. Trade practices between BiH and other European States are based on a variety of special arrangements and agreements. The enhancement of those relations, in terms of both practices and volumes, depends not only on bilateral relationships, but, in a larger sense, on the status of the Balkan region as a whole. Study Team representatives discussed in Brussels the perceived status of BiH transport with various organizations active in international transport. In addition to political and legislative constraints, an over-riding comment received was that BiH, in isolation, is likely to generate only modest cargo and passenger demands when compared to other east and central European states whose size is both larger, and geographically closer to, western Europe. This, in turn, is likely to dampen the desire of major European players in the transport industry of intensifying/extending services to/from BiH. It was frequently suggested to the Study Team that "critical mass" in transport demand must be enhanced via regional consolidation, thus catalyzing larger, more concentrated, shipments to/from western Europe.

Similar issues are central to formation of the Stability Pact, and its impact of enhanced economic as well as trade activities among, and with, the SEE members – Albania, BiH,

Bulgaria, Croatia, FYR Macedonia, Romania and Yugoslavia. Action plans[9] focus on four key elements:

- Moving rapidly towards trade integration with the EU and within the region itself, and creating a stable, transparent and non-discriminatory environment for private sector development;

- Fostering social inclusion and social change within the region to reduce tensions and create the conditions for peace and stability;

- Improving institutional capacity and governance structures, and strengthening anti-corruption efforts in the region; and,

- Investing in regional infrastructure to integrate the region physically with rest of Europe and within itself, which must include initiatives that safeguard the environment.

The review goes on to state that the current state of trade relations – discriminatory, variable and sometimes highly protectionist – is a long way from the ultimate goal of regional countries, that is, integration with the EU. Yet there is no simple or single way of moving towards that objective. The review postulates a possible approach of meeting the objective of overall trade integration, an important prerequisite. This is presented in two phases with an intermediate review that would permit the analysis of progress achieved and would also permit the tailoring for further EU integration to individual countries.

- During the initial phase – say over two or three years, a gradual but general liberalization of all trade must be achieved, with support by the World Bank and IMF, and elimination of administrative barriers to trade must be achieved, as must the beginning of multilateralization of existing bilateral trade practices.

- Following the initial phase, the EU may wish to decide among various options with regional countries, but might include decisions as to which countries would simply continue building free trade relationships; which, if any, are invited to negotiate for EU accession; and which, if any, are invited to join a customs union on the way to fuller integration with the EU.

- During the second phase, the regional countries would need to establish a full-fledged Free Trade Area with the EU and among each other. In some cases, this may lead directly to full association with the EU; in others, a customs union may be an intermediate step. In both cases, countries will need to implement a convergence of their external tariff to that of the EU; in addition, they would have to make progress in aligning economic policies and institutions in other areas needed to make a customs union and/or full integration effective. Concurrently, the EU will need to

[9] *The Road to Stability and Prosperity in South Eastern Europe – A Regional Strategy Paper*, The World Bank, Europe and Central Asia Region, March 2000.

progressively eliminate remaining restrictions on imports from these countries according to timetables to be negotiated.

(4) Sector Modernization Strategies

For a government to bring coherence into the actions of its many agents and to be able to communicate with the community it governs, it is necessary that there be a statement of the political, social and economic principles which guide its policies and actions. The road operations aspect of the Transport Master Plan is intended to fulfill this role for inter-city and long-distance truck and bus operations. It is, of necessity, a framework approach rather than an overly detailed statement of operations. The Study Team considers this approach necessary as first there must be established a new industry framework that is responsive not only to transport management and operating issues, but is compatible with other on-going efforts in areas of trade, taxation, privatization and financial restructuring. Only once the "ground rules" are established is there a coherent basis for more detailed reviews regarding the formulation of route structures, operating standards, etc.

The transition from pre-war to post-war conditions has been extraordinarily difficult; even today, many challenges remain due to both the war and the on-going economic reforms within BiH. Thus, a continuing test in the transport sector may be to define a path which is adaptable to today's circumstances and tomorrow's market challenges.

In its most basic sense, the structure of the inter-city and long distance truck/bus operations strategy strives to put as much of the sector's assets and functions as possible in a deregulated, competitively structured private sector, in which determination of prices and investment is left to the marketplace. The government's role would then be limited to one of setting policies to ensure that the (transport) market works effectively, that transport operations are undertaken safely, that environmental norms are observed, and that services are available to all users on an equal basis.

The suggested strategy strives to be innovative, yet practical, while concurrently meeting the needs of various participants active in the BiH transport industry. Following principles guide the process and form the basis upon which the framework is founded, and within which recommendations are derived as follows:

i) Regulation tends to protect firms from competition, whereas government monopolies are neither disciplined by the market nor by a regulator. Privatization and deregulation are alternative ways to restore competitive private markets to industries that government has traditionally controlled and/or operated. In deregulating or privatizing road transport services, one of the most essential services that government can perform is creation of an environment that fosters effective competition, and that prevents the formation of predatory monopolies or cartels.

ii) The focus of the current study is a countrywide transport master plan; thus, any series of recommendations will be geared toward that objective. However, it must

concurrently be understood that any change in the transport sector, such as that contemplated for road transport, cannot be achieved in isolation. Instead, efforts must proceed parallel to, and be compatible with, on-going reforms in other sectors at both the State and Entity levels to include, among others, revisions of customs duties and procedures, restructuring of banking/financial markets, review of taxation policies, industrial privatization policies/practices and integration with the European Union. It should concurrently be understood that privatization of the inter-city and long distance road transport industry is not simply a matter of "selling the buses and trucks." If the privatization and deregulation of road transport operators is to succeed in BiH, and indeed it must, legal and administrative changes must concurrently occur.

iii) Privatization/deregulation comes in many forms; frequent references in literature are made to experiences in the United Kingdom, Russia, United States, Mexico, and Chile. The Study Team agrees that privatization and deregulation of the inter-city and long distance bus/truck operators is needed in BiH, but not necessarily in an unfettered free-market format driven entirely by market demand and performance. The BiH market is still imperfect, and likely to remain so for the near-term future; thus, initial actions regarding the road transport sector should embrace free market principles guided by a reasonable policy framework. However, in the medium to longer term, gradual transition to a more unfettered mechanism is desirable.

iv) The plan is based on the realities of the existing condition. It is apparent that throughout BiH there are a number of individuals who are highly knowledgeable of, and experienced in, the operation of buses and trucks, but are often frustrated and constrained by the existing "system". Many essential elements for improvements are already in place, thus the current plan attempts to build upon existing opportunities, rather than suggesting that a whole new approach be implemented.

v) Compliance with EU transport policies remains desirable, but it must concurrently be realistically accepted that full EU membership for BiH will take some time. Thus, in the bus and truck industry, one must "walk before running"; that is, initial efforts should focus on transforming the industry so as to provide efficient and effective services, then gradually conforming to EU standards and practices. This should not be mutually exclusive paths, but on-going (although not necessarily deterministic) exercises; indeed, considerable conformance has already been achieved by those operators providing services to western Europe.

vi) Any strategy that includes policy measures must be monitored and enforced. The safety characteristics of vehicles and the control of overloading are some of the most difficult technical regulations to be enforced.

vii) Existing regulations, controls, and procedures in the inter-city transport sector tend to be complex and intimidating. It must be accepted universally within BiH that, under a post-privatization scenario, bus and truck operators cannot continue to be smothered under a blanket of restraints. To do so will impede the growth and success of this vital sector, and if private sector growth is impeded due to stifling governmental control,

then all of BiH will suffer, included the government itself. The path to a prosperous future will be blazed by private enterprise and market-driven economic mechanisms.

Within the spirit of the goals, and the framework of the Master Plan, further sector-specific modernization strategies are summarized in Table 5.14. Further detail is contained in Chapter 2, *Volume II* of the *Interim Report*, Section 2.3.

Table 5.14
Summary of Recommended Modernization Strategies for Long Distance and Inter-city Bus and Truck Operators

Focus	Issue	Proposed Action	Discussion
Entire Sector	Absence of reliable and consistent data base is seen as a considerable deterrent to management, investment and operations planning. Industry monitoring severely constrained.	Establish data base which provides details regarding operator activities. Data flow must be dynamic, with, at minimum, semi-annual or annual updates.	Focus on typical EU information norms including type of goods, fleet profile and utilization, trip length and goods origin-destination for trucks. For buses, route structure, trip length, fare levels, fleet profile and utilization (route kilometers, seat kilometers, passenger kilometers, revenue kilometers).
Ministries of Transport and Communications	Privatization and deregulation of government-owned assets	Devolution of assets either directly (say sale) or indirectly (such as setting up leasing companies); freight rates and passenger fares to be determined by market; regulatory structure to combat predatory monopolies; free access for new operators assuming compliance with general regulations; removal of direct subsidies.	Convert government-owned assets to private ownership. Operations to be deregulated, competitive and with prices and investments determined by marketplace. Government's role would revert to setting policies that ensure efficient sector performance, safe operations, that environmental norms are observed and that services are available to all users on an equal basis.
International Bus Operations	Permits managed by State. Agreements between operators leads process.	None	Private sector already has leading role; agreements between central authorities follows European practice.
International Truck Operations	Bilateral permits controlled by State. Distribution to Entities based on set formula (one third RS, two thirds Federation) applicable to all permit countries.	In recognition of the importance of international trade to BiH and the Entities, the allocation of bilateral cargo permits should be market driven so that the needs of the economy are met.	Further discussion regarding technical criteria needed, but could involve shipment contracts, trade statistics, modal shipment preferences, fleet composition and use of previous-term permits. Such data could also support the bilateral negotiation process in an effort to increase the absolute number of permits made available to BiH.

(continued)

Focus	Issue	Proposed Action	Discussion
Inter-Entity Fixed Route Bus Transport	Permits managed by State after service approvals by Entities.	Negotiations should proceed to initiate permit-free fixed route inter-Entity passenger services based on demand and other market-driven considerations.	Fixed route bus transport should follow the lead of permit-free inter-Entity charter bus transport and cargo (truck) transport.
Operator Associations	Following privatization, increasing need for operators (particularly small operators) to pool knowledge and resources via operator or route associations.	Chambers of Commerce, with an established private-sector focus and historically strong relationship with transport operators, should be considered as an umbrella organization for such associations.	Associations present collective voice of industry, and can achieve economies of scale in terms of market information, load optimization, procurement of vehicles and supplies, education, training and development of terminals and depots. Chambers, which now operate at regional, Entity and State level, offer broad arena for private sector integration, including foreign investors.
Bus Terminals	Inter-city bus terminals now under government control. Terminals serve as important passenger interchange points between longer distance and local bus services, as well as between bus services and other modes.	Privatize terminal operation; however, bus companies should not be permitted to also own terminals. Separate companies should be created, with revenue streams at terminals patterned after airport terminal operations.	In the fast-changing world of privatized bus operations information is critical. Existing and potential bus passengers must be able to easily compare different operators in terms of vehicles, schedules and fares. This is best accomplished at a single (or limited number of) inter-city bus terminal(s).
Truck Terminals	Expected rapid increases in truck cargo transport implies gradual separation of trunk line and distribution services.	Begin with planning of truck terminals in periphery of urban centers with consideration to cargo transport needs and urban environment (traffic, accidents, noise, air quality).	Truck terminals could be operated by truck companies or associations. Major terminals should contain not only trans-shipment facilities, but also container depots, warehouses, sorting and packaging facilities.
Vehicle Inspections	Separate procedures between Entities; two sometimes conflicting inspection procedures in Federation.	Begin discussions to unify inspection procedures to single standard.	Vehicles operating on the roads of BiH should, regardless of place of ownership, conform to identical measures of road safety and environmental standards.

(continued)

Focus	Issue	Proposed Action	Discussion
Neighborly Relations	Bus and truck movements between BiH and Croatia are market driven and not subject to permits. Trade and passenger activities with Yugoslavia are informal due to severed diplomatic relations.	Ensure that similar procedures are adopted for both neighbors once the diplomatic situation so permits.	Yugoslavia and Croatia are important and traditional trading partners with BiH. This relationship should be market driven in future.

5.3 HUMAN RESOURCE DEVELOPMENT

5.3.1 Planning Issues and Targets

(1) Necessity of Strengthening Transport Training Functions

An important part of humanware development is the professional training and education of public and private stakeholders. Expertise building is a critical success-factor to guarantee that the future transport system is used, maintained, and improved according to EU standards. The lack of modern training and education constitutes at present a serious cross-modal problem. Three evolutions caused the present situation, namely:

- The emigration of high quality professionals immediately after the war;
- The lack of training and education for the remaining experts, which causes a substantial gab between their present knowledge base and the modern techniques and technologies applied in modern logistics; and
- The present need to train local experts in European institutes enables BiH experts to find employment in Europe and do not return home.

All professional experts and public representatives consider the lack of professional staff as a critical problem that requires immediate attention. They argued that training and education in modern techniques and technologies and in integrated logistics is a basic requirement to develop transport in BiH in the future. However, training and education in BiH should also focus on basic practical training to ensure a minimum quality level.

To ensure that sustainable expertise is build in BiH, the creation of a **Transport Training Institute** should be a short-term objective. In support of the activities of the Transport Training Institute, a strategic planning instrument should be developed and later implemented. The staff of the Institute will also have to be familiarized with the instrument and stimulated to use this instrument to tackle the ongoing and coming required changes within and outside the Transport Training Institute in an efficient and effective way.

The long-term objective of the proposed development plan is to ensure the continuity of the Institute as an efficient and effective institution for the transport industry, which can be achieved by creating “stability” during the development processes and by ensuring that quality of training is at a high international level. This high international level means also recognition of the **certificates** to be issued by the Institute by international transport organizations as being equal to those of the traditional Western nations.

Specific targets have therefore to be set for the Transport Training Institute in terms of organization, structure, and expertise level so that this institute can contribute to the sustainable development of human expertise in the transport sector.

(2) Organization

The organization of training and education in BiH should be structured in such a way that international cooperation with the different stakeholders is direct and efficient. Concentration and rationalization of the training and education system is, therefore, a key issue in the development program. The training and education program needs to be developed to European quality standards and the related certificates homologated at the international level. It is essential that foreign expertise be incorporated into the development plan of the BiH training and education program.

(3) Structure

Controlling and monitoring the training and education programs is essential for international acceptance. A structure is therefore necessary to guarantee international quality standards in the training and education programs. Equal standards and certification methods in both Entities are essential to obtain international acceptance and support.

(4) Expertise

Expertise in the transport sector and at the level of public authorities responsible for transport issues is a critical issue. The available expertise in the public and private sectors is at present below the required standards. Both basic and advanced training for public and private transport professionals is essential to ensure the sustainability of future development of the transport sector in BiH.

The proposed development plan for the Transport Training Institute incorporates all the above-described targets and considers not only the training and education aspects, but also the organizational, structural, and financial aspects to strengthen the training functions for the entire BiH transport system.

5.3.2 Development Scenario for Capacity Building Program

Provision of modern transport training requires a practical approach to various segments of transport, including freight forwarding, intermodal transport chain management, document flows, technological and technical applications, dangerous goods etc.

The specific phases of the proposed development program include following steps:

- Investigate the present situation in BiH
  - Investigate the existing training facilities and expertise
  - Benchmark existing facilities and expertise with European examples
  - Identification of needs

- State of the art expertise building for public decision makers
- To establish the Transport Training Institute and assist in the gradual transition towards a self-sustaining organization:
  - Organise a *Train the Trainers* program that will set the basis for self sustainability of transport training and education;
  - *Develop training programs* and write the course syllabi in accordance with those available in similar training institutes in Europe;
  - *Provide foreign experts* during the transition phase; and
  - *Help the training institute to become self-supporting* as soon as possible and ensure a long-term co-operation structure with a European high quality partner.

(1) Analysis of Present Situation

In the first phase, the available expertise and facilities have to be mapped and analyzed for their content and quality. This analysis includes also **a benchmark** with training and education facilities in Europe to assess future requirements to upgrade transport training and education in BiH to meet the European standards.

The analyses in the first phase assess the present situation in BiH, the existing skills, and available know-how. These analyses of the present situation include at least:

- Comparison of international (European) regulations and requirements in the field of transport training and education. They should be compared with existing local laws and regulations;
- Assessment of existing training programs and training curricula;
- Evaluation of existing teaching staff taking into accounts the numbers and categories of personnel and staff;
- State of the Art analysis for existing training centers in BiH, including currently existing material and technical equipment, training material used; and
- Overview of ongoing and planned training and education projects and their relevance for the Transport Training Institute to coordinate with and/or integrate other on-going initiatives.

The assessment of the present situation will create a basis for the Resource Analysis. This Resource Analysis includes following minimal steps:

- Discussions with local teachers/trainers. These discussions will aim to determine the need for upgrading expertise. Also the need for upgrading the know-how of supporting staff (administration, technical staff, etc.) should be determined in this procedure.

- Questionnaires and follow–up interviews with public authorities and technical experts, responsible for the development of transport and of education in BiH.
- Discussions with relevant experts (e.g., World Bank, EBRD, EIB, EU, OHR, etc) regarding the planned and ongoing training needs and programs for BiH.
- Benchmark of the results with a selection of European training institutes.

The optimal concept of the future Transport Training Institute will finally be determined in close cooperation with university experts and the relevant public authorities in BiH.

The analyses have to be integrated in a total organizational and structural concept as visualized in Figure 5.18.

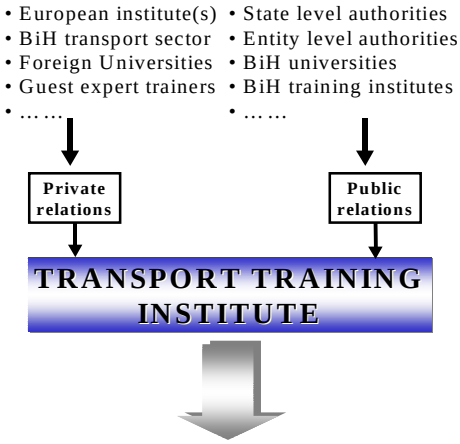


Figure 5.18 Organizational and Structural Conditions with Resources

The Transport Training Institute will have both private relations and relations with public authorities at the state level, the Entity level and the local level (in places where departments of the Institute are located). Of particular interest for the Transport Training Institute Development Plan are the relations with the state- and Entity-level authorities on the one hand, and the relation with the European and international institutes that supports the Transport Training Institute of BiH on the other hand.

Also during this first phase, possible strategic alliances and cooperation agreements between the Transport Training Institute and some international training and education facilities have to be investigated. In this context, particular attention should be paid to the sustainability of the alliance of cooperation agreement. The goal should be to find international partners that are willing to engage in a long-term relationship and offer their expertise and assistance at advantageous conditions.

(2) Expertise Building for Public Decision Makers

The development of international alliances and cooperation agreements between the Transport Training Institute and foreign training and education facilities requires public decision makers, responsible for the control and management of the institute, to have sufficient knowledge about the transport sector, its working and the way training and education in the field of transport.

Key persons that will be directly involved in the transport training activities should be introduced with the state of the art in transport training and education. These key persons include strategic management persons and executive management persons. Strategic management persons will need training in organizational and institutional building while executive management persons require more practical training to increase their knowledge in the different transport disciplines.

Expertise building by public decision makers should include a combination of practical training courses and study tours to selected training institutes, education facilities, and public authorities. The study tours are beneficial for both the strategic and executive managers in BiH because they will provide in-depth insight in the organization and operations of high quality transport training institutes, education centers such as universities and transport operators.

The practical training courses differ for the strategic and executive managers. Strategic managers need to be introduced in the managerial aspects of the Transport Training Institute, while the executive public managers need to have basic knowledge of the practices in modern transport.

(3) Establishment of the Transport Training Institute

The third phase of the development plan includes concrete steps to create the Transport Training Institute. More in particular, this third phase includes:

- Guidance and technical assistance during the process of establishing the training institute;
- Assistance in procurement of training staff;
- Assistance in obtaining training skills (a *train-the-trainers program*);
- Assistance in curriculum design; and
- Assistance to the institute in becoming self-supporting.

Foreign experts will provide the necessary technical assistance in the concrete establishment of the Transport Training Institute. This assistance includes among others

- Identification of necessary teaching equipment (computers, printers, projectors, etc);
- Instalment and testing of the equipment; and

- Familiarization of staff with new teaching equipment.

Similar assistance will be provided in the selection of teaching staff for the Transport Training Institute. In collaboration with the responsible authorities, the best selection procedure will be determined to guarantee the necessary quality levels of the staff, responsible for future training activities. The selected persons will be trained in a dedicated the ***Train-the-Trainers program***. In terms of logistics training, the Train the Trainers Program will receive intensive training on three main factors of transport, namely:

1) Modern Logistics

In this module the background of modern logistics is explained. It deals with questions like how goods flows come about and what the term "logistics" stands for. A systems approach is presented to help defining traffic flows, borders, starting- and endpoints and transfer points. The field of logistics will also study logistics influence on other departments in a company and will include an introduction to transport economics, where logistic costs are analysed. Finally, the roles of the different means of transport, distribution centres, terminals, and storage facilities are discussed.

2) Forwarding

Forwarders can be regarded as the “architects of the transport.” They set up transport flows and keep them going. On the physical distribution side attention is paid to public warehousing, Distribution Requirements and Resources Planning, Material Requirements Planning and Manufacturing Resources Planning as well as Roles of the forwarder, integration with truckers, distribution centers and storage facilities.

3) Document Flows

The Bill of Lading and the Connossement and their different use, aspects and problems are discussed in detail in this module. For road transport the CMR, for rail transport the CIM, the Air Waybill for air transport and the DGC for sea/air transport are discussed separately and in combination. Furthermore, insurance certificates, packing, and type of goods are analysed in detail. Seller’s risks, Buyer’s risks and claims are subjects of this module. The relations between transport documents, customs documents and payment documents are given in-depth attention. The use of INCO-terms and the different aspects of each of the terms are explained. A detailed description on the aspects of terms and critical points (costs, risks, documents) gives not only theoretical but also practical expertise.

The **Train-the-Trainers Program** also includes vocational and managerial training. The trainers will be introduced in the use of new technologies such as distant learning, Internet applications, interactive courses on computer and via Internet, etc. Training the trainers program will also include social / practical training modules such as:

- Flexible learning & multi-form learning;
- Distant learning;
- Study techniques;
- Modular training;
- Designing/adapting study and teaching material;
- Open/flexible curriculum design;
- Self-instructional study material;
- Teacher's role; student's role; and
- Contemporary adult pedagogy.

4) Transport Training Curricula

The development of transport training curricula is the next segment in this phase of the program. Some important principles are applied in the development of the training programmes and courses:

- The program and courses are **modular-based**, meaning that the traditional curricula are split up in small(er) units, modules, which are elaborated in direct contact with the market / stakeholders and with consideration taken of future needs. This has several advantages in comparison with the more traditional approach. *First*, it allows a more flexible course management, which answers to specific needs. *Second*, it is more efficient, since it allows an individual approach. *Third*, it allows easily adjustments of the training to a changing transport environment.

- The curricula will consider **the existing situation.** Consideration must be given to existing training curricula and training material and they should be used / integrated as much as possible.

- The courses will offer **both theoretical and practical components**. The theoretical parts are substantiated through practical examples and hands–on exercises to introduce the students with concrete market practices.

- Training courses will be **interactive**, including group work, presentations and discussions and computer based applications.

Although the training courses for the Transport Training Institute have to be decided during the development program, a first overview of what might be necessary is discussed hereafter. The professional training courses include three different approaches:

- Courses with syllabi;
- Simulation courses (with CD-ROM and group sessions); and

- Interactive courses.

(4) Help the Training Institute Become Self-supporting

The expert assistance in the final phase will include:

- A financial plan (expected costs and revenues) that satisfies the need to become self-sufficient. This financial plan should evaluate the possibility of alternative financing structures;
- The use of external experts and identification of these experts;
- Methods to find support by private companies;
- Potential partners for strategic alliances and co-operations agreements;
- Organizational and operational structures; and
- Development of a management information system on student progress, finance, equipment, personnel, curricula (yearly development /revision), buildings, energy, consumption, facilities (classrooms, workshops, copying and printing facilities, audio-visual equipment, hard- and software)

The financial plan will be based upon the evaluation of following elements:

- Identify number and location of facilities
- Commercial conditions, based on market prices
- Size of groups of students
- Possible combinations of study lines
- Co-operation between different departments
- Cooperation with the transport industry to assess job profiles

5.3.3 Training Curricula Development

(1) Courses with Syllabi

The courses with syllabi contain four main fields:

- General Transport Training: general requirements and conditions of (intermodal) transport and freight handling;

- Function – Specific Training: detailed training, directly related to specific duties and responsibilities in the transport environment;
- Training in Economics and Management: training courses in various fields of economics and management; and
- Training in Intermodal Logistics: specialized training in intermodal logistics and freight forwarding, including affiliated fields of interest such as automation.

Following types of courses can further be integrated in the total curriculum of the institute:

1) General Courses on Transport

- Transport economics
- Studies in traffic culture and traffic rules and regulations
- Transport mode standardization (European standards)
- Road and railroad transport and introduction to intermodal transport concepts
- Operations handling of goods in ports and terminals
- Acceptance of loads, loading/unloading
- Vehicle and container construction/inspection/reparation
- Environmental issues

2) Function Specific Training (to be determined by the beneficiary)

- European Transport Policy
- Integrated chain logistics
- Hazardous and toxic waste transport
- Training with different equipment and vehicles (off-the-job training) such as straddle carriers, fork lift trucks, container stacking equipment and empty container handling
- Responsibilities of consignors, consignees, drivers, haulers, ship-owners, air carrier owners, etc.

3) Transport Specialization Courses

- Air Transportation

- Maritime Technology
- Shipping (Management; Operations)
- Safety training & Environmental protection
- Terminal Management
- Techniques of International Trade and Transport
- Port Informatics
- Maritime Law
- Transport Law
- Hinterland Transportation
- Maritime and Transport Insurance

4) Automation and Telematics Courses

- Windows and Windows NT
- WORD, WordPerfect, EXCEL (spreadsheets), CorelDraw and PowerPoint
- Internet use (management of the «homepage », Website creation)
- Intranet computer network management (NOVEL NETWERK 4.1)
- Specialized computer programs on freight handling, transport document handling dangerous goods, warehousing, stuffing and stripping, queuing systems, etc
- EDI / EDIFACT, GPS, GNSS technology etc;

5) Courses in Economics and Management

- Strategic Management
- Strategic Management Tools
- Operational Management
- Structural changes in the World Economics
- Maritime Economics

- Port Economics
- Transport Economics
- Environmental Economics

(2) Preparation of Training Modules

Attention must also be devoted to intermodal transport. An in-depth training program on all elements of intermodal transport should therefore be available. An example syllabus of this type of course is provided hereafter.

Module 1: Costs and benefits of intermodal transportation:

- cost calculations of the different modalities for a certain transport route
- cost build-up of intermodal transport

Module 2: Non-financial costs and benefits of intermodal transportation:

- qualitative advantages and disadvantages
- rules and regulations in the different European countries

Module 3: Essentials of intermodal transportation:

- possibilities for combinations
- mechanisms and systems for combinations

Module 4: The importance of co-operation, from both a national and an international point of view:

- reasons for strategic alliances are discussed in order to facilitate the decision process

Module 5: Company strategy development:

- internal and external analytical methods

Module 6: Advantages and disadvantages of production organisation compared with traditional organisation

- process and management systems
- modern socio-technology

Module 7: Information technology:

- types and applications
- advantages and disadvantages

Module 8: Implementation of strategic changes:

- concepts of intermodal transportation
- phases of the implementation process

Module 9: Case Studies:

- integration of the knowledge and skills obtained in the course
- development of a business plan for intermodal transport
- presentation of the business plan
- discussion on the practical application of the plan

(3) Transport Simulation Tools

Given that the Transport Training Institute requires an long-term sustainable development plan, the training program should also include a *Transport Network Simulator*. The simulation of transport and logistics in door-to-door transport includes all typical transport needs, operational, administrative, and managerial. Transport is nearly always implemented by a variety of organizations working together to complete the transport, but each chasing their own objectives by contributing in this specific transport. The program will therefore offer a helicopter view that surpasses the objectives of single organizations in the intermodal transport chain. The logistical full mission simulator will answer to the questions and problems of all network participants. The objective of the Transport Network Simulator is to provide students insight in the realities of transport. To teach students the concept of logistics they have to be familiar with the tools of the trade. So any education starts with the basics of transport, described in the following paragraphs at operational, tactical, and strategic level.

Full mission simulators provide environments in which:

- a complete job can be exercised;
- the level of complexity can be managed by the succession of exercises;
- it is possible to go “to far”; students are allowed to make mistakes that would cause a disaster when done in reality;
- exercise can be varied in as many ways as required; and
- an exercise can be repeated indefinitely.

So a carefully composed set of exercises give students the opportunity to find out what logistics is all about, at each stage adapted to their knowledge and experience. Interactive Training Courses

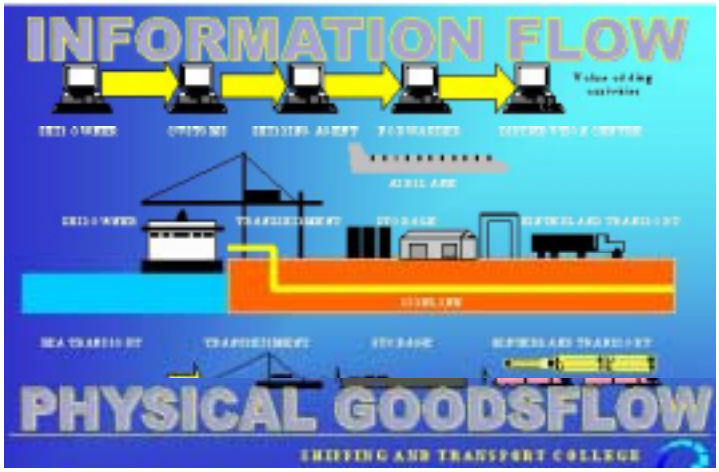


Figure 5.19 A Conceptual Chart of Logistics (an example)

(4) Interactive Training Courses

Computer aided courses on logistics can be used in the (computer) classroom and made available for the students at home. These programs provide a very flexible type of study material, with which the student can set his or her own pace.

Most available courseware is divided into modules. Each module deals with a certain subject of transport and forwarding and consists of the following elements:

- a written text, explaining the subject
- Software: one or more diskettes or CD's, containing:
- an interactive software program, including questions
- a test, consisting of multiple choice questions. The software registers the results of this test
- exercises to be submitted to a lecturer.

The following interactive training modules exist and can be easily adapted to the needs of the training institute in BiH:

- Logistics in general
- Logistics in transport
- Ports as nodal points of logistic flows
- Transport of dangerous goods
- Logistic costs
- Electronic Data Interchange (EDI)
- Planning in Transport

- Transport and storage of pesticides
- Loading carriers with dangerous goods
- Documents in Transport
- INCO-terms

Special training courses will be applied in the Transport Training Institute that applies **i**nteractive distant learning in core topics. To bring persons from different background up to date with new developments or changing approaches to familiar problems requires a highly adaptable and flexible didactical method. Interactive training is the most flexible method to reach that goal. Even when these people are professionals and/or managers, interactive learning methods can give them new opportunities, even when they have no time to attend regular courses. The courseware can be studied in the classroom, at home or on the job. The equipment only includes a (Pentium II) PC with CD-ROM and an Internet connection (modem).

In general, each module in an interactive training course deals with a specific subject and includes following elements:

An Internet site, containing:

- **Pre-test** for students that are familiar with the subject to check how much they already know and to determine if it is useful to use that part of the course. If their answers are satisfactory they can proceed to the next item. The results of the Pre-test are recorded and can be checked by the tutor.

- **Theoretical introduction** into the subject, basically an interactive syllabus.

- **Exercises** to be made by the student to test his/her ability to understand the theory and to get some practice in the required actions.

- **Post-test** to test the knowledge and understanding of this subject. The results of the Post-test are recorded and can be checked by the tutor. After satisfactory completion of a module the student can continue with another module (subject).

A CD-ROM application, containing the video-clips required for the theoretical or exercise part. This is done to avoid long waiting times in case of slow connections to the Internet.

An Email address for the student and for the teacher to exchange assignments, guidance, advice, questions, answers, etc.

5.3.4 Indicative Investment Requirements

The required investments cover 4 different sections of the development plan mentioned in the preceding sections. An indicative costs are estimated below, however, this

estimate is subject to clarification based on the detailed development plan, including implementation schedule for the different implementation phases (divided over the activities for each phase).

Table 5.15 Indicative Cost Estimate for Transport Training Institute

Implementation phase	Estimated Costs (KM)
Research and facility assessment	500,000
Public expertise building	250,000
Establishment of the Institute	2,500,000
Assistance during transition period	250,000
Total	**3,500,000**

Source: The JICA Study Team

5.3.5 Institutional and Organizational Arrangements

To ensure efficiency in all these relations, the Transport Training Institute needs a flexible organization that is embedded in a consistent structure. It should be noted that the final organization and structure of the Transport Training Institute is subject to the results of the organizational and structural assessment.

The Transport Training Institute could be organized as an integrated part of the Transport Public Corporation (see Chapter 7 for details on this issue). A structure and organizational context of the concept is provisionally proposed as shown in Figure 5.20.

Within the Transport Public Corporation, a special department for Training and Education will be responsible for:

- the content of the courses of the Transport Training Institute;
- the (quality) control of the institute;
- the certification of the institute and other (private) transport training centers; and
- the ratification of certificates and diplomas.

Given that a section of their activities is related to educational aspects, a direct relation with the Ministry of Education is advisable. Consultation between both parties will ensure that the courses in transport education at the graduate and post-graduate levels are consistent with market requirements and that specialized training programs in the Transport Training Institute can be integrated in the course packages at BiH universities.

During and after the transition phase, a preferred relation with a well-reputed European Transport Training Institute should be established. This strategic alliance will ensure that the Transport Training Institute in BiH will continue to operate according to European standards of transport training.

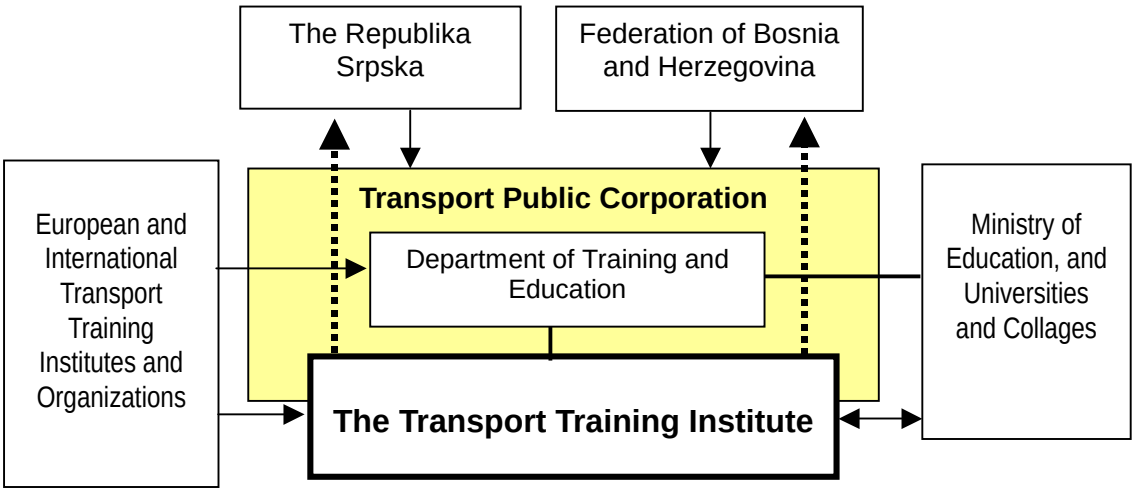


Figure 5.20 A Proposed Structure and Organizational Context

5.4 ENVIRONMENTAL ADMINISTRATION

5.4.1 Organisation of Environmental Protection in Bosnia and Herzegovina

Both Entities in the State of Bosnia and Herzegovina have their own Ministry of Physical Planning and Environment. There is no Ministry of Environment at the state level. However, there is an Environmental Steering Committee (with 8 members) for coordination among both Entities of environmentally related matters. Each Entity has four members assembled in the Steering Committee, which meets generally once per month.

Under both Federal Ministries of Physical Planning and Environment, there are four Departments, among which the Department dealing with environmental issues:

- Department of Physical Planning;
- Department of Environmental Protection;
- Department of Construction and Reconstruction;
- Department of Law Cases and General Affairs.

Departments of Environmental Protection in both Entities are operational at present, but are understaffed. Policy emphasis needs to be placed on strengthening the environmental administration capability.

5.4.2 Environmental Guidelines for Transport Development

(1) General

Environmental guidelines to be followed for the Transport Master Plan for Bosnia and Herzegovina are in principle the regulations and guidelines of both Entities. However, because both Entities in Bosnia and Herzegovina have not yet formulated their own environmental laws and regulations (it is under preparation as described in the following section), the JICA[10] and EU guidelines[11] are being followed for the Initial Environmental Examination. When the EU and JICA guidelines and regulations are felt to be insufficient for certain components of the Environmental Assessment, then international environmental guidelines are followed from the World Bank[12] and United Nations[13]. In general, it can be stated that EU and JICA environmental regulations, as well as international guidelines, prescribe that transport development projects should be designed and constructed along environmentally sound principles to ensure sustainability.

(2) Environmental Laws and Regulations in Bosnia-Herzegovina

At present there are no specific environmental laws and regulations in the Federation of Bosnia-Herzegovina and the Republic Srpska, although the existing Law on Physical Planning has about 40 provisions related to environmental issues. Each Entity will have their own environmental laws in the near future, but they will be practically identical.

The EU assists the preparation of the new laws and regulations. Austria is the main contributor. Six new laws are being formulated. An Environmental Framework Law is being prepared now and will probably be finalized at the end of the year. Other environment-related laws under preparation are:

- Law on Water Protection;

[10] Environmental Guidelines for Infrastructure Projects, XII Transport Development, JICA Environmental Guidelines, Japan International Co-operation Agency, September 1992.

[11] Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (85/337/EEC - OJ L 175/40, 5 July 1985); Council Directive 97/11/EEC of 3 March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment (97/11/EEC - OJ L 73/5, 14 March 1997); and Guidance Note, Procedures in DG I North/South for assessing the environmental impact of EC-financed Projects and Programmes, Commission of the European Communities, Directorate General External Relations, Brussels, July, 1992, 44-92R1.

[12] Environmental Assessment Sourcebook, World Bank Technical Paper, no. 139, 140; Environment Department, The World Bank, Washington D.C., USA, 1991, 1994.

[13] Environmental Impact Assessment, Guidelines for Transport Development, ESCAP - Environment and Development Series, United Nations, New York, 1990.

- Law on Waste;
- Law on Nature Protection; and
- Law on Air Protection.

(3) JICA Environmental Guidelines for Infrastructure Projects

The JICA Environmental Guidelines for Infrastructure Projects, especially for Transportation Development (Sector XII), are being used for the screening, scoping, and evaluating components of the IEE. These guidelines prescribe that for JICA assisted projects first of all the environmental guidelines of the host country should be followed. Because, both Entities in Bosnia and Herzegovina have not yet formulated their own environmental laws and regulations, the JICA guidelines are used. Moreover, it was agreed in the JICA Study Team that also EU-regulations should be followed, since Bosnia and Herzegovina has the intention to apply (in the future) for European Union Membership. Also, if applicable, the World Bank guidelines are followed for the environmental assessment.

According to the JICA-regulations, an Initial Environment Examination (IEE) of selected project areas should be carried out, including Site Descriptions (SD) and proper Project Descriptions (PD). The PD and SD facilitate the screening process, which will result in the identification of the required type of follow up environmental study. It should be realised that screening and scoping in the IEE-phase is mainly carried out in a qualitative way.

The following step in the process of IEE is - next to the evaluation whether an Environment Impact Assessment (EIA) is required or not - to define the contents of the EIA. "Scoping" is the process of identification of the important/significant environmental impacts, resulting from a proposed transport development project. Based on scoping, the items to be studied in the EIA can be defined, which form the basis for the preparation of the TOR for the EIA.

(4) Environmental guidelines of the European Union

Both JICA and EU environmental regulations and guidelines are being used for the assessment of the impacts of the proposed priority transport projects on the environment. The EU directives 85/337/EEC and 97/11/EEC will be used for the IEE. Annex I of Council Directive 85/337/EEC provides a list of activities/projects (first category) for which an EIA is required.

A case-by-case environmental examination, or the use of thresholds or environmental criteria, is being used for projects not included in the first category. Specific criteria will indicate whether an EIA is required or not. These projects of the so-called 'second category' are of a smaller magnitude than the 'first category' projects.

In general, the directives state that pollution and nuisance should be prevented at the source, and at the earliest possible stage, in all the decision-making and technical planning processes in the pre-construction, the construction, as well as the post-construction/ operation and maintenance phases of proposed transportation development projects.

5.4.3 Initial Environmental Examination (IEE)

(1) Conduct of an IEE

Transport development projects are implemented to improve the mobility of goods and persons, which should result in improved economic development. Consequently, it should improve the social environment of the people involved. However, almost every project has also negative environmental impacts, being slight or severe.

To obtain insight in this field for proposed (priority) transport development projects for Bosnia and Herzegovina, and to ensure sustainability, an IEE of these projects is being carried out as part of the Transport Master Plan studies. The IEE will indicate the potential negative, as well as the positive environmental impacts, to be expected from the proposed projects, in order to determine whether more detailed follow up environmental studies are needed. Also an indication of mitigation measures, required to alleviate adverse impacts, will be provided.

The screening and scoping process, whereby guidelines JICA, the European Union (EU), as well as World Bank guidelines, are applied, will result in identification of one of the following analysis requirements for each proposed priority project:

- A full EIA plus Environmental Management and Monitoring Plans (EMMP) are required, because significant adverse environmental impacts are to be expected;
- Only EMMP are required; or
- No further environmental actions are required, as only minor (no significant) adverse environmental impacts are to be expected.

The IEE is now under preparation, having meetings with government officials and NGO's. Local consultants are being selected for field surveys and report preparation has started.

(2) Criteria for Environmental Impact Assessment

Environmental impacts may be permanent or temporary; may occur during the pre-construction/design phase, the construction phase and the post-construction/ operation & maintenance phase of a project, and may be a direct result of construction activities, or an indirect result (like unplanned developments along roads).

Environmental criteria for the proposed transport development projects relate to processes and activities, which may affect the social and cultural environment and the physical/biological environment (landforms, the preservation of nature reserves, flora, fauna, quality of water resources).

The EC Council Directive 97/11/EC-OJ L 73/5 provides criteria to judge the significance of environmental impacts. These criteria relate to characteristics of the projects, to the location/environmental sensitivity of project areas, and to characteristics of potential impacts. Additionally, the number of environmental components affected and the cumulative nature of impacts should be taken into account.

Answering the following questions could indicate the overall environmental appropriateness of proposed projects:

- Will the project make unwarranted accelerated use of scarce resources in favour of short-term over long-term economic gains?

- Will the project create unwarranted losses in precious/irreplaceable natural or other sources?

- Will the project result in unwarranted hazards to endangered species?

- Will the project tend to intensify rural to urban migration to an undesirable degree?

Not all recommended environmental activities need the same scope. For example an EIA for one type of project needs to be more extensive than for another type of project. The same applies for recommended Environmental Management and Monitoring Plans, as well as for Operation and Maintenance Plans.

CHAPTER 6: PRIORITY PROJECTS AND PROGRAMS

6.1 OVERALL TRANSPORT DEVELOPMENT CONCEPTS

The first section of this chapter of the report summarizes the transport sector plan for each mode namely: the Road Development Plan, the Railway Development Plan, the Waterway Transport Development Plan, and the Air Transport Development Plan. Further details on the Sector Plans are provided in Volume II of this report.

In the next section of this chapter there is a discussion on the affordability of the Road Sector Plan.

6.2 TRANSPORT SECTOR DEVELOPMENT PLANS

6.2.1 Road Development Plan

(1) Sufficiency Scenario Formulating Process

A sufficiency scenario is a combination of project proposals to satisfy the traffic demand on the road network with minimum investment for capacity build-up. The analysis begins with identification of road sections with insufficient capacity under the Do-Nothing Scenario. The next step is to analyze what would be the likely solutions to ameliorate the insufficient capacity. There are basically two methods to achieve this. One is simply to build up the capacity of the road section itself. The other is to guide the overflowing traffic to other corridors. In this sense, an alternative solution may exert a larger influence on the network particularly when the alternative solution has a larger impact on capacity.

(2) BiHTMAP Project Proposals for Sufficiency Scenario

The road network assumptions for proposing new project proposals are as follows:

- Appropriate maintenance activities will be implemented by the local authorities;
- Reasonable pavement and bridge rehabilitation on Primary I and Primary II corridors will be implemented gradually in addition to specific projects proposed by BiHTMAP; and
- Improvements due to committed projects are a given condition in the road network.

BiHTMAP project proposals consist of several categories of projects. A brief description of each category and the projects are given below. These proposed projects are shown in Figure 6.1 and the list of projects with responsible Entity, length, indicative costs and proposed implementation periods are shown in Table 6.1 (1)-(2). It should be noted that the costs indicated in Table 6.1 are indicative only, and further clarification for each project will be necessary when the projects are studied or designed more in detail.

(3) Sufficiency Scenario Testing Result

The BiHTMAP Project Proposals recommended for the sufficiency scenario were tested in the model. The results are shown in Figure 6.2 and Figure 6.3.

Figure 6.2 shows that major traffic flow would be guided to Primary I corridors. The higher traffic volume sections would be:

- E-661 Corridor (Gradiska - Jajce),
- E-73 Corridor (Corridor Vc),
- P-2 Corridor (B. Novi - Zvornik),
- E-761 Corridor (D. Vakuf - Zenica (Lasva)),
- P-6 Corridor (Gorica - Mostar),
- P-10 Corridor (north and south of Tuzla), and
- P-12 Corridor (Raca - Zvornik).

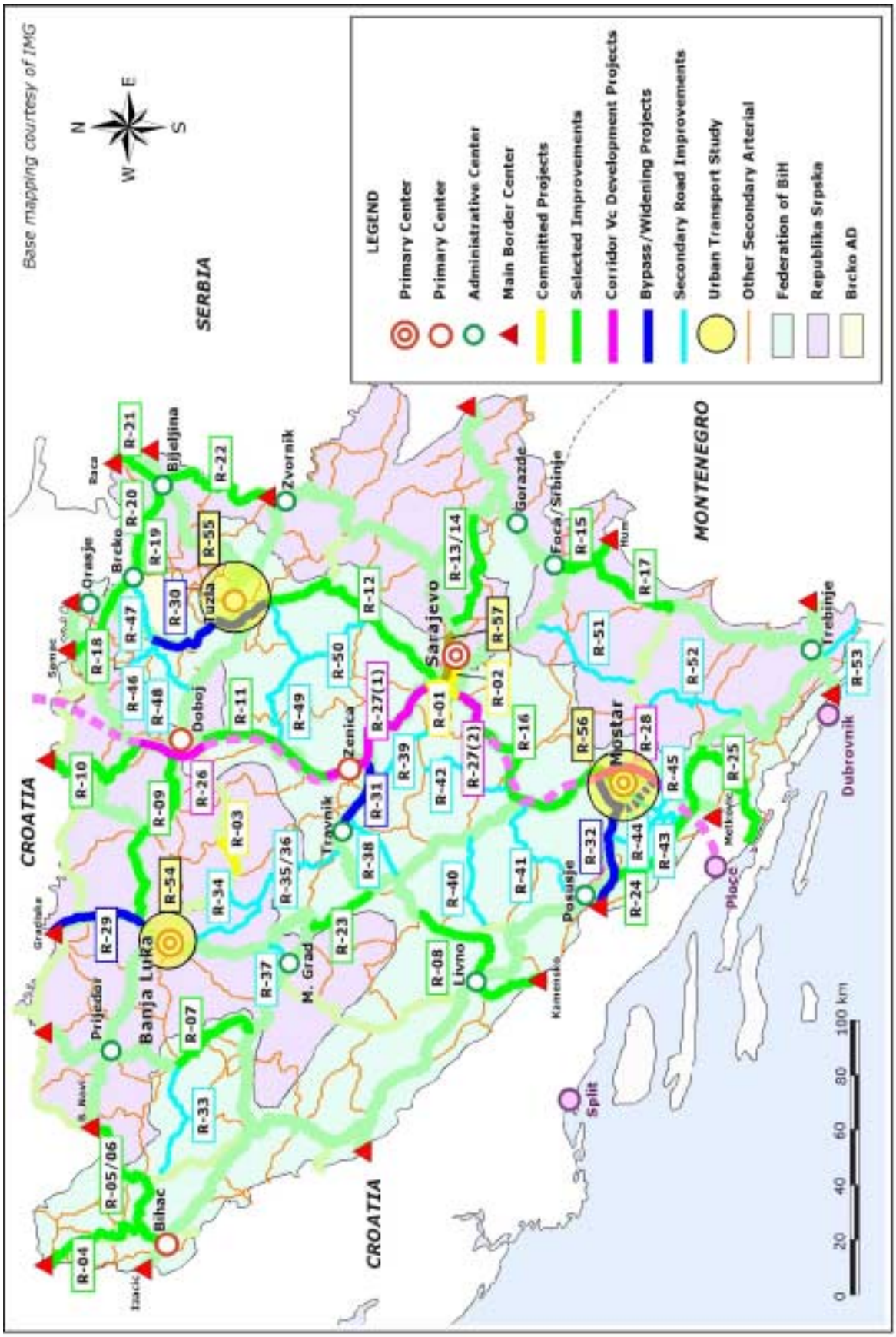


Figure 6.1 Project Location Map for BiHTMAP Project Proposals

Table 6.1 Road Infrastructure Improvement Projects

ID No.	Project Name	Description	Entity	Length	Cost * (KM mil.)	Implementation Period		
						2001-2005	2006-2010	2011-2020
Committed Projects								
R-01	Corridor Vc Sarajevo Bypass (Josanica-Vlakovo)	New Bypass	FBiH	13.6 km	** 135.0	○		
R-02	Sarajevo Bypass Access Highway (Phase II)	New Bypass	FBiH	2.3 km	** 26.7	○		
R-03	Maslovare-Pribilic Road Improvement	Improvement	RS	6 km	** 9.1	○		
Selected Improvements								
R-04	Velika Kladusa-Srbljani Road Improvement	Improvement	FBiH	45 km	18.0		○	
R-05	Bihac-B. Novi Road Improvement (FD)	Improvement	FBiH	51 km	35.7		○	
R-06	Bihac-B. Novi Road Improvement (RS)	Improvement	RS	17 km	11.9		○	
R-07	Sanski Most - Kljuc Road Improvement	Improvement	FBiH	32 km	12.8		○	
R-08	Heavily Loaded Road Improvement (Kamensko-Kupres)	Improvement	FBiH	81 km	56.7			○
R-09	Banja Luka-Doboj Road Development	Improvement	RS	86 km	168.7	○		
R-10	Heavily Loaded Road Improvements (B.Brod-Seslija)	Improvement	RS	50 km	35.0	○		
R-11	Heavily Loaded Road Improvements (Zenica-Maglaj)	Improvement	FBiH	53 km	37.1	○		
R-12	Sarajevo-Tuzla Road Improvement	Improvement	FBiH	98 km	102.3		○	
R-13	Ljubogosta-Mesici Road Development (RS)	Improvement	RS	54 km	187.8			○
R-14	Ljubogosta-Mesici Road Development (FD)	Improvement	FBiH	6 km	4.2			○
R-15	Foca/Srbinje-Hum Road Improvement	Improvement	RS	21 km	172.2		○	
R-16	Tarcin-Mostar Road Improvement	Improvement	FBiH	93 km	67.7	○		
R-17	Foca/Srbinje-Gacko Road Improvement	Improvement	RS	64 km	25.6			○
R-18	Heavily Loaded Road Improvements (Samac-Loncari)	Improvement	RS	27 km	18.9			○
R-19	Heavily Loaded Road Improvements (Loncari-Vrsani)	Improvement	BR	29 km	20.3			○
R-20	Heavily Loaded Road Improvements (Vrsani-Bijeljina)	Improvement	RS	25 km	52.7			○
R-21	Heavily Loaded Road Improvements (Bijeljina-Raca)	Improvement	RS	23 km	9.2			○
R-22	Heavily Loaded Road Improvements (Bijeljina-Zvornik)	Improvement	RS	54 km	37.8			○
R-23	Heavily Loaded Road Improvements (D. Vakuf-Jajce)	Improvement	FBiH	34 km	23.8			○
R-24	Heavily Loaded Road Improvements (Grude-Stolac)	Improvement	FBiH	69 km	48.3		○	
R-25	Stolac-Neum Road Improvement	Improvement	FBiH	51 km	20.4			○
Corridor Vc Development Projects								
R-26	Corridor Vc (Doboj Bypass)	New Bypass	RS	15 km	106.5			○
R-27(1)	Corridor Vc (South Zenica-Josanica)	Motorway	FBiH	56 km	448.0		○	
R-27(2)	Corridor Vc (Vlakovo-Tarcin)	New Bypass	FBiH	16 km	243.5		○	
R-28	Corridor Vc (Mostar Bypass)	New Bypass	FBiH	20 km	142.0			○
Bypass / Widening Projects								
R-29	Klasnica-Gradiska Road Improvement	New Bypass	RS	32 km	163.2		○	
R-30	Zivinice-Celik Road Improvement	Widening	FBiH	51 km	168.3			○
R-31	Lasva-Travnik Road Improvement	New Bypass	FBiH	26 km	184.6			○
R-32	Mostar-Gorica Road Improvement	New Bypass/Widening	FBiH	51 km	264.7	○		
Secondary Road Improvements								
R-33	B. Krupa-S. Most Road Improvement	Pavement	FBiH	52 km	41.6			○
R-34	K. Varos-S. Vakuf Road Improvement	Pavement	RS	16 km	12.8			○
R-35	Jagare-Turbe Road Improvement (RS)	Pavement	RS	80 km	64.0			○
R-36	Jagare-Turbe Road Improvement (FD)	Pavement	FBiH	18 km	14.4			○
R-37	Crna Rijeka-M. Grad Road Improvement	Pavement	RS	14 km	11.2		○	
R-38	Novi Travnik-Bugojno Road Improvement	Pavement	FBiH	32 km	12.8		○	
R-39	Blazuj-Kaonik Road Improvement	Pavement	FBiH	50 km	40.0	○		
R-40	Mokronoge-Prozor Road Improvement	Pavement	FBiH	43 km	17.2			○
R-41	Posusje-Jablanica Road Improvement	Pavement	FBiH	65 km	26.0			○
R-42	Ostrozac-Fojnica Road Improvement	Pavement	FBiH	65 km	26.0			○
R-43	Mostar-Ljubuski Road Improvement	Pavement	FBiH	33 km	13.2			○
R-44	Siroki Brijeg-Capljina Road Improvement	Pavement	FBiH	47 km	18.8			○
R-45	Sitluk-Zitomislici Road Improvement	Pavement	FBiH	10 km	4.0			○
R-46	Gradacac-Ormanica Road Improvement	Pavement	FBiH	14 km	11.2		○	
R-47	Cerik-Brcko Road Improvement	Pavement	BR	24 km	19.2			○
R-48	Gracanica-Srnice Road Improvement	Pavement	FBiH	24 km	19.2		○	
R-49	Zepce-Zivinice Road Improvement	Pavement	FBiH	80 km	32.0		○	
R-50	Olovo-Ribnica Road Improvement	Pavement	FBiH	40 km	32.0			○
R-51	D. Polje-Pluzine Road Improvement	Pavement	RS	67 km	53.6			○
R-52	Nevesinje-Ljubinje Road Improvement	Pavement	RS	55 km	22.0			○
R-53	Trebinje-Grab Road Improvement	Pavement	RS	15 km	6.0		○	
Urban Transport Studies / Major Urban Projects								
R-54	Banja Luka Urban Transport Study	Study	RS	---	1.0	○		
R-55	Tuzla and Vicinity Urban Transport Study	Study	FBiH	---	1.0	○		
R-56	Mostar Regional Transport Study	Study	FBiH	---	1.0	○		
R-57	Sarajevo City Motorway	New Bypass	FBiH	10 km	** 99.5		○	
Total for BiHTMAP Project Proposals ***			Entity	Length	Cost	2001-2005	2006-2010	2011-2020
Total (Fedaration of BiH)			FBiH	---	**2,288.0**	807.0	687.8	793.2
Total (Republika Srpska)			RS	---	**1,160.1**	204.7	364.5	590.9
Total (Brcko District)			BR	---	**39.5**			39.5
Total (Bosnia and Herzegovina)			---	---	**3,487.6**	1,011.7	1,052.3	1,423.6

Source: JICA Study Team ** Year 2000 Constant Prices* *** Cost obtained by Local Authorities* *** Not including Committed Projects*

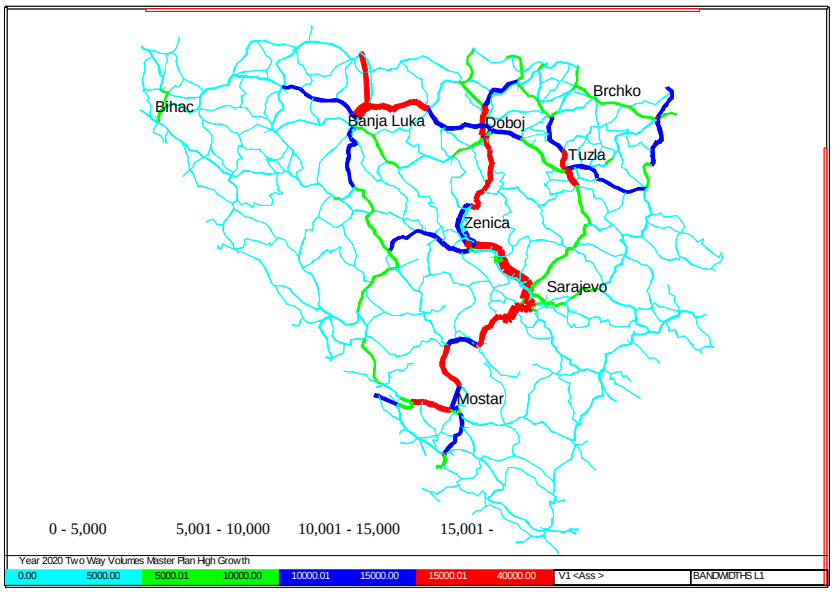


Figure 6.2 Year 2020 Total Daily Vehicle Trips (Sufficiency Scenario) (High Economic Growth)

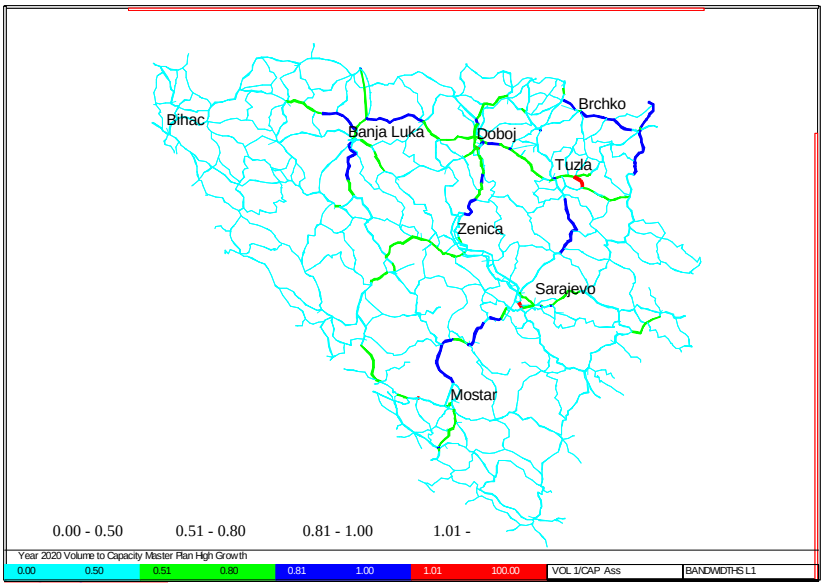


Figure 6.3 Year 2020 Volume to Capacity Ratio (Sufficiency Scenario) (High Economic Growth)

Figure 6.3 shows there would be no major capacity problems to occur in the network, except adjacent to some urban areas. These urban issues should be addressed by area-specific studies. Some such studies are included in the list of Road Infrastructure Improvement Projects.

As a result of analysis on road maintenance, rehabilitation, and new project proposals, the overall investment package required in the road infrastructure improvement is summarized in Table 6.2.

Table 6.2 Road Infrastructure Investment for Year 2001 - 2020: Summary

(Unit: KM million)

Item	FBiH	RS	BR	Total	%
Maintenance	1,036.0	940.0	15.4	1,991.4	30.7 %
Rehabilitation	828.5	750.3	1.7	1,580.5	24.6 %
Committed Projects	161.7	9.1	---	170.8	2.5 %
BiHTMAP Projects	2,288.0	1,160.1	39.5	3,487.6	42.2 %
Total	4,314.2	2,859.5	56.6	7,230.3	100.0 %
% by Entity	59.7 %	39.5 %	0.8 %	100.0 %	---

Source: JICA Study Team

The total expected road infrastructure investment would be about KM6,500 million. This means on average total BiH would require KM325 million investment per year in the road sector.

There is a figure to compare regarding the assessment of this investment size. At the end of former Yugoslavian era, the Republic of Bosnia and Herzegovina was spending $200 million per year for the road sector investment, which can be converted to KM432 million in today's exchange rate. From this figure, the estimated investment cost for the road sector is considered as a level of "minimum necessity" to maintain proper function of the road network.

6.2.2 Railway Development Plan

Railway transportation is an integrated system with three essential elements: 1) the network; 2) the safety system; and 3) the operations. Without any of the three elements, the railway system cannot function properly. The current condition of the railways in BiH is assessed as poor. They currently lack network continuity, communication systems, signal systems, level-crossing security systems, and necessary maintenance equipment. Although tracks are physically operable, they have low capacity of traffic operations and a low running speed for trains between 30 and 70 km/h.

The railway system is operable only under a condition that all the physical elements of railway facilities are functioning well and integrated as a total system. Overemphasized efforts on only selected parts of the system, therefore, are not meaningful for the improvement of the entire system. Balanced investment must be a key. Once the new renovated system is operational, the continued good performance of the railways in BiH will require vigilant maintenance.

However a large effort is still required to fully restore the current damaged railway system and to develop it as one of essential transport alternative modes to meet the economic development in BiH. To this end, enhanced improvement efforts should be made in a phased manner with three stages as follows:

- Phase 1 (up to 2005) is recognized as "*the normalization period*," when all efforts should be made to recover from the current deficient situation and normalize the entire system.

- Phase 2 (2006 ~ 2010) is regarded as "the transportation recovery period," when the credibility of railway transport is resumed, thereby encouraging more passengers as well as freight traffic.

- Phase 3 (2011 ~ 2020) is conceptualized as "the functionally strengthening period," when the BiH railway system should be further strengthened in its technical, operational and managerial facets in such a way that the railways in BiH can play a significant role as part of the Pan European Network System, sharing the European norms, regulations and standards for the commercial operations.

Relevant to the phased development scenarios, the railway transport demand curves, in terms of ton-km, are delineated in the 20-year time horizon. (See Figure 6.4) Two scenarios are envisaged namely: an ambitious growth (Scenario 1) and a more likely growth scenario (Scenario 2).

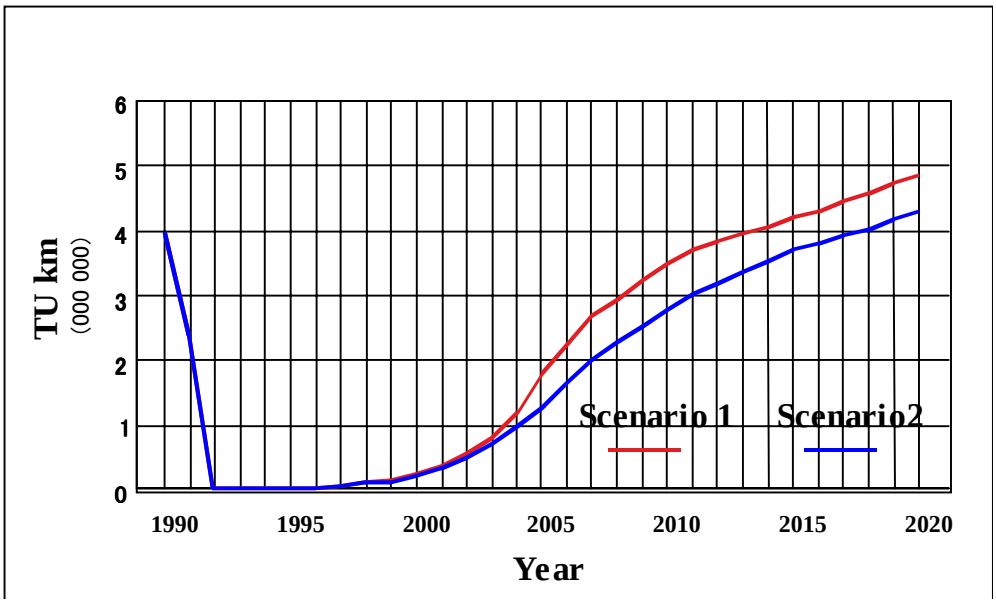


Figure 6.4 Traffic Recovery Scenario of the Railways in BiH

Scenario 1 represents an ambitious case where rail recovers to a 50 % level of the former service, or, the 1990 transport volume, in 2005, and reaches almost the same level of the former state in 2015. If this growth momentum continues, the transport demands in 2020 will reach a level of about 120% of the 1990 performance.

Whilst, Scenario 2 is adjusted downward, taking into account the implications from the traffic demand analysis and difficulty in the recovering process in practice. This scenario aims to reach the 50% of the pre war level 2 years after 2005, and eventually the traffic demand in 2020 will be the same level as the 1990 performance. This second scenario is rational, looking into experiences in CIS and CEE countries where the railway transport

demands had suddenly been reduced down by approximately 50% in 1990 to 1991, and in these cases they have still not recovered today. It can be said that for programming the facility improvements, Scenario 2 provides a more rational basis.

A general task flowchart of the railway infrastructures, facilities, and equipment is proposed based on the phase scenarios discussed above, and is shown in Figure 6.5.

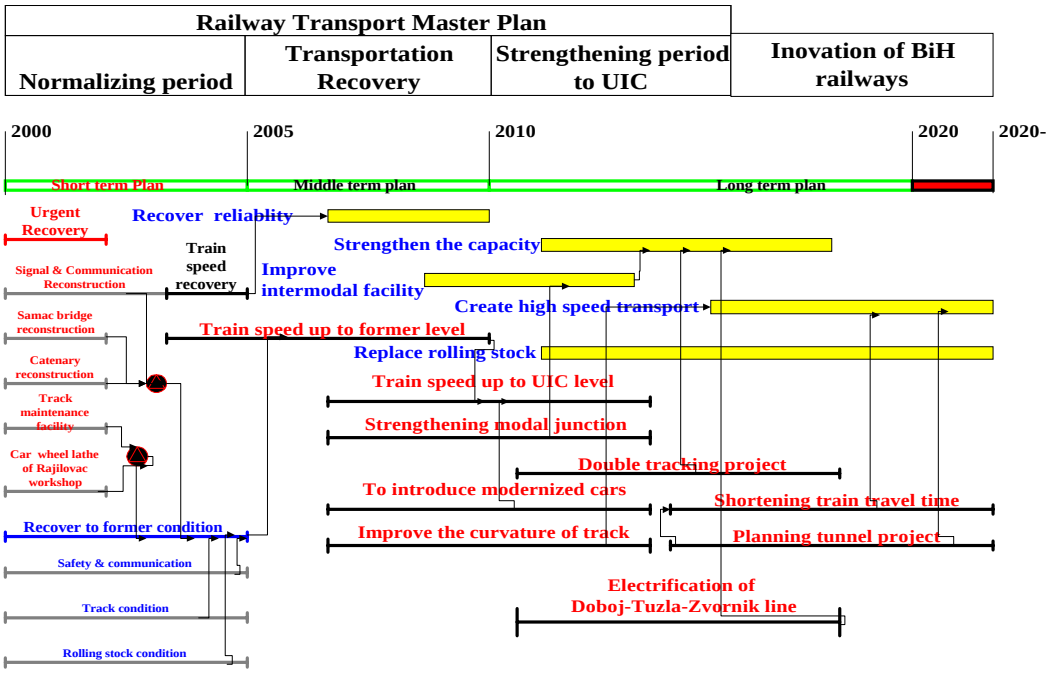


Figure 6.5 Task Items of Reconstruction and Improvement

(1) Short-term Plan for Phase 1 (2001-2005)

The short-term plan, that is to recover the facility conditions to the former state, is targeted to be completed in the Phase 1 period until 2005,which coincides with the target year of the economic recovery of BiH. It is deemed that after 2005, the intesive assistance programs for rehabilitation by the international community will retreat from this country.

A strategic focus of this short-term plan should be placed on: 1) connection of the railway lines; 2) improvement of maintenance conditions for track facilities, rolling stocks, electrical systems of power supply, signal and communication systems and train control systems. All these facilties and equipment are expected to recover to the normal level before the war. The detailed components to be undertaken in this period are designated as the urgent program and shown in Figure 6.6.

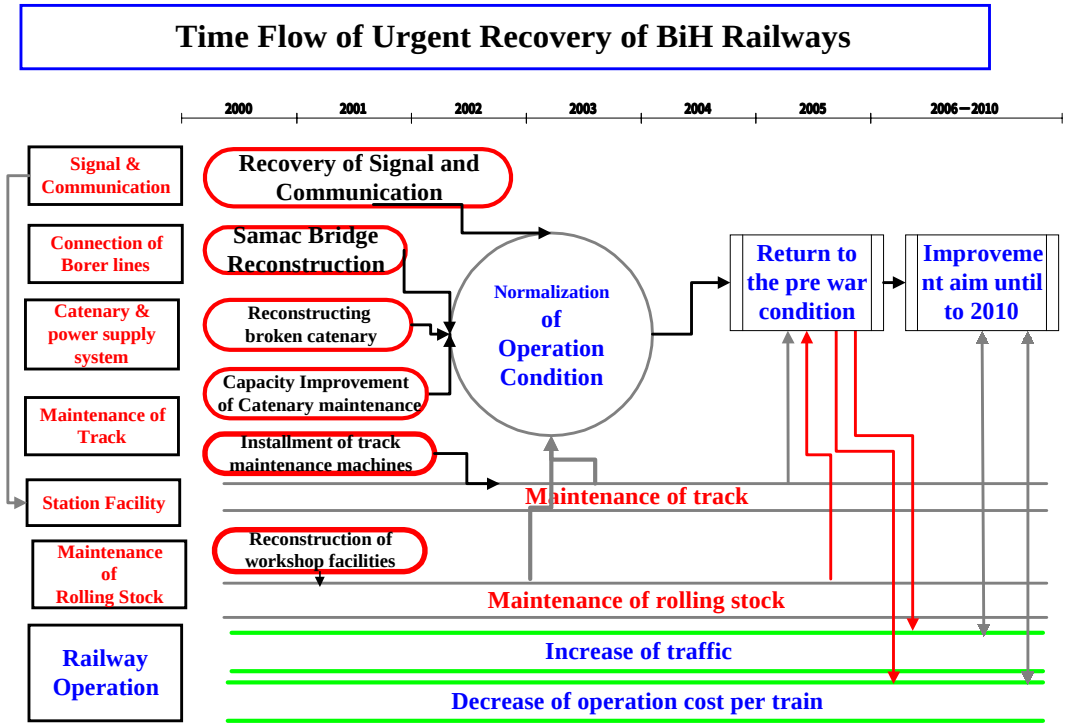


Figure 6.6 Urgent Recovery Flowchart of the Railways in BiH

Immediate actions for the rehabilitation need to be taken, focusing on the accomplishment of the railway connection, safety recovery, and the improvemant of the running conditions. These urgent works should be completed by 2002-2003.

These urgent projects comprise the high priority components on the two strategic railway lines in BiH namely:

- Line Croatia border-Doboj-Sarajevo-Mostar-Croatia border (single line, 311 km electrified, double track 95 km electrified); and

- Line Croatia border-Banja Luka-Tuzla-Serbia border (single line electrified 285 km).

It has been estimated, as seen in Table 6.3, that the improvement for the two strategic lines costs a total of nearly KM 110 million, out of which the investment cost for ZBH accounts for about 57% of the total, while that for ZRS, 43% of the total. These works are scheduled for completion in 2003.

Table 6.3 Lists of Priority Rehabilitation Projects

ID No.	Project	Line Croatia Border-Doboj -Sarajevo-Mostar-Croatia		
		ZBH (KM Mil.)	Border RS (KM Mil.)	Total (KM Mil.)
Rw-01	Border railwa station Samac			3.2
Rw-02	Border railway station Capljina	2.0		2.0
Rw-03	Reconstruction of tunnel of Jedrinje	2.9		2.9
Rw-04	Station signalling system on the line Samac-Capljina	21.0	9.8	30.8
Rw-05	Power traction remote control on the line Samac-Capljina	3.5	0.4	3.9
Rw-06	Traffic remote control on the line Samac-Capljina	2.5	0.5	2.9
Rw-07	Communication system on the line Samac-Capljina	14.1	2.8	16.9
Rw-08	Information system on the line Samac-Capljina	2.8	0.7	3.5
Rw-09	Equipment for infrastructure maintenance on the line Samac-Capljina	10.8		10.8
	Total :	**59.5**	**14.2**	**73.7**

No.	Project	Line Croatia Border-Banja Luka-Doboj-Tuzla-Serbia		
		ZBH (KM Mil.)	Border RS (KM Mil.)	Total (KM Mil.)
Rw-10	Border railway station Dobrljin		2.0	2.0
Rw-11	Border railway station Zvornik		2.0	2.0
Rw-12	Power traction remote control on the line Doboj-Novi Grad		1.2	1.2
Rw-13	Communication system on the line Dobrljin-Zvornik	3.1	12.8	15.9
Rw-14	Information system on the line Dobrljin-Zvornik	0.7	2.8	3.5
Rw-15	Equipment for infrastructure maintenance on the line Dobrljin-Zvornik		9.5	9.5
	Total:	**3.8**	**30.2**	**34.0**
	Grand Total:	**63.3**	**44.4**	**107.7**

Data resource: IMG Report, Conversion Rate 1 EUR=1.96KM

(2) Medium-term Plan for Phase 2 (2006-2010)

The medium-term plan needs to include a considerable number of improvement components to functionalize the total railway system as a reliable transport mode. Safe and efficient operation are focal issues for the improvement during this period to attract back railway customers. In this regard, the railway system will be required to be incorporated into the entire intermodal structure with the other transport modes such as roads, airports and ports, developing intermodal transfer facilities. Based on the above requirements to the railways, the following improvements need to be undertaken:

- Facilitate electrification of Doboj-Tuzla-Zvornik and introduction of pendulum train, referring to the requirement of UIC regulations;
- Improve the curvatures on some sections for speedup to meet the UIC standard;
- Introduce a private freight car system;
- Develop/improve loading and unloading facilities at freight terminals;

- Establish a passenger information service system;
- Improve the intermodal connection at major stations;
- Construct container inland terminals;
- Develop a freight information service system; and
- Begin the introduction of pendulum passenger train of light weight construction.

(3) Long-term Plan for Phase 3 (2011-2020)

The long-term plan is to strengthen the technically operational and managerial functions of the railways in BiH, thereby promoting its competitiveness with other transportation modes. Emphasis of the improvement should be placed on preparing the integration with the Pan European railway network, taking into account the following aspects:

- Explore a double tracking project to increase the capacity of "Corridor Vc", depending upon the demand;
- Facilitate electrification of the section Doboj-Tuzla-Zvornik Novi;
- Explore a tunnel construction project between Blazuj and Konjic;
- Seek measures to increase train operation speed to meet the UIC regulations for operation in the international corridors;
- Improve the curvatures fundamentally on selected sections to increase speed;
- Introduce pendulum passenger trains of light weight construction; and
- Study a double tracked tunnel construction project between Blazuj and Konjic.

For reducing the travel time, the introduction of pendulum trains and a tunnel project between Blazuj and Konjic should be studied from the engineering and economic feasibility points of view.

(4) Longer-term Considerations beyond 2020

Along with the economic development in the longer-term, the railways are expected to function as a more economically efficient mass transportation mode that can supplement or reinforce the intermodality linked with the European market. It may require to further strengthen the transport capacity as well as the transport service quality of the international corridors such as "Corridor Vc" and "Parallel X."

A total cost allowance including the urgent rehabilitation programs is estimated at 1,000 million KM for the first ten years and another 1,000 million KM for the next ten years. This budget is then allocated between the two entities. The schedule for Railway improvements in BiH is shown in Figure 6.7.

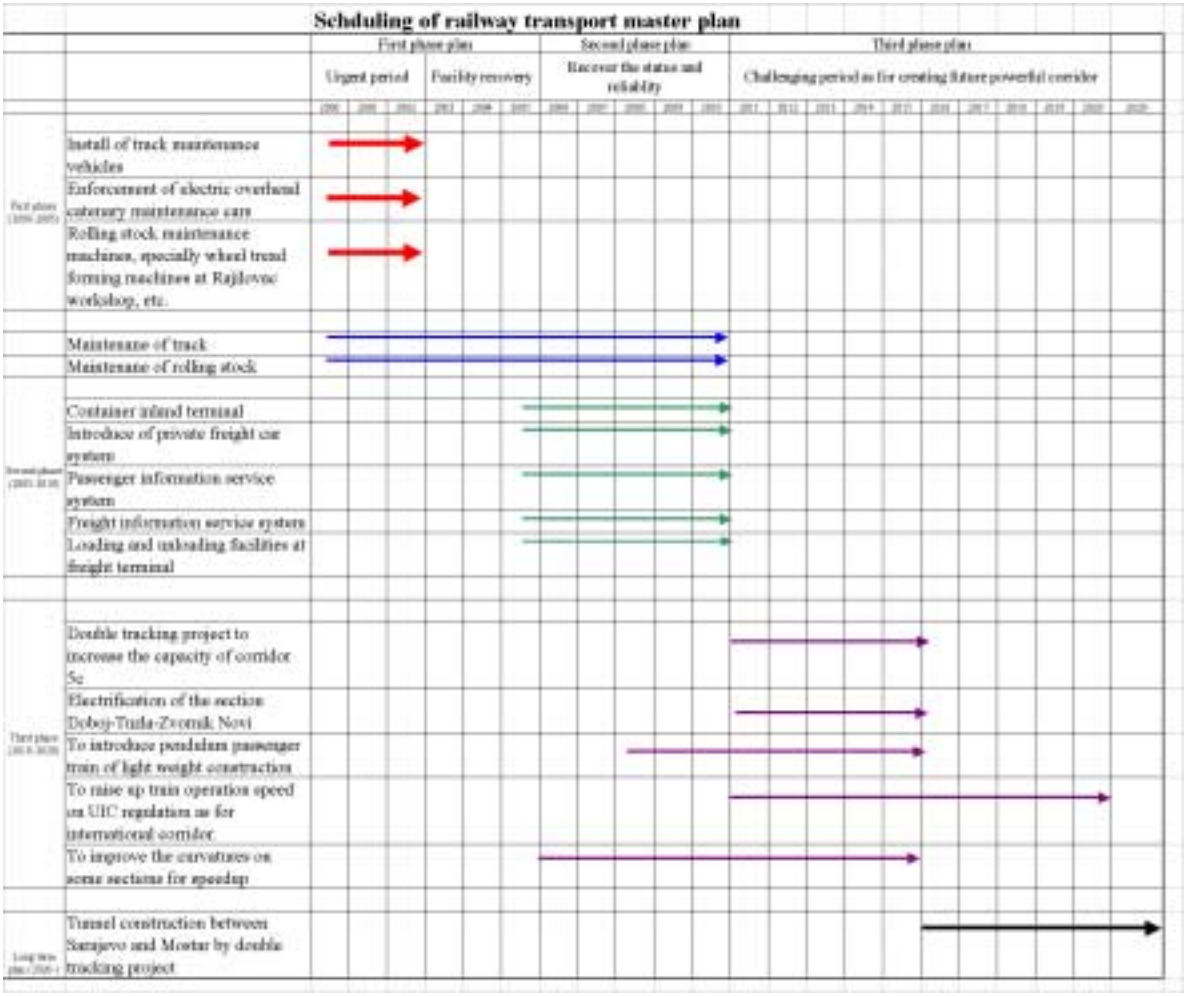


Figure 6.7 Schedule of Railway Improvement in BiH

6.2.3 Air Transport Development Plan

The project components which need to be addressed in the short term (2000-2005) to meet the ICAO standards with respect to safety and security as soon as practicable and to ensure future international demand and growth of traffic have been labeled as priority projects.

With respect to the general aviation, all project components have been labeled as priority projects to meet adequate general aviation operations and to stimulate further general aviation growth. However, the precise number of smaller airports to be developed has not yet been verified. A feasibility study for such purpose has been included in the list of priority projects.

With respect to ANS services and training requirements, all project components have been noted as priority projects as they affect directly the safety and security standards at the airports. A specific list of these projects with cost estimates is presented herewith by airport. Indications for the ANS Services and training projects are given thereafter.

(1) Priority Investment Projects at Main Airports

Table 6.4 Establishment of One ATS Unit for Intermediate Space Control

Project Components	Indicative Cost (Mill. KM, at 2000 prices)
Purchase of Secondary Radar, range app. 200 NM (SSR) with necessary equipment	43.0
Construction of physical facilities with necessary equipment	5.1
Provision of Technical Training of the Staff	4.2
Total	**52.3**

Source: BiHTMAP

Table 6.5 Priority Investment Projects, Sarajevo Airport

Project Components	Indicative Cost (Mill. KM, at 2000 prices)
Acquisition of land in accordance with master plan development	not costed
Construction of runway strip	0.6
Construction of new perimeter fence with emergency exits and intruder detection system	3.5
Construction of new perimeter and operational access roads	1.7
Widening/reconstruction of connecting taxiways "C" and "B" including fillets to suit class 4D aircraft	1.2
Construction of by pass exit at runway end 30	1.7
Relocation of fuel farm (preparation of new area)	1.7
Relocation and reconstruction of fire fighting building, re-equipment of CFR (minimal fire tender building: 2.9 m. KM; one fire tender: 1.4 m. KM)	4.3
Preparation for solid waste disposal and water treatment plants	1.2
Installation of radar for terminal (SSR)	5.8
Total	**22.0**

Source: BiHTMAP

Note: Cost estimates, for Sarajevo Airport, have been derived from the Master Plan Report based on US$1=KM2.32 (full details to be found in the Final Master Plan Report of S.E.A. Aeroporti di Milano)

Table 6.6 Priority Investment Projects, Banja Luka Airport

Project Components	Indicative Cost (Mill. KM, at 2000 prices)
Improvement of Safety and Security to meet the ICAO Standard	**37.7**
Development of the complete CFR system with equipment and facilities	17.0
Reconstruction and enlargement of the control tower	2.5
Installation of new ILS system	5.0
Installation of new ATC equipment	4.2
Installation of radar system	5.0
Installation of new airfield lighting systems	4.0
Airport Facility Development	**10.2**
Acquisition of land and removals of houses/buildings for widening the runway	Not costed *
Civil works for improvement of drainage system, water supply pipes, stabilization of the base layer of the runway, and construction of new perimeter fence	1.7
Construction of cargo building of 250m^2 with associated external works on landside:	4.0
Relocation of fuel warehouses	4.0
Installation of telecommunication connections and electric power line (20KV)	0.5
Total	**47.9**

Source: BiHTMAP

Note: *The costs for land acquisition for expanding the runway and compensation for removal of existing houses and buildings are not included as the project cost items.

Table 6.7 Priority Investment Projects, Mostar Airport

Project Components	Indicative Cost (Mill. KM, at 2000 prices)
Improvement of Safety and Security to meet the ICAO Standard	
Installation of MLS system or GPS System in lieu of ILS. Estimate based on equivalent ILS systems at other airports.	6.0
Construction of CFR building and re-equipment (only if SFOR equipment is not transferred)	3.5
Maintenance facilities and equipment (only if SFOR equipment is not transferred)	2.5
Total	**12.0**

Source: BiHTMAP

Table 6.8 Priority Investment Projects, Tuzla Airport

Project Components	Indicative Cost (Mill. KM, at 2000 prices)
Improvement of Safety and Security to meet the ICAO Standard	**15.5**
Installation of ILS system (only if SFOR equipment is not transferred)	5.0
Construction of CFR building and re-equipment (only if SFOR equipment is not transferred)	3.5
Maintenance facilities and equipment (only if SFOR equipment is not transferred)	2.5
Construction of new ATC tower and installation of equipment (only if SFOR equipment is not transferred)	4.5
Airport Facility Development	**3.5**
Construction of concrete apron area of 11,000 m^2	3.0
Construction of cargo building of 250m^2	0.5
Total	**19.0**

Source: BiHTMAP

Note: Facility capacities and cost estimates have for the proposed concrete apron area and the cargo building at Tuzla airport have been taken from the preliminary Master plan studies carried out by IPSA in April 1999 and unit costs available from Sarajevo Airport Master plan.

Table 6.9 Priority Investment Projects, Small Aerodromes

Project Components	Indicative Cost (Mill. KM, at 2000 prices)
Urgent minimum needs for improvement of "Safety and Security" for Selected Strategic Aerodromes	5.0
Feasibility Study *	0.5
Total	**5.5**

Source: BiHTMAP

Notes: A number of selected aerodromes need to be studied in terms of functions to be enhanced and improvement needs in the entire aviation network system for BiH, taking into account Bihac (Zeljave) and Visoko in FBiH and Prijedor, Zaluzani, Sokolac, Trebinje and Bijeljina in RS.

(2) Other Projects

Implementation of ANS recommendations should be facilitated. Costs being prepared by ICAO at present time have no details available yet. However, a sum of 7.5m KM is allocated to cover training for air navigation services staff, meteorological staff and for management.

CFR training needs to be conducted. An indicative cost of 1.5 million KM (assuming 40 trainees over 5 year, 3 months training per trainee) is estimated for the urgent project.

(3) Total Priority Investment

The total priority investment in the aviation sector is around 167.7 million KM. A summary of the projects is given in Table 6.10.

Table 6.10 Summary of Investment in Air Infrastructure

ID No.	Priority Investment Projects	Cost (mil. KM)
	Intermediate airspace traffic control system:	
	- Establishment of one ATS unit for intermediate space control	52.3
	Sarajevo airport:	
A1	- Improvement of safety and security to meet ICAO standards	22.0
	Banja Luka airport:	
A2	- Improvement of safety and security to meet ICAO standards	37.7
A3	- Airport development (cargo terminal)	10.2
	Mostar airport:	
A4	- Improvement of safety and security to meet ICAO standards	12.0
	Tuzla airport:	
A5	- Improvement of safety and security to meet ICAO standards	15.5
A6	- Airport development (concrete apron area and cargo terminal)	3.5
A7	Small aerodromes:	
	- Urgent minimum improvement for safety and security	5.0
	- Feasibility study	0.5
A8	Training:	
	- Staff training (implementation of ANS recommendations)	7.5
	- CFR training	1.5
	Total	**167.7**

Beyond the completion of the priority projects there is an allowance for minor investment by the government. This includes an investment in improvements at Banja Luka airport. The final decision on airport investment will be determined by the need for additional capacity.

6.2.4 Waterway Transport Development Plan

At present, no (relevant) investments have been made in the rivers of BiH. Two IMG studies have been made to estimate the total costs for urgent rehabilitation and at present, OHR has commissioned a study by Parsons Brinckerhoff International (USA) to assess the potential of the port of Brcko and to determine the infrastructure rehabilitation needs. Several development plans also exist at the entity and municipality levels that foresee future developments for the existing infrastructure and the construction of new river transport facilities.

All this information has been reviewed and taken into consideration to assess:

- The urgent reconstruction projects, and
- The phased development projects.

(1) Urgent Reconstruction Projects

The *urgent reconstruction projects* are projects that need to be implemented in the short-term future, i.e., prior to 2005 in order to have as soon as possible an operational river transport sector in BiH. The *phased development projects* are necessary in the medium- and long-term to guarantee the sustainability of river transport and to upgrade the transport system to EU levels.

The urgent reconstruction projects are as follows:

1) Navigation Channel on the River Sava

The rehabilitation of the navigation channel on the Sava River is one of the most important urgent reconstruction projects. Without a navigable channel, all investments in the ports of Samac and Brcko and in the terminal of Brod and other locations are futile because they will remain inaccessible for river traffic.

Reconstruction of a minimum navigation channel includes three elements:

- De-mining of navigation channel, port and terminal access and river banks where necessary,
- Debris removal in navigation channel, port and terminal access and river banks where necessary,
- Dredging of minimum navigation channel.

An estimate of the costs for de-mining the river Sava and the port areas is provided in the next Table 6.11. The estimated cost for removing one mine is 5 KM (source: IMG report on rehabilitation of port of Samac).

Table 6.11 Estimated Cost for De-mining

Location	# mines	Costs (KM)	Estimate made by
Samac	20.000	100.000	IMG
Brcko	8.000	40.000	IMG
Brod Refinery	10.000	50.000	Various / Industry
River + banks	50.000	250.000	Estimate BiHTMAP
Total	88.000	550.000	(Including survey costs)

Given the number of mined zones in the Brod-region and between Samac and Brcko, this estimate is moderate. A detailed cost assessment for de-mining can only be given after an in-depth survey of the river channel and banks.

Along the river, remaining debris needs to be removed and cleaning is required before dredging can begin. IMG estimates the costs for cleaning the river (banks) at 30 KM per meter. This would mean that the total cost for debris removal and riverbank cleaning would be approximately **990,000 KM** (30 KM x 330 rkm).

Finally dredging of a minimum navigable channel is urgently required. The minimum navigation conditions for river Sava should be:

- Width: 60 meters;
- Depth: 1 meter; and
- Length: 333 km (total length guaranteed for minimum navigation to access facilities from both sides).

Several sources indicated that approximately 95% of the river is at that standard and that 5% of the river length (16,500 m) needs to be dredged. According to this information, a total volume of 990,000 m^3 needs to be dredged. The cost estimates vary according to the source contacted. An overview of the different estimates per m^3 is provided in Table 6.12. The estimate used for further analysis in this project is 4,500,000KM.

Table 6.12 Estimated Dredging Costs

Source of cost estimate	*Cost per m^3*	*Total cost for dredging*
European Dredging Association	4 KM	3,960,000 KM
IMG	6 KM	5,940,000 KM
Captaincy / Industry	10 KM	9,900,000 KM

Urgent rehabilitation port of Brcko

2) Brcko Port Improvements

Loading and unloading facilities are a necessity for utilizing the benefits of river transport. Port of Brcko is one of two important facilities along Sava River that offers the industry access to the benefits of river transport. Urgent repairs are necessary to ensure minimum operations in the port area.

Table 6.13 provides an estimate of total costs for the urgent rehabilitation works for port of Brcko. The estimates are based upon the IMG estimates.

Table 6.13 Urgent Rehabilitation Costs Port of Brcko

Item	Quantity	Total cost (KM)
Mine clearance (port area)	10.000	50,000
Cranes (new, min 5 ton)	1	3,000,000
Crane rail track and supply (repairs)	1	25,000
Transformer station rehabilitation	1	200,000
Rehabilitation (sloped quay)	1	150,000
Rehabilitation (vertical quay)	1	1,000,000
Port railway track repair	1	150,000
Port road repairs (+ new stretch)	1	65,000
Engineering study costs	1	450,000
TOTAL COSTS		**5,090,000**

The purchase of a new crane generates over 60% of total investment costs. However, this option has been selected to avoid investments that will not generate sufficient payback. Rehabilitating the two existing cranes would be less interesting. Given the expected increase in traffic in the port, one efficient crane is sufficient to coop with the traffic in the port in the next five years. If the existing cranes should be repaired, both will have to be replaced in the next five years of operations, and the total investment of 1.5 million KM would not be recuperated while the investment for a new crane becomes imminent at that time.

A second important cost factor is the rehabilitation of the new vertical quay. This investment is considered urgent because the sloped quay is not convenient to guarantee direct loading and unloading activities (taking into account span of crane). The availability of a vertical quay is a minimum condition for efficient port operations and the crane should be made operational at that quay. The sloped quay can be used for vessel related activities such as maintenance, provision supply, fuelling and waste disposal, etc…

The proposed rehabilitation would provide an efficient port system that offers a quay and crane to load and unload vessels, storage facilities in warehouse nr 4, and additional yards for open storage of bulk.

3) Urgent Rehabilitation of Port of Samac

Loading and unloading facilities are a necessity for utilizing river transport. Port of Samac is the second important facility along Sava River. Urgent repairs are necessary to ensure minimum operations in the port area.

The necessary works are much more important than for the urgent rehabilitation phase in the port of Brcko.

Table 6.14 provides an estimate of total costs for the urgent rehabilitation works for port of Samac. The estimate is based upon the IMG estimates.

Table 6.14 Urgent Rehabilitation Costs Port of Samac

Item	Quantity	Total cost (KM)
Mine clearance (port area)	20,000	100,000
Cranes (new, min 5 ton)	1	3,000,000
Transformer station	1	1,000,000
New warehouse	1	1,500,000
Rehabilitation quay	1	1,000,000
Port railway and road repairs	1	150,000
Administrative building	1	450,000
Engineering study costs, miscellaneous & contingencies	1	650,000
TOTAL COSTS		**7,850,000**

Similar to Brcko port, a new crane is selected over the possible rehabilitation of the existing cranes. But contrary to the situation in Brcko, several new constructions have to be built. This increases the emergency investment costs with 2.5 million KM as compared to the urgent reconstruction needs for Brcko port. On site investigation demonstrated that also the existing quay requires serious rehabilitation.

Other proposed investments will provide an efficient port system that offers a quay and crane to load and unload vessels, storage facilities, and an efficient access to the port area by road and rail.

The proposed investments are mainly for new building. They are important but not mandatory to starting port operations. To start operations, the crane and quay investment (totaling 4 million KM) is mandatory. The other investments can follow once the port has started up its activities.

The reconstruction of the ports of Samac and Brcko and the rehabilitation of the river are urgent reconstruction projects to enable the future development of river transport in BiH. The traffic forecasts are based upon the immediate start of these projects so that river traffic becomes possible in 2002. The emergency projects should be fully completed in 2005.

At that time, a minimum navigation channel of class III should be available from the border over Brcko to Samac and both ports should be fully operational. The rest of the river should be accessible for class II vessels and, depending upon private initiatives, additional quays and terminals could operate along the river (e.g., terminal in Brod for oil refinery).

(2) Phased Development Projects

The further development of river transport is related to the economic and industrial development that will determine the future need for river transport as a part of the total transport offer.

Phase 2 and Phase 3 are focusing on the intermodal integration of the river transport system.

Phase 2 includes:

- **Stabilization of Sava river accessibility**
  - Further dredging of the Sava river (class IV from border to Samac)
  - Hydraulic engineering to avoid further silting of the river
  - River bank improvements

- **Further development of the ports**
  - Improvement of road and rail access to the ports of Brcko and Samac
  - Preparation of development plan for Gradiska port

Phase 3 includes:

- **Stabilization of Sava river accessibility**
  - Maintenance dredging of the Sava river
  - Hydraulic maintenance
  - River bank maintenance

- **Integration of river transport**
  - Intermodal platform Samac
  - Intermodal platform Brcko
  - Intermodal platform Gradiska

The objective of the two phases is to gradually integrate river transport in the entire transport system of BiH; the concept is demonstrated in next figure. The integration is necessary to achieve sustainability of river transport. At the same time, transport integration will benefit the other transport modes and improve the entire transport system as discussed hereafter.

Beyond the urgent reconstruction, the majority of future investment is expected to be privately funded. In the Master Plan there is a small allowance of 3 million KM per year for further government investment.

6.2.5 Master Plan Phased Investment

The total investment in transport infrastructure over the next 20 years in BiH is estimated at around 9,480 million KM (Year 2000 KM). Approximately 59% of this expenditure is required for FBiH whilst the remaining 40% is designated for RS.

Table 6.15 Transport Infrastructure Expenditure for the Master Plan

		Million Year 2000 KM			
SECTOR		**2001-05**	**2006-10**	**2011-20**	**TOTAL**
Road	**FBiH**	1,414.6	1,160.6	1,738.8	**4,314.0**
	RS	669.2	776.2	1,414.4	**2,859.7**
	Brcko	5.6	3.9	47.3	**56.6**
	Total	2,089.4	1,940.7	3,200.5	**7,230.3**
Rail	**FBiH**	290.0	290.0	580.0	**1,160.0**
	RS	205.0	205.0	410.0	**820.0**
	Brcko	5.0	5.0	10.0	**20.0**
	Total	500.0	500.0	1,000.0	**2,000.0**
Air	**FBiH**	86.4	3.0	6.0	**95.4**
	RS	81.3	2.0	7.0	**90.3**
	Brcko				**0.0**
	Total	167.7	5.0	13.0	**185.7**
Water	**FBiH**	7.5	4.7	9.3	**21.5**
	RS	7.9	10.1	20.2	**38.2**
	Brcko	5.1	0.2	0.4	**5.7**
	Total	20.5	15.0	30.0	**65.5**
TOTAL	**FBiH**	1,798.5	1,458.3	2,334.1	**5,590.9**
	RS	963.4	993.3	1,851.6	**3,808.3**
	Brcko	15.7	9.1	57.7	**82.5**
	Total	**2,777.6**	**2,460.7**	**4,243.4**	**9,481.7**

6.3 ROAD SECTOR AFFORDABILITY ANALYSIS

The Study Team has, as summarized in previous sections of this report and detailed in *Volume II - Sector Plans*, derived a staged road investment program extending over the entire 20-year BiHTMAP planning horizon. The investment program is comprehensive in that it includes four improvement categories; to wit, road maintenance, road rehabilitation, proposed expansion/enhancement of infrastructure and committed (at present) expansion/enhancement of infrastructure. The required BiH-wide investment costs total some 7,173.5 million constant year 2000 KM to include 1,976.0 million KM for maintenance, 1,578.6 million KM for rehabilitation, 3,448.1 million KM for new projects and 170.8 million KM for committed projects.

Any discussion of the affordability of the nominated program unavoidably entails analysis at the Entity level of detail as, at present, funding for the road sector is the purview of Entity Ministries of Finance and Entity Ministries of Transport and Communications (in case of FBiH, this responsibility further extends to the Kantonal level of authority). Each Entity uses different approaches to planning, financing and implementing road improvements. Considerable differences exist in certain areas; for example, in Republika Srpska, funding for the road sector is via dedicated sources, whereas in the Federation the Ministry of Transport and Communications must compete with other Ministries for increasingly scarce domestic resources. Thus,

- Section 6.3.1 presents affordability issues for Republika Srpska; and,
- Section 6.3.2 presents affordability issues for the Federation of BiH.

Sections 6.3.1 and 6.3.2 follow identical formats; that is, discussions highlight the current Entity budget (with a focus toward transport) as well as existing near-term budgetary forecasts; synthesize revenue as well as cost items; and, present conclusions regarding affordability.

6.3.1 Republika Srpska Road Projects

The nominated RS road investment program totals some 2,859.5 million constant year 2000 KM to include 940.0 million KM for maintenance, 750.3 million KM for rehabilitation, 1,160.1 million KM for new projects and 9.1 million KM for committed projects (Table 6.16).

Table 6.16
Synopsis of Proposed Republika Srpska Road Sector Investment Program

Improvement	Investment by Period (Million constant year 2000 KM)			
	2001-2005	2006-2010	2011-2020	Total
Maintenance	235.0	235.0	470.0	940.0
Rehabilitation	220.2	176.7	353.4	750.3
Committed Projects	9.1	0	0	9.1
New Projects	204.7	364.5	591.0	1,160.1
Subtotal	669.0	776.2	1,414.4	2,859.5

Source: JICA Study Team

Following section present issues regarding affordability, that is, a comparison of potential revenue sources vis-à-vis these estimated investment costs.

(1) Expenditure Analysis [1]

Budgetary expenditure in Republika Srpska has increased from 468.3 million KM in year 1998 to 600.5 million KM in year 1999, with the approved year 2000 budget totaling 604.1 million KM. Inclusion of commodity reserve, transfer to State Institutions and External Debt Service increases the approved year 2000 total to 698.0 million KM (Table 6.17).

The General Government Services group is the only category to experience significant decline between 1998 and 1999, largely due to one-time expenses associated with set-up of the administration. During 1999, expenditure totaled 298.4 million KM, or almost one half of budget expenditure.

The Community and Social Services group rose marginally as a proportion of budgetary expenditure in 1999, with the education program experiencing a significant increase in share. Between 1998 and 1999, total budgetary expenditure on education rose from 74.8 million KM to 109.8 million KM or by 47 percent. This yielded an increase in the sector's share of total spending from 16.0 percent to 18.3 percent.

[1] Data associated with this section have been drawn from *Budget Framework Paper 2001-03*, prepared with assistance from the World Bank by Ministry of Finance, Republika Srpska, July 2000. Document content was also discussed at several junctures with World Bank representatives.

Table 6.17 Budgetary Spending by Sector (Million KM)
Years 1998, 1999 and 2000 - Republika Srpska

Item	1998 Actual Budgetary Spending	% of Total	1999 Approved Budgetary Spending	% of Total	1999 Actual Budgetary Spending	% of Total	2000 Approved Budgetary Spending	% of Total
General Government Services	**246.5**	**52.6**	**293.1**	**52.1**	**298.4**	**49.7**	**277.4**	**45.9**
General Public Services	114.8	24.5	68.9	12.3	76.1	12.7	64.8	10.7
Defense	60.5	12.9	94.1	16.7	97.9	16.3	85.0	14.1
Public Order and Safety	71.3	15.2	130.2	23.1	124.4	20.7	127.6	21.1
Community and Social Services	**193.1**	**41.2**	**229.7**	**40.8**	**251.0**	**41.8**	**262.8**	**43.5**
Education	74.8	16.0	111.3	19.8	109.8	18.3	118.0	19.5
Health	13.6	2.9	6.7	1.2	6.8	1.1	4.1	0.7
Social Security and Welfare	98.1	20.9	97.1	17.3	119.9	20.0	129.2	21.4
Housing and Community Welfare	3.5	0.8	8.0	1.4	9.6	1.6	5.8	1.0
Recreational, Culture & Rel. Services	3.0	0.6	6.6	1.2	5.0	0.8	5.6	0.9
Economic Services	**28.7**	**6.1**	**39.7**	**7.1**	**51.1**	**8.5**	**63.9**	**10.6**
Fuel and Energy	0.1	0.0	0.2	0.0	0.2	0.0	0.2	0.0
Agriculture, Forestry, Fishing and Hunting	8.5	1.8	5.9	1.0	6.1	1.0	19.9	3.3
Mining and Mineral Resources	0.1	0.0	0.2	0.0	0.2	0.0	0.2	0.0
Transport and Communications	18.6	4.0	30.5	5.4	42.7	7.1	41.2	6.8
Other Economic Services	1.2	0.3	2.9	0.5	1.8	0.3	2.4	0.4
Other Services	**-**	**0.0**	**-**	**0.0**	**-**	**0.0**	**-**	**0.0**
Total	**468.3**	**100.0**	**562.5**	**100.0**	**600.5**	**100.0**	**604.1**	**100.0**
Commodity Reserve	8.4		14.0		58.2		6.0	
Transfer to State Institutions	1.1		10.0		10.1		14.9	
External Debt Service	16.4		50.2		82.4		73.0	
Expenditure from the Budget	**494.2**		**636.7**		**751.2**		**698.0**	

Source: *Budget Framework Paper 2001-03, op. cit.*

The Economic Services group of sector programs has gained most in the expenditure reallocation with an increase from 6.1 percent to 8.5 percent of budget expenditure because of increasing resources going to the Transport line item. Between 1998 and 1999, budgetary expenditures on Transport more than doubled and the sector share increased from 4.0 percent to 7.1 percent. This resulted from automatic increases in the revenue yields of certain income elastic taxes earmarked for the sector rather than a conscious policy choice.

A more comprehensive analysis of sector expenditure programs includes the expenditures of the extra-budgetary funds (Table 6.18). Estimated revenues and expenditures of the extra-budgetary funds rose at a similar rate to budgetary expenditures in 1999 so that the share of the extra-budgetary funds remained at just under one third of domestic public expenditure. The Pension Fund and Health Insurance Fund are the most important of these funds and their inclusion in consolidated public spending made Social Security and Welfare (at 31.6 percent of total domestic expenditure) and Health (at 14.5 percent of total domestic expenditure), respectively, the first and second largest programs in 1999. Community and Social Services is the largest sector group representing around 59.6 percent of domestic financing in 1998 and 1999. Increases in

extra-budgetary revenues going to the Roads Directorate were significant enough to have raised the share of Transport from 6.1 percent in 1998 to 7.3 percent in 1999. Defense, Public Order and Safety, and Education all received proportionately more of the available resources in 1999 compared to 1998.

Table 6.18 Consolidated Public Spending by Sector (Million KM)
Year 1999 - Republika Srpska

Item	Actual Budgetary Spending		Extra-Budgetary Funds		Total Domestic Spending	
	KM m	%	KM m	%	KM m	%
General Government Services	**298.4**	**49.7**	**0.0**	**0.0**	**298.4**	**32.2**
General Public Services	76.1	12.7			76.1	8.2
Defense	97.9	16.3			97.9	10.6
Public Order and Safety	124.4	20.7			124.4	13.4
Community and Social Services	**251.0**	**41.8**	**301.4**	**92.4**	**552.4**	**59.6**
Education	109.8	18.3			109.8	11.9
Health	6.8	1.1	128.0	39.2	134.7	14.5
Social Security and Welfare	119.9	20.0	173.4	53.1	293.3	31.6
Housing and Community Welfare	9.6	1.6			9.6	1.0
Recreational, Culture & Rel. Services	5.0	0.8			5.0	0.5
Economic Services	**51.1**	**8.5**	**24.8**	**7.6**	**75.9**	**8.2**
Fuel and Energy	0.2	0.0			0.2	0.0
Agriculture, Forestry, Fishing & Hunting	6.1	1.0			6.1	0.7
Mining and Mineral Resources	0.2	0.0			0.2	0.0
Transport and Communications	42.7	7.1	24.8	7.6	67.5	7.3
Other Economic Services	1.8	0.3			1.8	0.2
Other Services	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total Public Spending	**600.5**	**100.0**	**326.2**	**100.0**	**926.8**	**100.0**

[1] Excluding budget transfers. These are included under budgetary expenditure.
[2] Estimates.
[3] The Aid Co-ordination and Development Unit's current systems for collecting data on external project assistance do not allow annual breakdowns to be made.

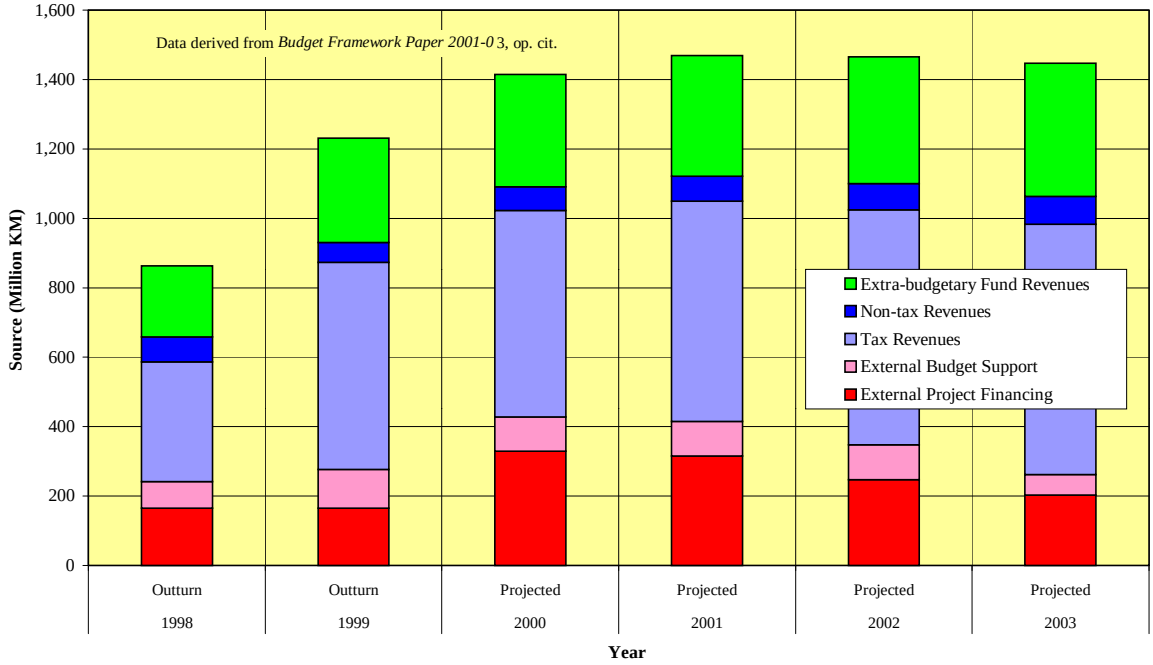
Source: *Budget Framework Paper 2001-03, op. cit.*

Budget expenditures for 2000 are planned at a level significantly lower than the 1999 outturn and, even though more optimistic revenue performance is likely to achieved, the final outturn will not exceed 1999. The slow down in the growth of budget revenues is likely to persist over the medium term, years 2001 through 2003. This makes the task of achieving shifts in the relative shares of sector expenditure program more difficult to achieve since increases in the share of one program can only be achieved at the expense of cuts in the cash budget of another.

A forecast of the consolidated expenditure framework suggests that a year 2000 revenue total of 1,414 million KM is expected to only modestly increase to 1,447 million KM. Within that aggregate is an increase in domestic receipts (tax revenues, non-tax revenues, extra-budgetary fund revenues) from 986 million KM in year 2000 to 1,186 million KM in year 2003. However, over the same period, external revenues (external budget

support, external project financing) are shown as decreasing from 428 million KM in year 2000 to 261 million KM in year 2003 (Figure 6.8).

Figure 6.8 Consolidated Expenditure Framework
Years 1998 - 2003, Republika Srpska



Between 1998 and 1999, budgetary expenditures on transport more than doubled. The 2000 budget projection called for a significant increase in expenditures on road activities and the figures show that such an increase was already occurring during 1999. All the same, it has to be recognized that the increase in resources for roads, and for transport in general, have arisen in mechanical fashion and not as a result of any strategic allocation decisions on the part of government: a large proportion of sector resources are drawn from dedicated taxes[2] and economic growth has merely fed through into increased tax yields. Nevertheless, in the case of roads the increase in expenditures can be welcomed. During 1999, the Roads Directorate expended some 41.2 million KM on actual road maintenance, reconstruction, and construction, a total expected to reach some 45.5 million KM during year 2000. This represents 86 percent and 94 percent of expenditures during respective years (Table 6.19).

[2] The Roads Directorate receives 50 percent of the excise tax on fuel sales together with vehicle registration fees.

Table 6.19 Revenues and Expenditures of the Roads Directorate Years 1998, 1999 and 2000 - Republika Srpska

Item	1998 (actual)	1999 (plan)	1999 (actual)	2000 (plan)
Revenues				
RS Budget (share of excise on fuel)	5,706,134	27,000,000	23,834,568	30,000,000
RS Budget (co-financing for externally financed projects)	-	-	650,000	2,000,000
Vehicle registration fees	5,430,309	5,800,000	12,423,684	12,000,000
Charges on foreign vehicles	14,574,634	500,000	4,253,274	-
Exchange rate differentials	3,604,232	-	314,064	500,000
Income from SFOR contracts	-	-	1,788,411	3,000,000
Other revenues	467,090	1,700,000	2,861,847	2,500,000
Total	29,782,399	35,000,000	46,125,848	50,000,000
Expenditures				
Maintenance of local roads, streets and squares	1,228,897	-	2,671,579	-
Regular and winter maintenance of roads	16,593,485	15,347,506	20,228,538	25,000,000
Periodic maintenance of roads	491,724	7,898,000	1,514,843	8,500,000
Periodic maintenance of basic equipment	225,287	-	-	-
Investment in road reconstruction and construction	-	5,850,000	16,740,300	12,000,000
Investment in office accommodation and equipment	-	3,000,000	3,554,133	-
Donations - aid	524,686	-	180,543	-
Other expenses (costs of administration, etc.)	3,060,526	1,160,000	2,012,434	2,500,000
Payment of arrears from previous year	-	-	708,846	-
Total Expenditures	22,124,604	33,255,506	47,611,217	48,000,000
Change in Reserve	7,657,795	1,744,494	- 1,485,370	2,000,000

Source: Reports and plans of the Roads Directorate as presented in *Budget Framework Paper 2001-03, op. cit.*

In comparison to the estimated year 2000 Republika Srpska GDP of 2.19 billion KM, the direct Road Directorate expenditure on road improvements represents some two percent of GDP.

(2) Revenue Analysis

The issue of affordability is complex in that it involves the interplay of various considerations over the next two decades. These include:

- Near-term forecasts to year 2003 have confirmed that considerable reductions in external assistance can be expected, with year 2003 levels almost half of those noted during year 2000. Thus, increasing reliance on domestic revenues is unavoidable. The role of public-private partnerships (PPP) is therefore expected to assume a more positive role as scarce public resources continue to be placed under increasing stress.

- GDP is expected to grow in future; the socio-economic framework associated with the current study has developed twenty year forecasts in terms of constant year 2000 KM. These include both a base case as well as high economic growth scenarios. Sectorial allocations should grow in rough proportion to GDP assuming inter-sectorial relationships remain balanced as at present.

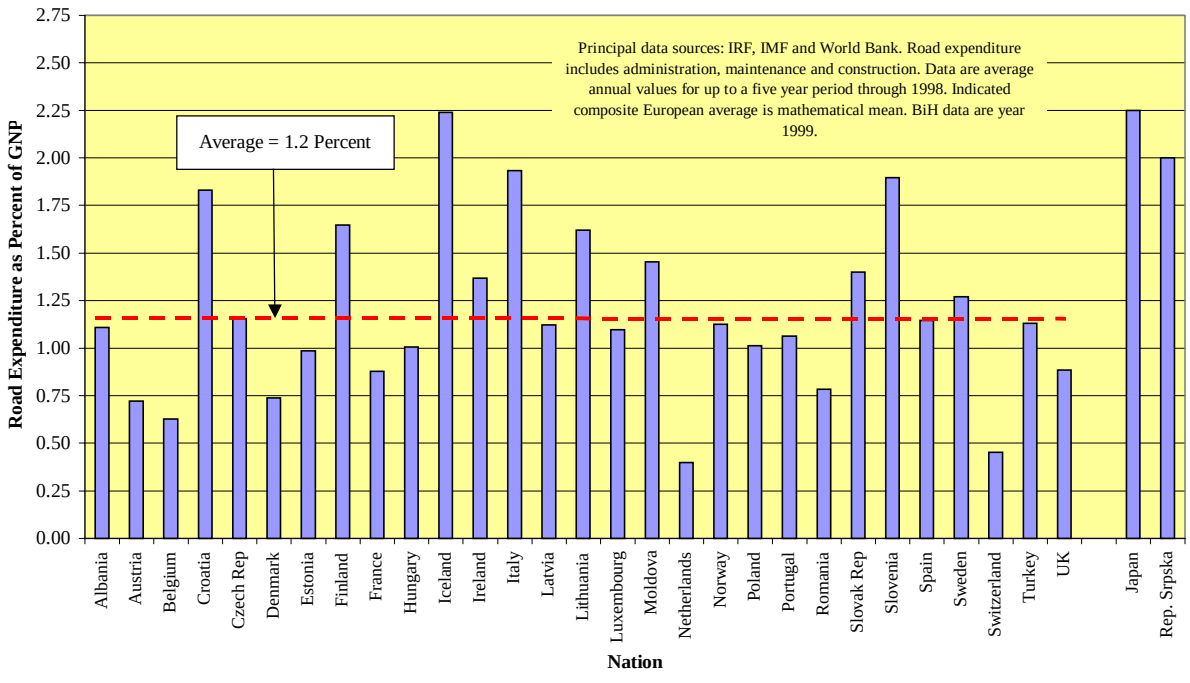
- Quantum changes in governmental revenues could occur should major changes in the fiscal arena be implemented in areas such as taxation system. This would generate more revenue availability across all sectors, although competition for such funds among various Ministries would likely be fierce.

- Restructuring of the budget could occur; that is, higher shares allocated to, say, transport in response to reductions in other sectors or changes within the transport sector itself. For example, in the latter case, reduction or elimination of operations subsidies with yields funneled to, say, road construction.

The present analysis, therefore, focuses upon existing levels of domestic funding for the provision of road infrastructure, and how these compare to the proposed program of road improvements promulgated by the current study.

A review of road expenditure patterns was initially conducted to establish a general perspective of European norms. Data regarding average annual expenditure on roads ranges from some 0.4 percent to more than two percent vis-à-vis national GNP. The composite value hovers near 1.2 percent; as a comparison, the expenditure pattern for Japan is shown at 2.25 percent (Figure 6.9). Thus, one may conclude that the spending pattern of Republika Srpska, which is near two percent of budget, falls within the upper range of European expectations.

Figure 6.9 Recent European GNP and Road Expenditure Relationship

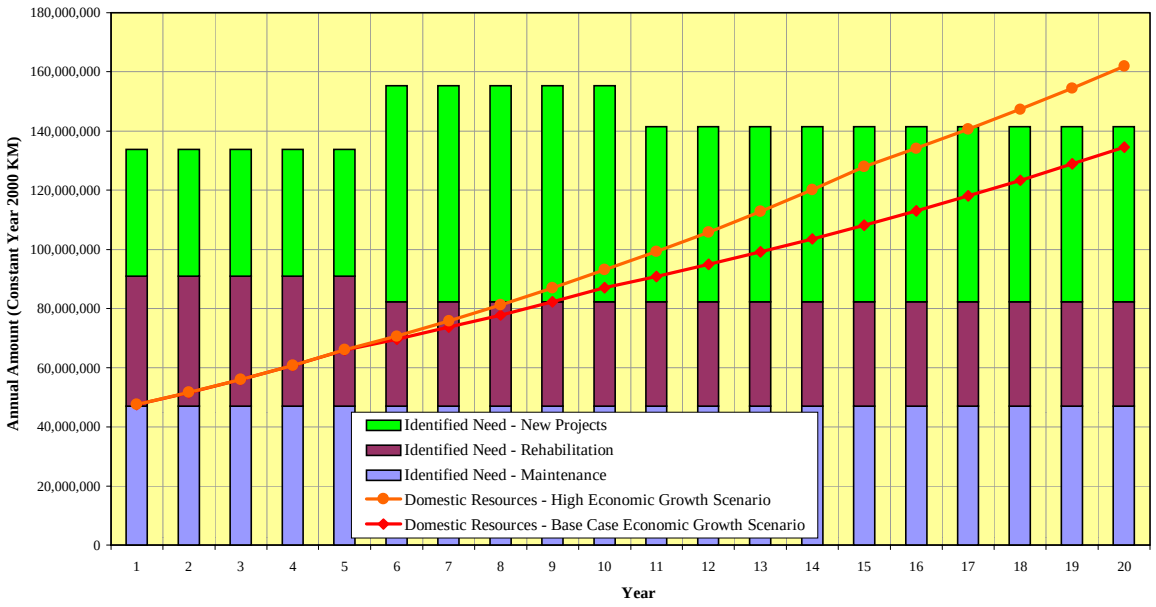


As the initial step, road improvement expenditure needs (refer Table 6.16) were equally allocated to each year within the identified three time periods within the 20-year planning horizon. Current domestic expenditure patterns, as a percent of GDP, were then

extrapolated to future years based on the two economic growth scenarios contained within the socio-economic framework; that is, real growth embedded in the base case and high economic growth scenarios.

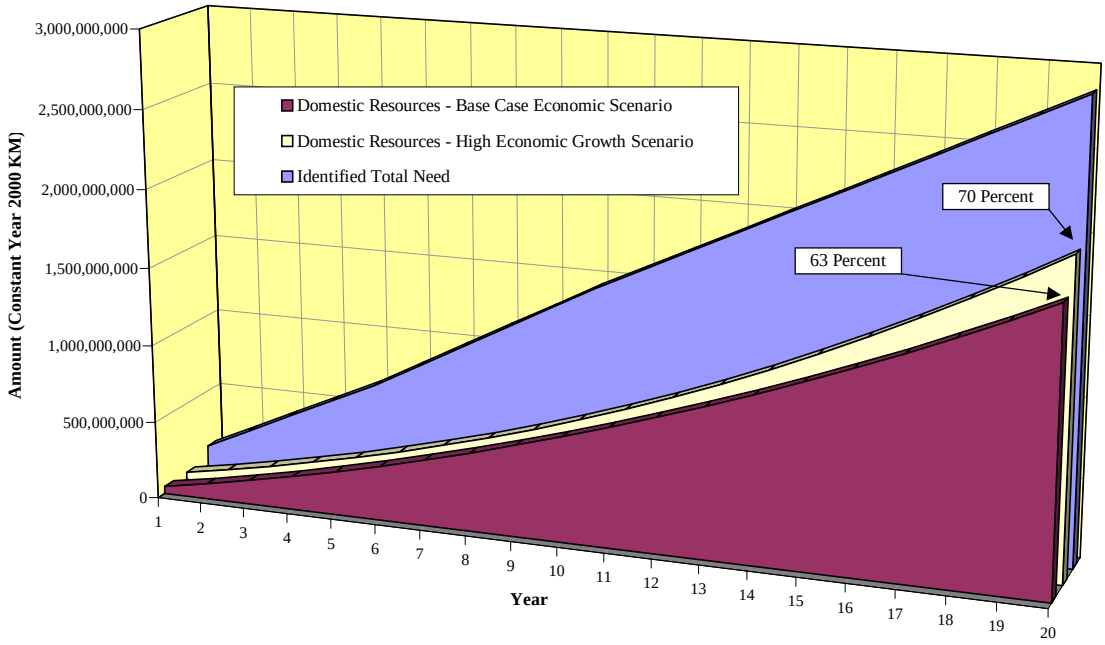
In case of Republika Srpska, the present expenditure pattern confirms that outlay may be considered sufficient to address maintenance needs of the main and regional road networks. Within approximately 10 years real economic growth is expected to be sufficient to address both maintenance and rehabilitation needs; and, near end of the twenty year planning horizon, domestic resources would approach self-sufficiency in terms of road needs (Figure 6.10).

Figure 6.10 Comparison of Road Sector Needs and Domestic Resources
Existing Funding Scenario, Republika Srpska



On a cumulative basis (Figure 6.11) over the twenty year period can be expected to provide between 63 and 70 percent of road needs, thus suggesting that alternative sources (external funding, PPP) are needed to cover the remaining gap.

Figure 6.11 Comparison of Cumulative Road Sector Needs and Domestic Resources
Existing Funding Scenario, Republika Srpska



(3) Conclusions

Previous sections presented a comparison between road improvement needs identified by the JICA Study Team, as well as the status of domestic funding in Republika Srpska. Several conclusions flow from that review, augmented by wider considerations which evolved as part of the current study.

- Near-term budgetary forecasts to year 2003 have confirmed that considerable reductions in external assistance can be expected, with year 2003 levels almost half of those noted during year 2000. Thus, increasing reliance on domestic revenues is unavoidable. The role of public-private partnerships (PPP) may therefore assume a more prominent role as scarce public resources continue to be placed under increasing stress.

- On-going and effective road maintenance is, in the first instance, seen as being a top priority to ensure that continuing deterioration of road systems is prevented. In the second instance, road rehabilitation is seen as being of critical importance to carry on efforts begun under the Emergency Transport Reconstruction Program (ETRP) while concurrently expanding such works to those parts of the network not addressed by the ETRP.

- The allocation of scarce domestic resources should be dictated by the needs of maintenance and rehabilitation, with a goal being self-sufficiency, that is, on-going and effective maintenance and rehabilitation using own resources without need for external support.

- The Study Team has, in addition to maintenance and rehabilitation works, proposed a series of priority projects thus expanding, in one form or the other, the existing network. It is concurrently noted that for such projects to be effective, other elements of the road net must have the benefit of proper maintenance and rehabilitation.

- In general, the Team's analyses suggest that domestic allocations in Republika Srpska are adequate to address maintenance needs at present and, within the next decade, will likely also be sufficient to address the full range of expanded rehabilitation needs proposed by the current study. Thus, external financial assistance can be focused on those elements of the road network where new/improved facilities are seen as being of importance to the enhanced movement of people and goods.

Within the spirit of those recommendations, it logically follows that the Road Directorate should continue to develop its road management and planning capabilities to successfully carry out a staged and technically sound approach to road system management, ideally with the support of a Road Maintenance Management System and associated database. A number of initiatives are underway, under sponsorship of the World Bank and others, to provide assistance for the support of such a venture. In this regard, the on-going privatization of road maintenance companies, as well as competitive bidding for maintenance contracts, should continue to be followed.

6.3.2 Federation of BiH Road Projects

The nominated FBiH road investment program totals some 4,314.0 million constant year 2000 KM to include 1,036.0 million KM for maintenance, 828.3 million KM for rehabilitation, 2,288.0 million KM for new projects and 161.7 million KM for committed projects (Table 6.20).

Table 6.20
Synopsis of Proposed Federation of BiH Road Sector Investment Program

	Investment by Period (Million constant year 2000 KM)			
Improvement	2001-2005	2006-2010	2011-2020	Total
Maintenance	259.0	259.0	518.0	1,036.0
Rehabilitation	186.9	213.8	427.6	828.3
Committed Projects	161.7	0	0	161.7
New Projects	807.0	687.8	793.2	2,288.0
Subtotal	1,414.6	1,160.6	1,738.8	4,314.0

Source: JICA Study Team

This section presents issues regarding affordability, that is, a comparison of potential revenue sources vis-à-vis estimated FBiH investment costs

(1) Budgetary Analysis [3]

Consolidated figures for actual functional spending in 1998 for the Federation totaled some 3,037 million KM; year 1999 and 2000 budgets total 3,402.9 and 3,341.4 million KM, respectively (Table 6.21). This includes federal budget allocations, Kanton budget allocations, and projects funded by the international community. Also included are health expenditures financed from the Health Insurance Funds, but not pensions and unemployment benefit programs. During this period, General Government Services have declined from 30 percent of total expenditure in 1998 to 25 percent in the 2000 budget. While spending on defense and general public services have fallen, the share of spending on public order has increased with public order budgets in the Kantons now amounting to around two-thirds of spending on education.

Community and Social Services spending has increased from 46 percent of total expenditure in 1998 to 51 percent of budgeted expenditure in 2000. There has also been a rapid increase in Kanton budgets for social security and welfare. Externally financed spending on housing and community services has fallen, partially offset by increased spending from Kanton budgets.

Economic Services spending has fallen from 20 percent of total expenditure in 1998 to 15 percent in the 2000 budget. This reflects declining external assistance allocations, which account for around 70 percent of sector spending. Domestic budget allocations have fallen by almost 30 percent since 1998, with a marked decline in transport and communications.

For the year 2000 budget, General Government Services account for 24.7 percent of the budget, Community and Social Services 50.9 percent, Economic Services 15.1 percent and Other Services 9.3 percent. On a source basis, 28.2 percent are federal budget, 50.3 percent Kantonal budgets, and 21.5 percent external project financing. Transport was allocated a total of 135.7 million KM in 1998, increasing to 166.7 million KM in 1999; almost no increase is foreseen in the year 2000 budget. External project financing is an important element of the transport budget accounting for 79.6 percent, 54.9 percent and 60.0 percent in the 1998, 1999 and 2000 budgets, respectively.

[3] Data associated with this section have been drawn from *Budget Framework Paper 2001-03*, prepared with assistance from the World Bank by Federal Ministry of Finance, Federation of Bosnia and Herzegovina, July 2000. Document content was also discussed at several junctures with World Bank representatives.

Table 6.21 Budgetary Spending by Sector (Million KM)
Years 1998, 1999, and 2000 – Federation of BiH

Sector Group/Sector	Outlay (Million KM)											
	1998 Actual				1999 Budget				2000 Budget			
	Federation	Cantons + Health Ins. Fund	External Project Financing	Total	Federation	Cantons + Health Ins. Fund[1]	External Project Financing[2]	Total	Federation	Cantons + Health Ins. Fund	External Project Financing[3]	Total
General Government Services	437.1	342.3	134.6	914.0	476.8	331.2	66.8	874.8	431.9	324.1	69.8	825.7
General Public Services	113.0	89.5	94.2	296.7	57.5	59.3	37.0	153.8	71.0	56.7	65.7	193.4
Defense	285.5	37.5	40.4	363.3	368.0	0.0	29.7	397.7	305.5	0.0	4.0	309.6
Public Order	38.7	215.3		254.0	51.3	271.9		323.3	55.4	267.3	0.0	322.7
Community and Social Services	248.0	872.7	280.6	1,401.3	294.9	1,039.6	236.8	1,571.3	287.5	1,127.8	287.0	1,702.2
Education	5.7	343.6	48.1	397.4	3.1	407.8	27.0	437.8	3.1	419.1	17.0	439.2
Health	5.1	351.8	60.9	417.8	3.6	373.0	65.3	441.9	5.0	423.1	70.8	498.9
Social Security and Welfare	231.0	99.3	16.3	346.6	285.9	164.7	35.7	486.3	276.5	190.7	99.2	566.3
Housing and Communal Services	0.7	47.3	155.3	203.2	1.8	56.3	108.4	166.4	2.0	67.3	98.2	167.4
Recreational, Culture & Religious Services	5.5	30.7	0.0	36.2	0.5	37.9	0.5	38.9	1.0	27.5	1.8	30.3
Economic Services	65.8	130.3	422.4	618.5	41.9	152.7	499.8	694.4	45.8	94.4	361.3	501.4
Fuel and Energy		12.9	131.3	144.2	0.0	4.3	99.8	104.2	0.0	1.3	62.5	63.7
Agricultural, Forestry, Fishing & Hunting	19.6	5.4	15.2	40.2	8.7	16.0	32.3	56.9	8.9	21.1	25.5	55.5
Mining, Manufacturing and Construction	9.8	50.4		60.1	0.0	2.5		2.5	0.0	1.0	0.0	1.0
Transport and Communications	31.8	17.6	86.3	135.7	21.5	53.7	91.5	166.7	22.5	44.2	100.1	166.8
Other Economic Services	4.6	44.1	189.5	238.2	11.7	76.2	276.3	364.2	14.3	26.9	173.2	214.4
Other Services	28.7	74.5	0.0	103.2	106.4	156.0	0.0	262.5	174.9	135.6	1.5	312.0
Total	779.7	1,419.8	837.5	3,037.0	920.0	1,679.6	803.4	3,402.9	940.0	1,681.8	719.5	3,341.4

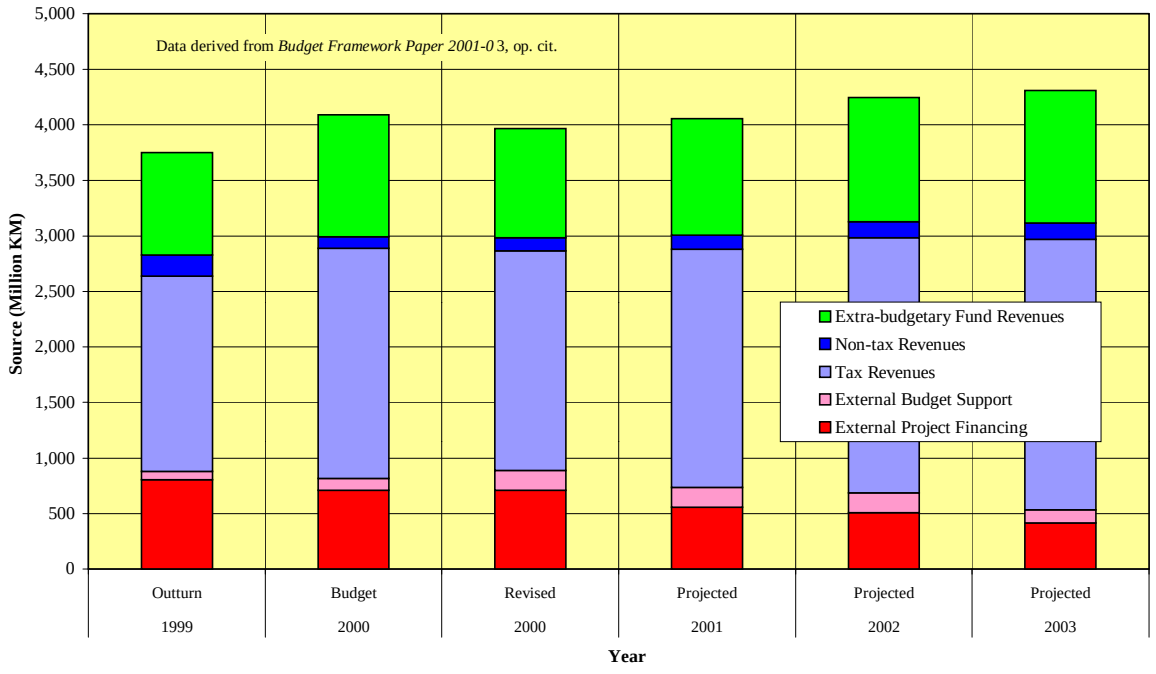
Notes: (1) Includes actual Health Insurance Fund Revenues; (2) RCC estimates of actual disbursements in 1999; (3) Sector distribution based on actual sector share of carry forward financing at beginning of 2000. Source: *Budget Framework Paper 2001-03*, op. cit.

Responsibilities for financing transport infrastructure and services in the Federation are divided between the federal government (main road network, rail networks, civil aviation and water transport), Kanton governments (regional roads, public transport services), and municipalities (local roads). Federal and Kanton budget expenditures in the transport sector predominately relate to the maintenance of the road and subsidies to the rail networks which together account for over 85 percent of all expenditure on the sector excluding externally financed projects. Road outlay is not a dedicated line item and fiscal details are extremely difficult to ascertain; however, current levels of road maintenance allocations are, per World Bank estimates, seen as covering only 30 percent of requirements, and there are considerable arrears in payments to road maintenance organizations. The federal and Kanton governments have also had difficulties in meeting local cost contributions on externally financed road projects.

A reasonable estimate might therefore be that, at present, some 25-30 million KM per annum are being expended in the Federation from domestic resources on road maintenance and rehabilitation. Comparison to the estimated year 2000 Federation GDP of 6.43 billion KM yields a ratio of 0.4-0.5 percent. Inclusion of externally funded road projects raises this ratio to about 1.4 percent.

A forecast of the consolidated expenditure framework suggests that a year 2000 total of 4,090 million KM is expected to increase to 4,312 million KM by year 2003. Within that aggregate is an increase in domestic receipts (tax revenues, non-tax revenues, extra-budgetary fund revenues) from 3.3 billion KM in year 2000 to 3.8 billion KM in year 2003. However, over the same period, external revenues (external budget support, external project financing) are shown as decreasing from 817 million KM in year 2000 to 535 million KM in year 2003 (Figure 6.12).

Figure 6.12 Consolidated Expenditure Framework
Years 1999 - 2003, Federation of BiH



(2) Revenue Analysis

The issue of affordability is complex in that it involves the interplay of various considerations over the next two decades. These include:

- Near-term forecasts to year 2003 have confirmed that considerable reductions in external assistance can be expected, with year 2003 levels almost half of those noted during year 2000. Thus, increasing reliance on domestic revenues is unavoidable. The role of public-private partnerships (PPP) is therefore expected to assume a more positive role as scarce public resources continue to be placed under increasing stress.

- GDP is expected to grow in future; the socio-economic framework associated with the current study has developed twenty year forecasts in terms of constant year 2000 KM. These include both a base case as well as high economic growth scenarios. Sectorial allocations should grow in rough proportion to GDP assuming inter-sectorial relationships remain balanced as at present.

- Quantum changes in governmental revenues could occur should major changes in the fiscal arena be implemented in areas such as taxation system. This would generate more revenue availability across all sectors, although competition for such funds among various Ministries would likely be fierce.

- Restructuring of the budget could occur; that is, higher shares allocated to, say, transport in response to reductions in other sectors or changes within the transport

sector itself. For example, in the latter case, reduction or elimination of operations subsidies with yields funneled to, say, road construction.

- The sourcing of dedicated funds continues to be an issue in the Federation. The *Road User Charges Study* has made certain recommendations regarding the setting-up of a road fund from which core road maintenance and rehabilitation costs would be borne. No decision has, to the Study Team's knowledge, been made in this regard at time of writing.

The present analysis, therefore, focuses upon existing levels of domestic funding for the provision of road infrastructure, and how these compare to the proposed program of road improvements promulgated by the current study.

A review of road expenditure patterns was initially conducted to establish a general perspective of European norms. Data regarding average annual expenditure on roads ranges from some 0.4 percent to more than two percent vis-à-vis national GNP. The composite value hovers near 1.2 percent; as a comparison, the expenditure pattern for Japan is shown at 2.25 percent (Figure 6.13). Thus, one may conclude that the domestic spending pattern of the Federation, which is near 0.4-0.5 percent of GNP, mirrors the lowest range of European expectations.

As the initial step, road improvement expenditure needs (refer Table 6.20) were equally allocated to each year within the identified three time periods within the 20-year planning horizon. Current domestic expenditure patterns, as a percent of GDP, were then extrapolated to future years based on the two economic growth scenarios contained within the socio-economic framework; that is, real growth embedded in the base case and high economic growth scenarios.

The present Federation domestic expenditure pattern for roads appears insufficient to address even maintenance needs of the main and regional road networks. Within approximately 10 years real economic growth is expected to generate sufficient funds to accomplish proper maintenance; however, cash flow is not sufficient to fully address road rehabilitation needs even during the twenty year planning horizon (Figure 6.14).

Figure 6.13 Recent European GNP and Road Expenditure Relationship

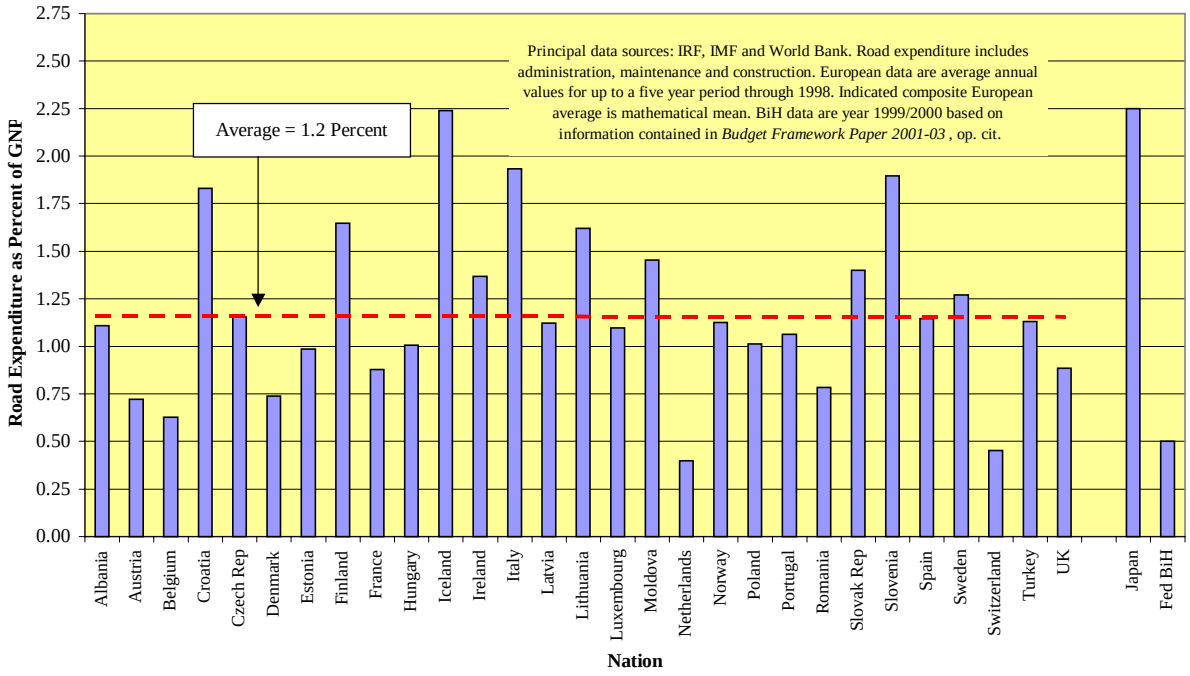
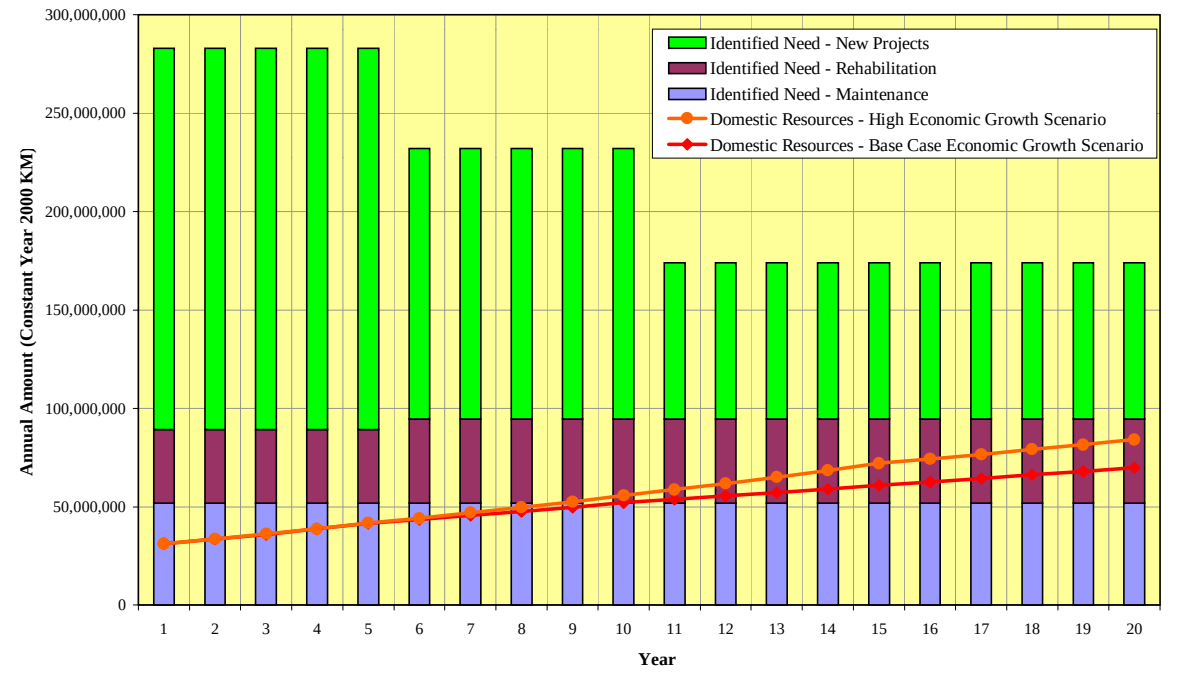
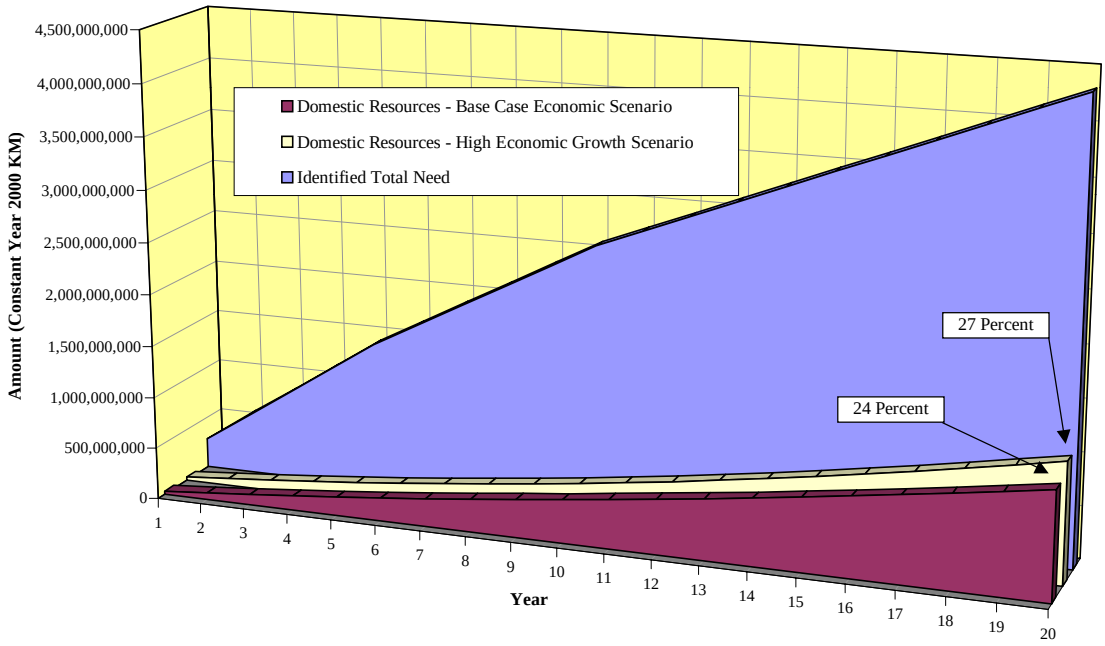


Figure 6.14 Comparison of Road Sector Needs and Domestic Resources
Existing Funding Scenario, Federation of BiH



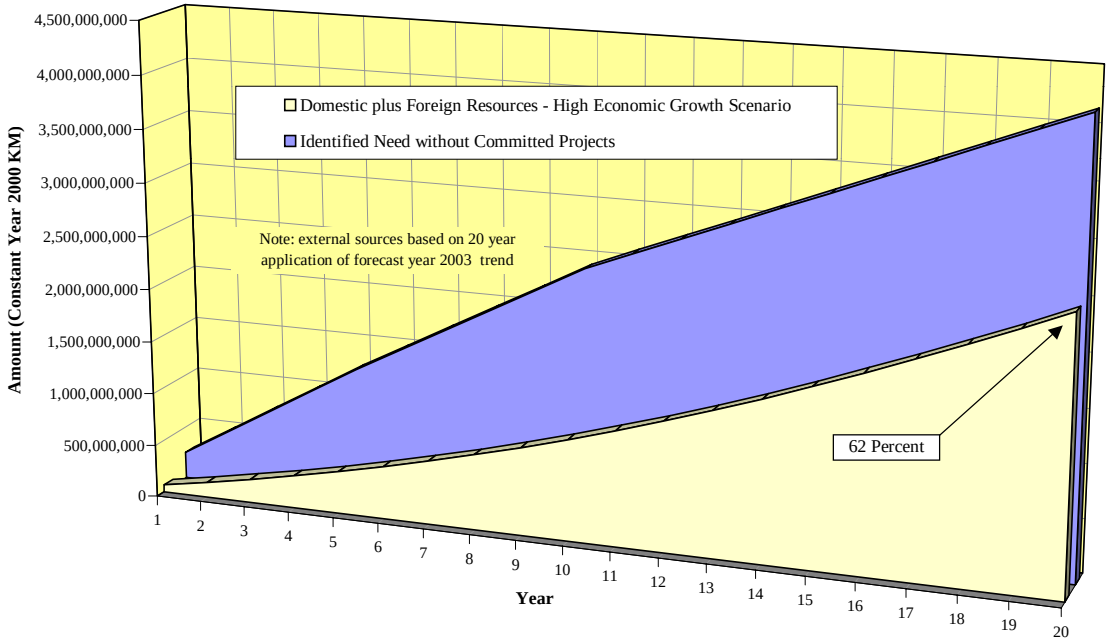
The implications are clear in that current domestic expenditure patterns are too low. On a cumulative basis, over the twenty-year period, some 25-30 percent of investment needs are met regardless of economic growth scenario (Figure 6.15). This implies that a massive infusion of external funding, or wide ranging PPP, is necessary to prevent continuing deterioration of the Federation road system.

Figure 6.15 Comparison of Cumulative Road Sector Needs and Domestic Resources Existing Funding Scenario, Federation of BiH



A further review confirms the magnitude of this need. For this exercise, it has been assumed that all committed road projects (totaling 161.7 million KM) are removed from the improvement needs cost. Further, relative external assistance levels forecast for year 2003 (refer Figure 6.12) are assumed to occur every year over the twenty year horizon in addition to current domestic investments in roads as shown under the high economic growth scenario (refer Figure 6.14). Even under such optimistic conditions, cumulative investments over the twenty year period still aggregate to only 62 percent of identified need, thus suggesting requisite external funding that is unlikely to be met under what can be termed realistic conditions (Figure 6.16).

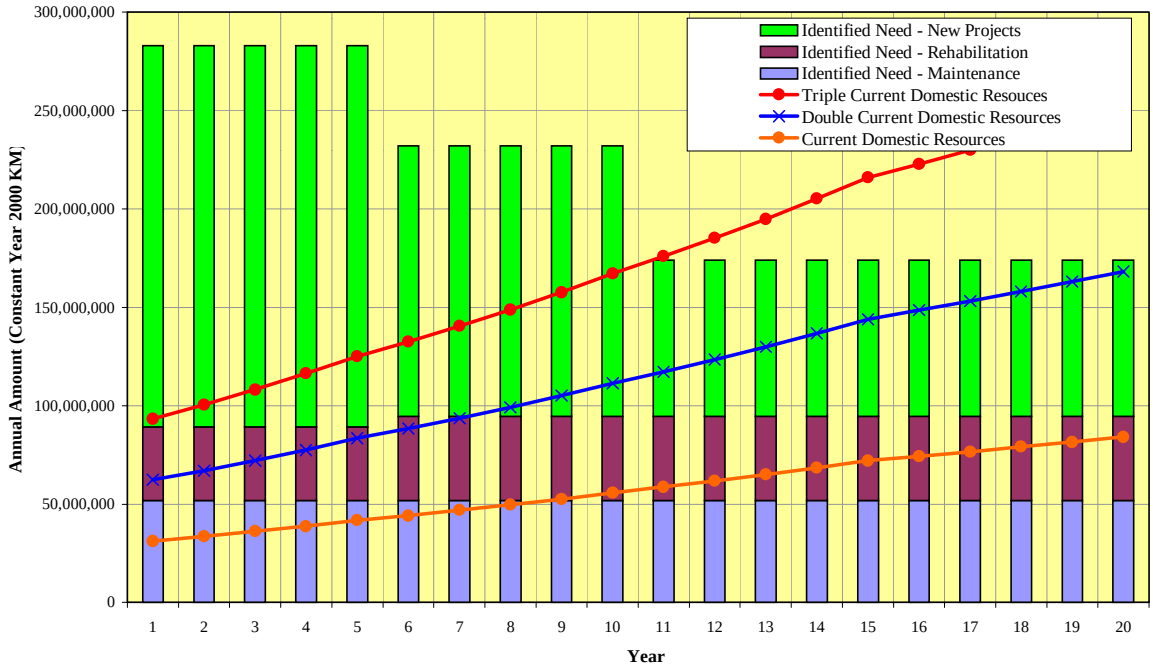
Figure 6.16 Comparison of Cumulative Road Sector Needs and Resources
Optimistic Scenario: Existing Domestic plus External Resources, Federation of BiH



While the conclusion that the investment of domestic resources into road infrastructure improvements in the Federation is insufficient, the question is what level is sufficient? This, of course, depends on many variables and issues as outlined at the beginning of this section. Central to the theme is the realization that there exists a very strong linkage between economic development and the provision of infrastructure, particularly roads, and that deprivation of the latter implies negative impacts in terms of economic growth. Thus, investment in road infrastructure should be seen as an investment in the Federations economic future.

A reasonable supposition might be that domestic investments in road infrastructure should be adequate to cover, in the first instance, maintenance and, in the reasonable future, rehabilitation. Thus, external funds and PPP may be focused upon improvements of the road network. A doubling of the current Federation investment, to about one percent of GDP, appears a reasonable target in this instance (Figure 6.17).

Figure 6.17 Comparison of Road Sector Needs and Domestic Resources
Alternative Domestic Funding Scenarios, Federation of BiH



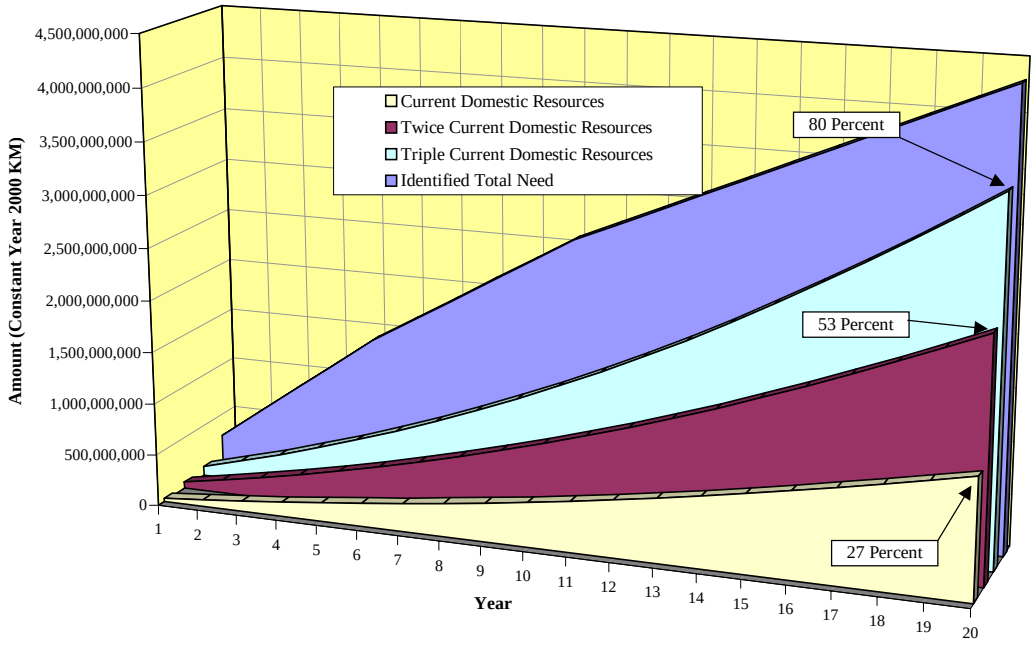
A doubling of domestic investments would, over the twenty-year horizon, address almost 60 percent of road investment needs. A tripling of current investments, to near 1.5 percent of GDP, would address almost 80 percent of identified needs, however, it is unlikely that such an increase is possible given other pressing needs within the Federation budget (Figure 6.18).

(3) Conclusions

Previous sections presented a comparison between road improvement needs identified by the JICA Study Team, as well as the status of domestic funding in the Federation of BiH. Several conclusions flow from that review, augmented by wider considerations which evolved as part of the current study.

- Near-term budgetary forecasts to year 2003 have confirmed that considerable reductions in external assistance can be expected, with year 2003 levels almost half of those noted during year 2000. Thus, increasing reliance on domestic revenues is unavoidable. The role of public-private partnerships (PPP) may therefore assume a more prominent role as scarce public resources continue to be placed under increasing stress.

Figure 6.18 Comparison of Cumulative Road Sector Needs and Domestic Resources
Alternative Domestic Funding Scenarios, Federation of BiH



- On-going and effective road maintenance is, in the first instance, seen as being a top priority to ensure that continuing deterioration of road systems is prevented. In the second instance, road rehabilitation is seen as being of critical importance to carry on efforts begun under the Emergency Transport Reconstruction Program (ETRP) while concurrently expanding such works to those parts of the network not addressed by the ETRP.

- The allocation of scarce domestic resources should be dictated by the needs of maintenance and rehabilitation, with a goal being self-sufficiency, that is, on-going and effective maintenance and rehabilitation using own resources without need for external support.

- The Study Team has, in addition to maintenance and rehabilitation works, proposed a series of priority projects thus expanding, in one form or the other, the existing network. It is concurrently noted that for such projects to be effective, other elements of the road net must have the benefit of proper maintenance and rehabilitation.

- A clear and impartial understanding of Federation road sector investments can only be obtained once budgetary allocations for maintenance, rehabilitation and new construction are uniquely specified in both federal and Kantonal accounting systems. Nevertheless, the Team's analyses suggest that road funding in the Federation is inadequate to meet even current maintenance needs of main and regional roads. It is suggested that domestic allocations for roads be so increased as to achieve a rate of approximately one percent of Federation GDP. This implies an immediate annual budget of some 60-65 million KM for the Road Directorate. Real growth in the

economy would likely yield sufficient revenue streams within less than a decade to also address rehabilitation needs, thus further reducing requirements for external funding support. Any external assistance can therefore, once maintenance and rehabilitation are increasingly addressed via domestic sources, be focused on those elements of the road network where new/improved facilities are seen as being of importance to the enhanced movement of people and goods.

- It is noted that, at the present time, two events are on-going in the Federation which are of importance to this matter. The first relates to the Federation *Law on Roads*, which has been drafted in various forms (latest version dated July 2000) and is understood to have been in debate for several years. This law contains provision for the allocation of resources for road infrastructure. Speedy action on part of the Parliament is urged. The second is the recently completed EBRD-sponsored *Road User Cost Study*[4], which contains recommendations on the equitable allocation of costs to road users, as well as strategies for the funding of road infrastructure maintenance, rehabilitation, and improvement. This study is also, at time of writing, still being considered. Timely action is urged.

Within the spirit of those recommendations, it logically follows that the Road Directorate should continue to develop its road management and planning capabilities to successfully carry out a staged and technically sound approach to road system management, ideally with the support of a Road Maintenance Management System and associated database. A number of initiatives are underway, under sponsorship of the World Bank and others, to provide assistance for the support of such a venture. In this regard, the on-going privatization of road maintenance companies, as well as competitive bidding for maintenance contracts, should continue to be followed.

[4] *Road User Charges in Bosnia Herzegovina*, Emergency Transport Reconstruction Project, European Bank for Reconstruction and Development; May 2000

CHAPTER 7: ORGANIZATIONAL ASPECTS

7.1 GENERAL FRAMEWORK AGREEMENT FOR PEACE IN BIH

The General Framework Agreement for Peace in Bosnia and Herzegovina was initialed in Dayton on 21 November 1995 and signed in Paris on 14 December 1995. Two components of The General Framework Agreement have particular relevance for the Transport Sector: Annex 4 - Constitution; and Annex 9 – Agreement on Establishment of Bosnia and Herzegovina (BiH) Public Corporations.

BiH consists of two Entities and the Brcko Administrative District. The two Entities are the Federation of Bosnia and Herzegovina (FBiH) and the Republika Srpska (RS).

At State level: under the BiH Constitution, the State-level government is responsible for:

- Foreign policy;
- Foreign trade policy;
- Customs policy;
- Monetary policy;
- Finances of the institutions of BiH and for international obligations of BiH;
- Immigration, refugee and asylum policy and regulation;
- International and inter-Entity criminal law enforcement;
- Establishment and operation of common and international communications facilities;
- Regulation of inter-Entity transportation; and
- Air traffic control.

Under the Constitution, additional responsibilities can be assigned to the State if both Entities agree.

There are six State-level ministries: Foreign Affairs; Foreign Trade and Economic Relations; Civil Affairs and Communications; Treasury of the Institutions of Bosnia and Herzegovina; European Integration; and Human Rights and Refugees. The Ministry for Treasury of the Institutions of BiH only deals with financial matters pertaining to the above-mentioned functions assigned to the State under the constitution. All other

financial matters are the responsibility of the Entities, each of which has its own Ministry of Finance. Also Brcko handles its own financial affairs. Transport-related functions at the State-level are: establishment and operation of common and international communications facilities; regulation of inter-Entity transportation; and air traffic control. At the State level, directly-generated government revenues are currently insignificant. Thus the State-level budget relies on contributions from the two Entities. However, this might gradually change **if** and when additional domestic funding sources for the State budget can be identified and established. The State authorities, in consultation with the High Representative, are currently working on this matter. For now though, it is realistic to emphasize that the existing Constitution assigns **no** tax collection power to the State.

At the Entity level: under the Constitution, the Entity governments are responsible for conducting **all** affairs not expressly assigned to the State.

- The FBiH government consists of 16 ministries, with 12 being based in Sarajevo and four in Mostar. The four Mostar-based ministries are responsible for: Commerce; Transport and Communications; Energy and Industry; and Education, Science and Culture. The four Mostar-based ministries have representative offices in Sarajevo. The FBiH governmental administration is sub-divided into 10 Kantons and also municipalities, which are empowered locally to implement various policies and regulations.

- The RS government consists of 16 ministries based in Banja Luka. The RS sub-unit of governmental administration is municipalities.

Annex 9 organizes the relation between the two Entities (the Parties - FBiH and RS). However, the Brcko Administrative District is not part of either Entity and thus, Annex 9 does not relate to Brcko.

7.2 TRANSPORT RELEVANT REGULATORY FEATURES

7.2.1 Regulatory Provisions

A very important transport-related feature in Annex 9 of the Dayton Agreement is the establishment of a Commission on Public Corporations to examine establishing BiH Public Corporations to operate joint public transport facilities for the benefit of both Entities.

The first task of the Commission was to examine

- the appropriate structure for such Public Corporations,
- the conditions necessary to ensure their successful, permanent operation,
- the best means of procuring long-term investment capital.

The present efforts are focussed on the establishment of a BiH Transportation Corporation to organize and operate transportation facilities, such as roads, railways, and

ports, for the benefit of both Entities. According to the provisions in Annex 9, the Transportation Corporation should be authorized to construct, acquire, hold, maintain and operate and dispose of real and personal property in accordance with specific plans that it develops. It is also authorized to fix and collect rates, fees, rentals and other charges for the use of facilities it operates; enter into all contracts and agreements necessary for the performance of its functions; and to take other actions necessary to carry out these functions.

7.2.2 The Present Status of Regulatory Initiatives

In principle and within the boundaries as set forward by Annex 9, the concrete way how the Transportation Corporation would operate transportation facilities has to be agreed by both Parties (FBiH and RS). In that context, both parties have to agree on sums of money to be contributed to the Transportation Corporation to finance its activities.

Annex 9 also provided the framework conditions to both Entities to expand the responsibilities of the Transport Corporation. Both Parties can at any time transfer to the Transportation Corporation additional funds or facilities that belong to them and the rights thereto.

At present, there is still a wide gap between the regulatory objectives and provisions on the one hand and its concrete implementation on the other hand. A brief overview of the achievements at the State level until now is provided hereafter.

Three transport-related functions are assigned to the State: establishment and operation of common and international communications facilities; regulation of inter-Entity transportation; and air traffic control. All other transport functions belong to the Entities. In addition, Brcko handles its own transport affairs.

The State-level institution for transport is the Ministry of Civil Affairs and Communications.

Each Entity has a Ministry of Transport and Communications (MOTC) for overseeing and managing road, rail, water, and civil aviation transport, with the exception that the air traffic control function is performed at State level by the Department of Civil Aviation under the Council of Ministers. Furthermore, in FBiH each Kanton has its own MOTC.

Under the RS MOTC, the Roads Directorate manages primary and regional roads. RS local roads are managed by the municipalities. In FBiH, main roads are managed by the federal MOTC, while regional roads and local roads are managed by the Kantonal MOTCs. In some Kantons the management of local roads is delegated to municipalities. Roads Directorates are being set up in the federal MOTC and in the Kantonal MOTCs. In the Federation there are two railway companies: ZBH based in Sarajevo and ZHB based in Mostar. Fairly soon it is expected that ZBH and ZHB will be merged into one company. The new company will be known as ZFBiH. In RS there is one railway company – ZRS based in Doboj.

(1) Joint Railway Public Corporation

The Transportation Corporation (Dayton Annex 9) has not been set up yet. However, a Joint Railway Public Corporation (BHZJK) was established in July 1998 and is functioning. BHZJK, with its headquarters in Sarajevo, is a joint structure between the two Entities. BHZJK was incorporated as part of the Transportation Corporation.

In essence, the purpose of BHZJK is to establish an institutionalized cooperation among the Entities and to provide whatever decisions are necessary to ensure smooth, safe, and regular inter-Entity and international railway traffic. BHZJK is assigned the specific mission to examine, in co-ordination with the railway companies, the international requirements for efficient traffic (including inter-operability) on two lines that are viewed as a part of the Pan-European railway network. The two lines are:

- Ploce - Mostar - Sarajevo - Doboj - Slavonski - Samac - Budapest
- Zagreb - Banja Luka - Doboj - Tuzla - Zvornik - Belgrade

BHZJK's main functions are summarized below:

- Allocation of train paths for inter-Entity and international traffic.
- Harmonization of signaling, safety, and other systems.
- Harmonization and determination of infrastructure fees.
- Settling of accounts between the railway companies.
- Overall supervision of compliance with regulations on inter-Entity and international traffic.
- By specific mandate of the Entities or of the railway companies, BHZJK could act as a common agent or in its own right for the acquisition of railway equipment, construction of facilities and/or the management of items of infrastructure or rolling stock.
- BHZJK's budget resources shall include part of infrastructure fees and subsidies from the Entities.

(2) Joint Road Public Corporation

In March 2000 a Joint Road Infrastructure Public Corporation (BRIC) was established as part of the Transportation Corporation. To date (October 2000) BRIC is not up and running yet but its Board of Directors (12 members) and Management Board (three members) have been appointed. BRIC's headquarters will be in Banja Luka.

- BRIC is a joint structure between the Entities. Its purpose is to establish institutionalized cooperation among the two Entities in the field of road infrastructure

and to provide for the taking of whatever decisions are necessary to ensure smooth, safe and regular traffic by road throughout the whole of Bosnia and Herzegovina. BRIC's main functions are summarized below:

- Participate in road and other transportation network development planning and the establishment of joint action plans for the entire territory of Bosnia and Herzegovina.

- Harmonize and agree on joint lists of priorities for maintenance, rehabilitation, upgrading, modernization and network expansion for presentation to potential international sponsors and other financiers. Such priorities shall reflect transportation, economic and social priorities adopted by the Entities.

- BRIC's immediate priority shall be the European road corridors traversing BiH.

- Work on harmonizing and/or creating joint standards for design, construction, and maintenance of roads in BiH.

- Work on modernizing and harmonizing road signage, road markings, traffic signals, weighing stations, lighting, road safety devices and other systems as well as rules and criteria used for managing road infrastructure in the two Entities.

- Work on harmonizing and determining the amount of road infrastructure usage fees to be collected from foreign operators using the network in the Entities, the distribution of revenues obtained among Directorates for Roads and the share to be allocated to BRIC.

- BRIC may, by specific mandate of the Entities, act as a joint representative or in its own right in contracting services and civil works, purchasing equipment and technology, and/or managing directly elements of road infrastructure.

- BRIC's budgetary resources shall include part of the commission for the issuance of licenses for international and inter-Entity transport, contributions from the Entities, foreign donations, and loans.

7.2.3 Improvement on the Way

Effectively functioning State and Entity institutions will be a prerequisite for progress towards BiH's entry into European and Euro-Atlantic structures. Therefore, closer integration with Europe will be the principal driving force of BiH's economic development strategy, reform effort, and institutional development across most sectors including transport.

Recent events that are relevant to this discussion are briefly summarized below under two headings: the external environment and economic development strategy.

(1) The External Environment

A major external development that will have marked impact is enhanced economic and political linkage with Europe through the recently announced Stability Pact for Southeast Europe. The Stability Pact offers links with European and global institutions as an external "pull" to help stimulate democratic and market-oriented reforms and reduce the risk of continued conflict in Southeast Europe (SEE). The Stability Pact gives the World Bank and the European Union (EU) a special mandate to coordinate a comprehensive regional approach to development in the Region.

Closer integration with the EU and its institutions would be achieved through Stabilization and Association Agreements (SAAs) that would govern political, economic and trade relations between the EU and the countries of the Region. To take advantage of these closer ties, however, SEE countries will need to undertake more systematic structural and political reforms, in particular in four areas: trade and private sector development; social inclusion; improved institutional capacity and governance; and development of regional infrastructure.

Minimum conditions for the EU to embark on a Feasibility Study, the first step in the SAA process, are currently being developed for BiH. These conditions are likely to include trade and private sector oriented economic measures as well as measures related to governance and social inclusion. To illustrate, a first SAA with the Former Yugoslav Republic of Macedonia is to be negotiated in 2000 and will include enhanced regional cooperation leading (after ten years) to a free-trade area between the EU and FYR Macedonia, and increasing conformity of FYR Macedonia's legislation with that of Europe. The Stability Pact provides substantial opportunity for BiH, and closer integration with Europe will influence BiH's institutional development strategy across virtually all sectors including transport.

An Economic Development Strategy (EDS) for the period 2000 - 2004 is currently being prepared by BiH authorities. A team comprising representatives from the two Entities and coordinated by the State is spearheading the EDS. The EDS is designed to replace the Priority Reconstruction and Recovery Program as the strategic basis for policy and spending decisions in BiH and serve as a framework for external development assistance. An initial Framework Paper for the EDS sets out seven key development priorities for BiH over the course of the next several years: fiscal management; fighting poverty; developing a market-oriented economy; institution building; completion of reconstruction; access to WTO and European integration; and fighting corruption and the gray economy. The EDS builds on strategy formulation initiatives underway in the context of a Medium Term Expenditure Framework (MTEF) exercise. The EDS will also be consistent with the "road map" of actions (minimum conditions) that will lead to the SAA Feasibility Study for BiH.

Under the MTEF exercise, which is supported by the World Bank as part of the Public Finance Structural Adjustment Credit II, the Ministry of Finance in each Entity is receiving technical assistance to effectively ensure aggregate fiscal discipline within a coherent macroeconomic framework, and improve strategic resource allocation and efficient resource use. The MTEF aims to develop capacity to manage expenditures

consistent with resource constraints and sector policies. This work will be a key tool in the preparation of the State-level EDS. A recent output from the MTEF work is that each Entity has prepared and approved a Budget Framework Paper for the period 2001 –2003. Each Budget Framework Paper includes a transport sector expenditure strategy. The EDS/MTEF exercise and the formulation of the transport sector expenditure strategies are consistent with the reforms that will be required for progress towards BiH's entry into European structures. Therefore, the two transport sector expenditure strategies (FBiH and RS) are in very close harmony with each other in terms of identified actions and reforms.

(2) Actions and Reforms Identified in the Transport Sector Expenditure Strategies

Key actions and reforms identified in the FBiH and RS transport sector expenditure strategies are summarized below under the following headings: Strategic Framework; Sector Policy and Legislation; Infrastructure Rehabilitation and Development; Infrastructure Maintenance; and Transport Operations.

1) Strategic Framework

The issues within FBiH are:

- A transport policy that optimizes transport costs, reflects inter-modal comparative advantage, and addresses Pan-European transport policy goals.
- Provision of an enabling legislative and regulatory framework for the transport sector.
- Appropriate investment in infrastructure.
- Adequate provision for maintenance.
- Promoting efficiency in transport operations.

The issues within RS are:

- Improved capacity for sector policy/strategy development.
- Strengthened legislative, regulatory, and institutional framework.
- Rehabilitation and development of affordable transport infrastructure.
- Improved funding and organization of maintenance.
- Commercialization and/or privatization of transport operations.

2) Sector Policy and Legislation

The necessary actions and reforms in FBiH are:

- Enabling legislation covering roads, civil aviation, and water transport.
- Finalization of the BiH Transport Master Plan and plans for development of Pan-European Corridor 5c.
- Completion of ongoing investment in infrastructure rehabilitation.
- Continue with process of institutional restructuring within the sector.

The necessary actions and reforms in RS are:

- Formation of policy analysis and management unit in MOTC.
- Conclude BiH Transport Master Plan and develop effective medium term transport sector policy framework and strategy.
- Develop realistic business plan for RS Railways.
- Continue to improve systems for collecting and analyzing planning data.
- Ensure that sufficient attention is given to the institutional aspects of the BiH Transport Master Plan.
- Review institutional options for managing roads and railways and identify appropriate reforms.
- Prepare and adopt new Law on Roads.
- Prepare new railway legislation separating infrastructure from operations and ensuring harmonization with European norms.

3) Infrastructure Rehabilitation and Development

The FBiH actions and reforms are:

- Priority areas for new financing are: rehabilitation of 1,100 km of primary road network; rehabilitation of secondary and local road networks; installing new rail signaling and safety systems and repair of Podlugovi-Capljina line; completion of ongoing rehabilitation of Sarajevo Airport; and dredging of River Sava and minimal rehabilitation to allow reopening of Brcko and Samac ports.

- Assess requirements for investment in further rehabilitation and modernization of railway infrastructure (track, signaling, and telecommunications) against traffic projections and business plans for rail operations.

- Seek additional financing for remaining rehabilitation requirements in civil aviation sub-sector, linked to realistic projections of air traffic growth.

- Develop priority program for future infrastructure investment for all sub-sectors within framework of BiH Transport Master Plan.

The RS actions and reforms are:

- Prioritize road projects for new financing using appropriate economic analysis techniques including introduction of HDM-4 and training in its use.

- Seek additional external financing for investment in road rehabilitation projects in order to maximize share of domestic funds allocated to maintenance activities.

- Re-assess requirements for investment in rehabilitation and modernization of railway infrastructure against traffic projections and business plans for rail operations and seek necessary financing.

- Seek further donor financing for airport and navigation facilities and equipment consistent with realistic projections of air traffic growth, economic viability, and affordability.

- Explore opportunities for private sector participation in aspects of airport operations e.g. terminal and ground services including cargo business.

- Allocate sufficient funds for co-financing of externally financed projects.

- Develop priority program for future infrastructure investment for all transport modes within the framework of the BiH Transport Master Plan.

4) Infrastructure Maintenance

The FBiH actions and reforms are:

- Develop road and rail maintenance projects for donor financing.
- Pass Law on Roads to clarify responsibilities for road maintenance.
- Direct rail subsidies towards specified priority maintenance activities.
- Develop proposals for restructuring and privatization of road maintenance organizations.
- Identify financing requirements for maintenance of civil aviation and port infrastructure, and how these should be met (private sector operators, user fees etc).
- Introduce revised taxes for commercial vehicles based on vehicle weight and axle loads.
- Introduce and enforce legislation on maximum axle loads.
- Increase provision for road maintenance in federal budget linked to recent decree on transport infrastructure.
- Link budget allocations for civil aviation and water transport to plans for commercialization/increased cost recovery.

The RS actions and reforms are:

- Develop road and rail maintenance projects for possible donor financing.
- Determine and initiate modalities for gradually increasing domestic provision for road maintenance.
- End earmarking of tax revenues and bring all revenues of the Roads Directorate into the budget (the rationale for this is to bring transport back into the domain of public expenditure decision-making in order to allow a stronger linkage to develop between sector policy objectives and the determination of expenditure priorities).
- Target railway subsidies to specific maintenance interventions instead of earmarking tax revenues.
- Develop proposals for restructuring and privatizing road maintenance companies.
- Clarify maintenance requirements of civil aviation infrastructure (airport and navigation facilities) and implement appropriate self-funding mechanisms (user fees, private sector operators etc).
- Explore modalities for contracting out railway maintenance.

- Increase provision for road maintenance from budgetary resources.
- Review registration taxes for commercial vehicles and, if necessary, amend to reflect damage coefficients.
- Introduce competitive tendering for maintenance contracts.
- Possible move towards agency status for Roads Directorate, contingent on appropriate institutional reform and strengthening (medium term).

5) Transport Operations

The FBiH actions and reforms are:

- Make explicit investment and operating subsidies for transport operations in federal and Kanton budgets.
- Initiate privatization of non-strategic transport operations.
- Restructure railway companies to prevent them becoming an unsustainable burden on the federal budget.
- Seek external technical assistance for Rail Restructuring and Financing Study to provide basis for future public financing of railway network.
- Undertake urban transport study to develop strategy for increased commercialization and eventual privatization.
- Rationalize organization and develop management program for urban public transport enterprises with objective of increasing efficiency.
- Re-organize water transport operations based on BiH Transport Master Plan.
- CAA to take over responsibility for air traffic control requiring organizational and institutional restructuring of CAA backed up by staff training.
- Establish a financially viable civil aviation regulatory organization.
- Increase commercialization of government-owned transport operations requiring preparation of business plans that specify full costs of operations and implicit and explicit subsidies.
- Financing of transport operations to be a declining share of sector federal and Kanton budgets.
- Increase transparency by identifying subsidies for transport operations in federal and Kanton budgets where transport companies are required to provide non-commercial services.
- Develop financing mechanisms for investment in fleet replacement linked to business plans that provide for loan servicing and repayment.

The RS Actions and Reforms are:

- Agree uniform technical and operating standards with railway companies in FBiH.
- Abolish Railway Tax and replace with explicit and targeted budget subsidies.
- Seek external assistance for business development plan as a basis for restructuring the railways.
- Review and revise rail tariffs to increase cost recovery.
- Reduce staff numbers on the railways in line with the requirements of the business plan and abolish the waiting list.

- Identify vacant railway land and buildings for lease or sale.
- Privatize rail freight distribution centers.
- Explore possibilities for selling access to the railways telecommunications network.
- Privatize road haulage and inter-urban and urban road passenger services.
- Prepare business plans for Banja Luka Airport and the Directorate for Civil Aviation.

Some of the actions and reforms embodied in the approved FBiH and RS transport sector expenditure strategies can be implemented in the short term (2001 – 2005) while others will require a longer time frame with wide-ranging and long term institutional support from the donor community. Thus the transport sector expenditure strategies are a useful tool in helping to identify and prioritize training needs in the transport sector.

7.3 FURTHER INSTITUTIONAL DEVELOPMENT 2001 – 2020

Several priorities will guide and influence BiH's long term institutional development across all sectors including transport - the Dayton Agreement, the Stability Pact for South Eastern Europe, access to the World Trade Organization, steps necessary for BiH to reach a Stabilization Association Agreement (SAA), and further steps on the long road towards reaching EU conditions and norms (The Acquis).

In the context of institutional development in the transport sector, the Dayton Agreement is seen as long term (Annex 4 The Constitution and Annex 9 Public Corporations). For BiH to reach a Stabilization Association Agreement (which after ten years would result in a free-trade area between the EU and BiH) the Constitution would not need to be changed because the SAA is mainly trade-related. Moreover, the concept of Public Corporations laid down in Annex 9 fits with past and present trends in Europe, both in existing EU countries and those in the queue to join (i.e., public corporations or agencies created to operate transparently at arms length from government).

For clarity purposes in the discussion of BiH's institutional development over the period to 2020, short term is considered to be until 2005, medium term until 2010 and long term until 2020.

When the Transportation Corporation is set up in BiH (perhaps in 2001), it will be a joint structure between the two Entities – just like BHZJK and BRIC. With help from OHR, there are ongoing developments to create two more public corporations as part of the Transportation Corporation – a ports and waterways corporation which might focus on business promotion and an airports corporation which might concentrate on assisting the development of the on-the-ground part of the air traffic business (not air traffic control). Therefore, the short-term outlook is that there would be four modal corporations (road, rail, water and air transport) **under the roof** of the Transportation Corporation.

In legal terms, the Transportation Corporation and the four modal corporations are **at Entity level**, **not above Entity level**. The joint corporations have to be legally registered in both Entities and are not financed under the State budget through the newly created State-level Ministry for Treasury. In other words, the joint corporations are not State-level institutions. Nevertheless, the overarching purpose of the joint corporations

is to establish institutionalized cooperation between the two Entities. This situation reflects two inter-related realities – political and financial. The financial reality is that each Entity has its own money, with the State having no significant revenue sources of its own.

To improve the enabling environment for private sector participation in the economy, OHR is assisting State and Entity authorities to prepare a BiH wide cross-sectorial model for Concession Legislation. A working group between the State and Entity authorities has been established to tackle this task. The eventual legislation will be enacted at both State and Entity level, but with both levels being consistent with each other. This initiative will be of particular interest for the transport sector (BOT-type deals, cargo handling concessions, etc).

The basic assumption is that the transport-related parts of the Dayton Agreement (Annex 9 and the assignment of transport and financial functions between the State and the Entities under the Constitution) would remain unchanged until at least 2020. This assumption does not conflict with the aim of BiH realizing closer ties with Europe through a Stabilization and Association Agreement (SAA). Beyond the SAA constitutional changes in non-transport areas would almost certainly be necessary, but this discussion is not for the Transport Master Plan.

Once the Transportation Corporation and all four transport sub-sector corporations are fully up and running and staffed, a long term institutional solution would largely be in place provided that the key transport institutions in each Entity were given adequate human and other resources to implement the path of reform laid down in the Entity-level transport sector expenditure strategies (key institutions include the Roads Directorates and the Rail Companies).

At that point, however (around the beginning of the medium term), there would still be parts of the puzzle missing. Firstly, State-level Transport Legislation would be a logical step. Such legislation would need to be based on the split of transport functions between the State and the Entities under the existing Constitution. Similarly, it would be logical to create a new State-level Ministry by separating Civil Affairs from Communications. The functions of the new Ministry for Communications would follow the existing Constitution. Also it would be desirable to create a BiH multi-modal Transport Training Institute under the roof of the Transportation Corporation. Independent regulatory bodies would also need to be established at both State and Entity level to reflect the split of transport functions assigned to each level under the Constitution.

It is envisaged that almost all transport implementation (infrastructure and operations) would remain with the Entity institutions and companies. The exceptions would be common functions such as heavy maintenance equipment used over the whole of BiH territory and common safety systems such as remote control centers. This is already starting to happen in the rail sub-sector with the Railway Corporation owning and operating commonly used maintenance equipment.

The road and rail corporations would particularly focus on harmonization of standards (design, construction, safety etc). The Transportation Corporation would consolidate the

work of the modal corporations to realize a multi-modal dimension and database. The State could have a seat on the joint Transportation Corporation's Board. The concept of implementation being the responsibility of the Entities is consistent with European trends (i.e. pushing power downwards and outwards to regions and in some cases to large municipalities).

In BiH however, technical/safety standards must be harmonized nationwide (especially for roads and rail) as well as strategic plans for international and inter-Entity routes. As long as the Entities retain financial power, it is envisaged that any BOT-type transport projects would have to be organized and legally concluded by Entity institutions.

Technical assistance priorities in the short to medium term are seen as follows:

- To strengthen the Roads Directorates and gradually transform them into Road Agencies so as to provide more management autonomy.

- To restructure the railway business including the separation of infrastructure from operations (it is envisaged that each Entity would have one public rail infrastructure company and competition in operations i.e. more than one operating company hopefully with private participation).

- To assist/consolidate start-up activities and gradually strengthen management in the Transportation Corporation, BRIC and BHZJK.

- To establish a BiH multi-modal Transport Training Institute.

- To establish independent regulatory bodies.

7.4 THE NEED FOR CHANGE

7.4.1 The Framework

The above overview of evolutions, plans, and intentions demonstrates some important factors, namely

- There is no specific Ministry for Transport (or any other name) at the level of the State;

- Transport issues are at present the responsibility of the Ministry of Civil Affairs and Communications. This Ministry has only limited powers and even more limited budgets in relation to transport issues;

- The planned reforms at State level all concentrate on the establishment and future role of the Transport Corporations, however, their potential impact and efficiency is highly determined by the willingness of both Entities;

- In the present situation, the future development of transport infrastructure and the regulatory issues related to transport (both private / commercial and public) are accredited to the Entities (in FBiH also to the Cantons) and no consideration is given to the potential need to co-operate and organize the sector at the State level;

- The intentions of both Entities demonstrate clearly their awareness of the importance of transport for future development, but do not consider the international dimension of transport and the conditions related therewith, in particular in relation to the European Union.

One priority objective of BiH is to achieve in time the formal integration of the country in the European Union. But even before formal political integration will be achieved, BiH has the intention of becoming an economic partner of the international community. To achieve this important and vital objective, BiH will have to meet a wide variety of conditions that are summarized in the *Acquis Communautaire*.

The European accession policy clearly states that "In order to become a Member State of the European Union, acceding countries must align their national laws, rules and procedures to the entire body of Community legislation *('Acquis Communautaire')* in such a way that the relevant EU law is fully incorporated in their national legal system. This obligation continues after accession" (see Transport Acquis, Introduction).

The Transport Acquis, as part of the Acquis Communautaire, includes all the Directives, Regulations, and Decisions adopted on the basis of the relevant provisions in the Treaty. It furthermore includes all the principles of law and interpretations of the European Court of Justice, all international transport agreements to which the European Community is a party, as well as the relevant declarations and Resolutions of the Council of Ministers.

The approximation process consists of three major stages:

- The transposition of the Acquis Communautaire in the transport sector into the national legal system by using the appropriate national procedures and mechanisms (often laws passed by the Parliament, sometimes Presidential, Governmental or Ministerial Decrees);

- Its implementation, by providing the institutions and budgets necessary to carry out the laws and regulations;

- Its enforcement, by providing the necessary controls and penalties to ensure that the law is being complied with fully and properly.

In other words, BiH will have to implement and impose in full the European Transport Policy and **foresee in the institutions and budgets to carry out the laws and regulations**. Given the international character of many transport activities, it is commonly recognized that the policy of CEEC countries will need to have an international dimension.

The present regulatory framework, based upon the establishment of a Transport Corporation and a Ministry of Civil Affairs and Communications that is also responsible for transport will undoubtedly create problems of exercise of competence in the field of external transport relations. One of the important objectives of the European Commission (in particular the Directorate General for Energy and Transport) is to reduce the situation where Member States conclude transport agreements with third countries, on issues like market access, based on reciprocity because this approach implies continuing discrimination on grounds of nationality that could give rise to considerable distortions. The opinions of the Court of Justice regarding the EC powers in the external field, in as far as they can be applied to transport, have often not been recognized by the Member States. There is nevertheless a tendency for transport relations with third countries to be conducted only within a Community framework in full accordance with the Treaty and subsequent jurisprudence.

On the basis of the EC Treaty provisions (Article 75), the European Commission has already concluded special transport agreements with third countries aiming to establish conditions for mutual access to the respective markets, particularly in the fields of road and combined transport. They concern Switzerland, Slovenia, and the former Yugoslav Republic of Macedonia. Other countries will follow, in particular those countries that are included in the list of Candidate Members (accession countries).

7.4.2 The Implications

The above description of the conditions of future integration and the framework set forward by the Transport Acquis clearly demonstrate that all transport issues, directly or indirectly having an international dimension, have to be treated at the State level. This is also true for the implementation and enforcement in BiH of European rules and regulations and all negotiations / discussions with EU and other international institutions related to international transport. At no point, regions, Entities, or other geographical determined bodies are included in this political structure.

7.4.3 Its Translation: the Case of Belgium

In general terms, the above evaluation undeniably leads to the conclusion that national transport is predominantly determined by international standards, rules and regulations and that only public bodies at the State level have the necessary and recognized authority to negotiate with international institutions such as the European Union.

Belgium is a Member State with a similar structure as BiH. In recent years, the country has rapidly evolved, via four sets of institutional reforms (in 1970, 1980, 1988-89 and 1993) into an efficient federal structure. So it is that today, for the first time, the first article of the Belgian Constitution states: "Belgium is a federal state which consists of communities and regions." The decision-making power in Belgium is no longer exclusively in the hands of the Federal Government and the Federal Parliament (State level). Now, the management of the country falls to several partners, which exercise their competencies independently in different fields.

The redistribution of power followed two broad lines. The first concerns linguistics and, more broadly, everything relating to culture. It gave rise to the Communities, a concept which refers to the persons that make them up and to the bound that unites them, in this case language and culture. Belgium is situated at the junction between the Latin and Germanic languages: Dutch, French, and German. Thus Belgium has three Communities today, based on language: the Flemish Community, the French Community, and the German-speaking Community. These correspond to population groups.

The second main line of the State reform is historically inspired by economic concerns, expressed by Regions who wanted to have more autonomous power. This gave rise to the founding of three regions: the Flemish Region, the Brussels Capital Region, and the Walloon Region. To some extent Belgian regions are similar to the American States or the German "Länder." The country is further divided into nine provinces (10 as of 1 January 1995) and 589 communes. The picture hereafter visualizes the present political structure of Belgium.

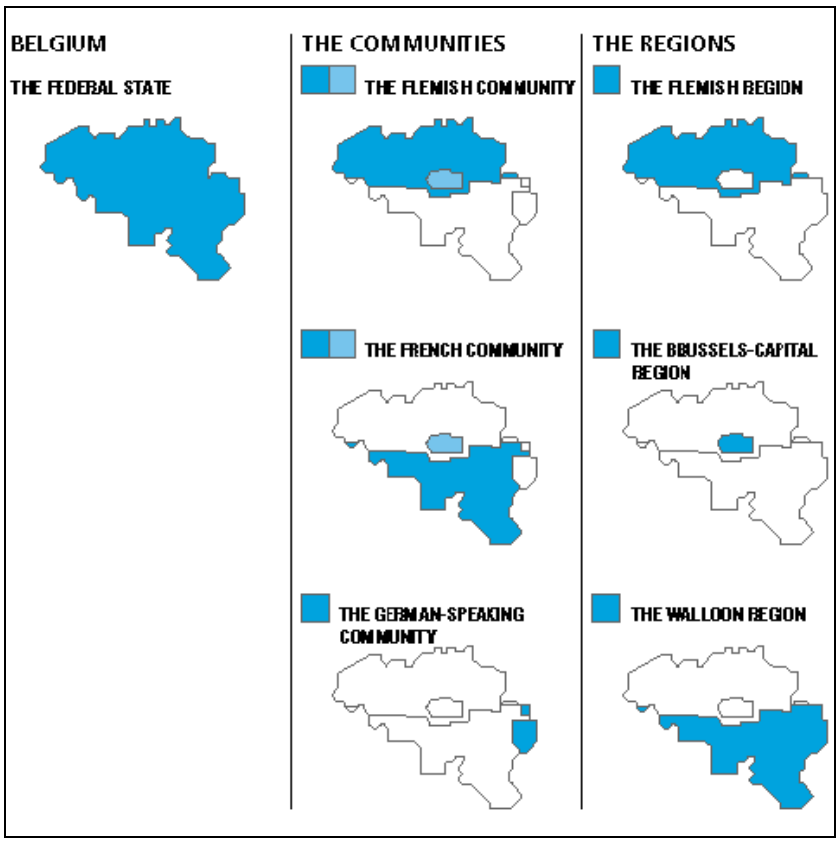


Figure 7.1 Political Structure of Belgium

The Federal State retains important areas of competence including: foreign affairs, defense, justice, finances, social security, important sectors of public health and domestic affairs such as transport and energy, etc. The Regions and Communities are entitled to run foreign relations themselves in those areas where they have competence but within the boundaries of the national and international rules and regulations.

For transport, the Federal government has a **Minister for Mobility and Transport** (at present Minister Isabelle Durant) that is the head of the **Belgian Ministry of Infrastructure and Communications**. The responsibility of this Ministry (and its Minister) is related to international transport (relation with EU, translating international rules and regulations into national law), police matters, vehicle registration, traffic code, national and cross-border transport infrastructure, aviation including the national airport of Brussels (although its operations have recently been privatized and the national carrier Sabena is partly owned by Swiss Air) and railways (in particular the control over the implementation of the liberalization), maritime transport. For each of these responsibilities, the Ministry has different Departments. These responsibilities clearly demonstrate that the responsibilities all relate to issues that have an international context of which policy making is between countries and within the context of international institutions such as the EU. Of course, the Ministry has also the responsibility to co-ordinate its policy with the regional governments. Laws at the State level are only published in the Official Journal after consultation and approval of the proposed law by the regional governments.

The regional governments have the responsibility of all other transport related issues. In particular in Flanders, with its large transport infrastructure network and its main ports the government has developed a government structure that can work both at the regional and international level. This structure will be discussed in some more detail hereafter.

Transport in Flanders is governed by the **Flemish Minister of Mobility, Public Works and Energy** (at present Minister S. Stevaert). For transport matters, the Department of Infrastructure and the Environment is the Administrative body that assists the Flemish Minister in his task. The structure of this Administration is similar to the one at the State level, as demonstrated in next figure.

Figure 7.2 Structure of the Department of Infrastructure and the Environment

Each of this Administrations and Cells is further sub-divided in sections that deal with specific issues within their authority.

The responsibilities at the regional level are in the first place the implementation of national rules and regulations (including international rules and regulations) and in the second place, the development of a Flemish Transport Strategy. In terms of Strategy development, police matters, safety and security, infrastructure etc, the responsibilities of the Flemish Minister for Mobility and his Administration is independent as far as their decisions do not contradict national or international rules and regulations and are not conflicting with the general framework of the national transport policy. For example, the Regional Minister of Mobility is responsible for the full exploitation and control over the regional airfields (excluding traffic control) but have (not yet) control over any issue that

is related to the railways. Further liberalization of the latter will open the door to transfer also in this sector responsibilities to the regional government.

7.5 A NEW TRANSPORT POLICY STRUCTURE FOR BIH

7.5.1 Introduction

In general terms, the Belgian approach could in time be translated towards the situation in Bosnia and Herzegovina, in particular in terms of the distribution of responsibilities and with minor changes, in terms of the organizational structure. *Some issues have therefore to be accepted by all parties involved before any true and sustainable changes can be implemented that are acceptable in the international community*. These major issues are:

1) At the level of the State, the responsibilities for transport (to be defined in detail later) have to be transferred from the Ministry of Civil Affairs and Communications to a new *Ministry for Mobility and Transport*;

2) The authority of this new Ministry for Mobility and Transport has to be accepted by the two Entities and also Brcko Administrative District will have to comply with decisions taken at this level;

3) The Transport Corporation will in time disappear and its authority will be transferred to the new Ministry for Mobility and Transport. If necessary, the Transport Corporation can remain active as advisory body to the Ministry for Mobility and Transport.

4) The relations between the Ministry for Mobility and Transport and the transport Ministries in both Entities and Brcko Administrative District have to be defined and the organizational structures developed that guarantee efficient and permanent co-ordination and consultation.

The concrete realization of the political restructuring does not require changes to the Constitution of BiH as defined in the Dayton Agreements, given that Annex 4 clearly defines that the public authorities at the State level are responsible for:

- Foreign policy;
- Foreign trade policy;
- Customs policy;
- Regulation of inter-Entity transportation; and
- Air traffic control.

More importantly, under the Constitution, additional responsibilities can be assigned to the State if both Entities agree. This means that the establishment of a Ministry for Mobility and Transport can be formalized within the structures of the Constitution. It only depends upon the initial willingness of public decision makers in both Entities. The

first step could be to formally establish the Ministry for Mobility and Transport and to transfer all present State responsibilities from the Ministry of Civil Affairs and Communications to the new Ministry.

7.5.2 The Ministry for Mobility and Transport: Functions and Structure

The name of the new Ministry for Mobility and Transport clearly indicates that the function of this Ministry is in structure and objectives different from the transport Ministries at the Entity level. In general, the priority role of the Ministry for Mobility and Transport should be the translation of EU policy into national rules and regulations that focus on *liberalising market access, ensuring integrated transport systems across Europe, ensuring fair and efficient pricing within and between transport modes, enhancing the social dimension and making sure rules which have been agreed are properly implemented* (COM(1998) 716 final, III.8).

Its function could be defined in relation to the following EU description of sustainable mobility: "Sustainable Mobility is to maximise welfare, and provide a sound economic, social and environmental base for both present and future generations…The most efficient approach to achieving sustainable development of the transport sector requires a combination of regulatory instruments (particularly for vehicle emissions) and restructuring of charges and taxes on the basis of marginal costs (including external costs) to provide incentives to reduce external costs to optimal levels. It often also requires improvement of the quality of transport, especially rail services (ensuring reliability and complete logistic services) and promotion of intermodal services." (CEMT/CM(2000)1/FINAL)**.**

Translated into a concrete approach for BiH means that the authority will include four different levels:

- The Ministry for Mobility and Transport of BiH deals with matters of inter-Entity, national, and international interest. The Minister for Mobility is appointed by the national Parliament;

- The Parliaments of the Entities holds legislative power for the region. It also appoints the Ministers of the Entities, including the Minister of Transport and Communications;

- The Government of both Entities oversees regional and community matters. The former cover everything to do with the territory and its administration. Community matters are those involving the lives of the people in the two Entities - matters such as education and mobility; and

- The municipalities in RS and the Kantons in FBiH are the local relays. The Ministers of Transport of the two Entities have supervision over the activities at this local level.

It is clear that with such structure, the Ministry for Mobility and Transport will have as a priority task the implementation in Bosnia and Herzegovina of the rules and regulations

as set forward in the Transport Acquis. In that context, the Ministry could be accredited following responsibilities:

- Strategic Transport Planning (implementation of Transport Master Plan);
- Strategic (international and inter-Entity) Transport Infrastructure development, improvement and maintenance, including budgeting of transport infrastructure investments;
- Policy matters and customs;
- International rules and regulations (translation into national law, control and enforcement);
- Standards and certificates (including transport training and education);
- Air traffic control;
- Transport privatization and quality control, in particular in relation to public transport services;
- Sustainable mobility development (public transport) and environmental protection.

The exact definition of each of these responsibilities will have to be decided by the relevant public decision makers at the State level and at the level of the two Entities. As a general rule, responsibilities at the State level will have to remain limited to issues that have a strategic importance at the level of the State. This means issues that are directly or indirectly related to cross-Entity and international transport. All other decisions should remain the exclusive right of the transport ministries in the two Entities.

A final structure of the Ministry for Mobility and Transport will also have to be decided by consensus between the two Entities. However, the Belgian case could be used as an example to give indications regarding the most efficient structure in terms of integration the transport sector of Bosnia and Herzegovina in the international community and in time, in the European Union.

A possible structure, based upon the Belgian case is presented in next figure.

Figure 7.3 Organizational Structure Ministry for Mobility and Transport

The State Minister for Mobility has a Ministry for Mobility and Transport under his responsibility. A Secretary General, the closest collaborator of the Minister for Mobility, governs the Administration.

Given the (future) existence of the Public Transport Corporation, a special division in the Ministry is responsible for the relation with the Transport Corporation. It should be noted that the Transport Corporation should remain an independent Entity that can advise the Minister for Mobility and its Administration. The same principle applies with the Division Entity Coordination via which the Minister for Mobility and his Ministry coordinate their activities with the two Entities. The importance of this Division should not be underestimated for several reasons:

- A close and efficient coordination with the two Entities is essential because their needs to be a constant interaction in relation to the State transport strategy, based upon the results of the Transport Master Plan for Bosnia and Herzegovina;

- State level decisions have to be approved by both Entities before State Law can be implemented and therefore require constant interaction during the development phase of State Law (see further);

- The Entities are responsible for the implementation and control of State Law and therefore require constant and efficient relations with the Ministry for Mobility;

- The Entities have the responsibility for all transport matters that are not regulated at the State level. In order to ensure that the transport policies of both Entities are consistent and do not conflict with the national transport policy, a constant interaction is essential.

Another important Division is the Division Policy Preparation and Transport Master Plan. In this division, the implementation of the underlying Transport Master Plan for BiH will be monitored on a permanent basis and frequent updates of the Plan performed. Close relation should in this context be sought with existing and future transport facilities such as universities, institutes, and training and research centers.

The Ministry for Mobility further consists of a number of Administrations, responsible for specific transport modes.

The Administration Roads and Traffic deals with all aspects of commercial, private, and public road transport in Bosnia and Herzegovina, as far as it is the responsibility of the state Ministry. These issues include road transport issues such as international standards and safety measures, transport of dangerous goods, vehicle registration, inter-Entity and (inter)national transport infrastructure development, policing, implementation of Transport Master Plan, international road transport policy, etc. Furthermore, and similar to the situation in Belgium, this Administration has responsibility over the airports, in particular for air traffic control and other aspects relevant to the safety of air transport.

Given that river and sea transport, including port and port-related activities, are almost always inter-Entity or international, the majority of the decisions in this field will be the responsibility of the state Ministry for Mobility. Responsibilities of this Administration include the implementation on rivers and sea of international maritime and river laws, rules and regulations related to vessels, river- and sea-traffic, etc…

Railways, similar to the Belgian case, are also State responsibility. This implies that in time the Entity railway companies will have to be integrated into a single railway company of Bosnia and Herzegovina. Here however, the responsibility of the Ministry for Mobility and Transport and its state Minister will have to focus on the privatization of the railways, in accordance with European policies. Once the privatization will be accomplished, the role of the Administration for Railways will be to control that private companies operate according to minimum service quality standards (similar to the UK situation where railway privatization has been established).

The Administration for Intermodal Transport will become increasingly important in the future. Their responsibility will concentrate on the integration of transport systems and the development of intermodal transport in BiH. In particular, this Administration will control the development and operations of intermodal transport terminals that have international and / or inter-Entity significance.

An important element for the Administration for Intermodal Transport is public transport. The efficient integration of public transport at various levels (urban, regional, inter-Entity, international) requires complex management. In particular, the integration will require an intermodal approach where urban transport by road (busses) are linked to passenger rail transport or to inter-Entity and international public transport. Also the efficient integration of airway traffic with public and private transport will have to be considered in this context.

The Administration for the Environment, Nature and Spatial Planning will have a very important role in the process of internationalization of transport and the integration of the transport sector of Bosnia and Herzegovina in the international economic environment. Environmental protection (including spatial planning and nature protection) is essential elements in the European transport policy and will have to be implemented in BiH if the objective of international integration is to be achieved in time.

Finally, the Administration of Supporting Studies and Contracts will be responsible for future studies and research activities, the regular update of the Transport Master Plan for Bosnia and Herzegovina, the issuing of contracts for infrastructure development that will be financed by the State etc…

The transfer of a number of responsibilities from the Entities to the Ministry for Mobility and Transport does not imply that the Entities no longer have control over the decisions. Similar to the decision-making procedures in Belgium, the Entities are the final threshold for the Ministry for Mobility and Transport before any initiative can be translated into law (via publication in the Official Journal).

A possible decision-making procedure at the State level for Bosnia and Herzegovina is visualized in next figure.

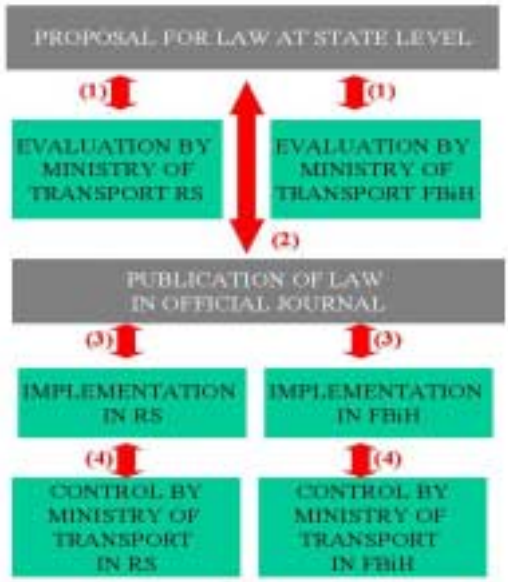


Figure 7.4 Decision-making Procedure

As demonstrated in above figure, any proposal by the state Ministry for Mobility has to be sent to the Entity Ministries for Transport for evaluation and control of its content. This is phase 1 of the decision making process. The Entities have the possibility to suggest changes to the original text in order to have the final text meeting their specific expectations. It should be noted here that proposals at the State level can only relate to issues for which the Ministry for Mobility has responsibility.

Once both Entities accept the text of the proposal, the final version has to be approved by the State Parliament after which the document is published in the Official Journal to become law in Bosnia and Herzegovina. In the publication, it should also be mentioned at what time the law has to be applied in both Entities in case implementation dates is different. This is phase 3 of the decision making process where the Entities implement the State Law in the two Entities. These decisions do not need Parliament approval in the two Entities because State Law automatically applies in both Entities. In the last phase 4, the control over the implementation of the law is the responsibility of the Ministry of Transport in both Entities. The integration of the law into Entity law is the responsibility of the Entities. This can be done by simple acceptance of the State Law, or by amending this law for Entity implementation. If amendments are added to the original version, the spirit of the law and the specific regulations should not be altered. This approach is common in relation to EU regulations concerning environmental protection. Member states applies the EU rules but sometimes add more stringent rules that are enforced in the member state alone.

The structure, proposed for BiH, is equal to the *principle of subsidiarity* as defined in the EC Treaty and applied in European legislation. Member states have the responsibility of translating European law into national law. Decisions, taken at the EU level, include an Article in which the time frame is specified for member states to implement the European law in national legislation.

7.6 RESOURCE ALLOCATION FOR THE MINISTRY FOR MOBILITY AND TRANSPORT

7.6.1 Introduction

The establishment of a State-level Ministry for Mobility and Transport will require both financial and human resources to perform the tasks that are accredited to the Ministry and his Minister. Also in this context, the Belgian example and the European practices can be used as a guideline to organize the Ministry in BiH.

As regards the financing of the Ministry, the concrete budgeting will have to be decided in mutual agreement between both Entities and the State. The ruling principle (similar to the Belgian and EU applications) should be that the Ministry for Mobility and Transport should be partly financed from financial revenues from transport (fuel taxes, vehicle registration costs, etc.) and partly by *"dotations"* (annual budget allocated to the Ministry for Mobility and Transport from the annual spending budget of the Entities and State).

The principle to allocate human resources to the Ministry is that the Minister is elected / appointed by the National Parliament and the top-level persons in the Administration of the Ministry for Mobility and Transport are appointed by the Minister. The rest of the (lower) Administrative staff is employed on a permanent basis in the Department and do normally not change when a new Minister is appointed.

The concrete implementation of these guiding principles in BiH are discussed in more detail in the paragraphs hereafter.

7.6.2 Allocation of Financial Resources

In Belgium, the budget of the Federal Ministry (State level) is financed by own resources. In the present Federal State Structure, the Regions (Entities) are only in a limited amount financed by the State (annual Dotations). Most of its revenues are coming from regional taxes, etc. However, in the Belgian case, these taxes are collected by the State and after collection transferred to the Regional governments. This complex structure is necessary in the Belgian case because according to Belgian legislation, the collection of taxes is (still in majority) State responsibility.

The European situation is different. Member States finance the EU and all its institutions via annual contributions in accordance with their representation in Europe (geographical size, population density, Parliamentary representation, etc). In principle, the EU does not collect taxes (Exempt from duties and taxes according to Art 3 & 4, Protocol on the Privileges and Immunities of the European Commissions of 8 April 1965, OJ 152 13/07/67) or generates any other form of direct revenues.

Taking into account the above examples and the situation in BiH, the financing of the Ministry for Mobility and Transport and Transport should be a combination of "dotations" by the Entities to complete the revenues of taxes and vehicle registration and other potential revenues.

The exact contributions of the Entities are impossible to determine and have to be decided on an annual basis in which the potential revenues of the Ministry for Mobility and Transport are decided by governmental decision. The *dotation* of the two Entities will have to bridge the possible gap between the estimated annual revenues and the annual costs of the Ministry. The overall financing principle is visualized in next figure.

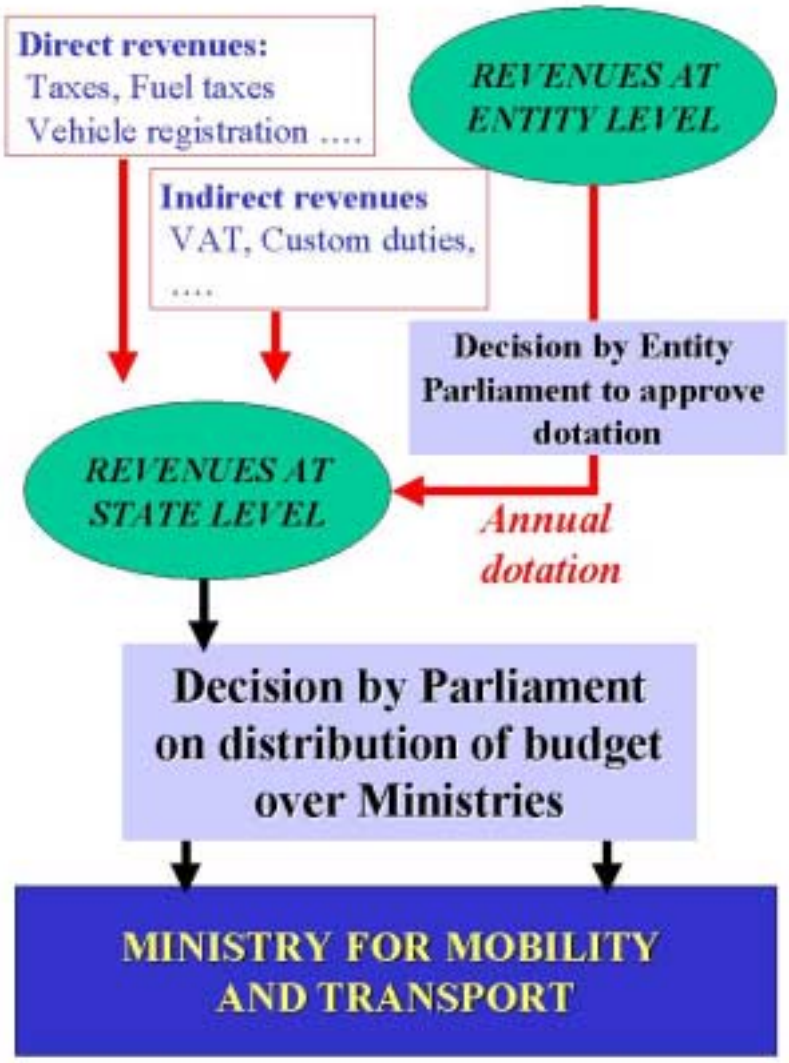


Figure 7.5 Financing Resources of the Ministry for Mobility and Transport

7.6.3 Human Resources Allocation

As a basic rule, the number of personnel should follow the level of responsibilities and activities that the Entities allocate to the State Ministry for Mobility and Transport. This means that at the moment the Ministry is established, a small number of permanent staff is allocated to the Ministry. When the further the functionality of the Ministry becomes clear, the different Administrations should be expanded with new staff members.

A possible approach to determine the basic structure and required staff of the new Ministry could be that following phases are accepted:

- Establishment of Ministry for Mobility and Transport and appointment of first State Minister of Mobility;
- Agreement between Entities regarding the initial responsibilities of the Ministry;

- Appointment of a General Administrator and minimum staff.

In particular the last point is important because it provides all interesting parties the necessary time to come to an agreement regarding the final structure and detailed responsibilities of the Ministry for Mobility and Transport.

To start up the Ministry for Mobility and Transport, the research team expects that 5 full-time employees are sufficient to effectively fulfill the minimum duties. These employees are

- One permanent staff for the contacts with the regions;
- One permanent staff to maintain permanent relations with the Transport Corporation and with OHR during the time the Transport Corporation is organized;
- Two persons responsible for the implementation of the Transport Master Plan;
- One person allocated to the Administrative Control Cell, in the beginning, his responsibility should be to negotiate and develop in direct collaboration with the Entities the structure and responsibilities of the other Administrations.

In addition to the 5 persons that make up the permanent staff in the beginning, two elected persons will have to join the new Ministry for Mobility and Transport. These persons are the Minister of Mobility and the General Administrator, both to be appointed by the State Parliament after consultation and approval of both Entities.

7.6.4 Conclusions

One of the priority objectives of Bosnia and Herzegovina is the future integration of the country in the international transport environment and more in particular in the European Union. To achieve that goal, BiH will have to organize its transport sector at the State level and take control over strategic decisions that involve both Entities and / or international relations.

The proposed Ministry for Mobility and Transport will take up that role and ensure that there is consistence in the transport policy of BiH and the two Entities. The proposed structure and working is based upon the Belgian example, a Member State of the European Union that has a political structure that can be compared with the structure of BiH. Furthermore, the relations between both Entities and the State are organized according to the EU principle of subsidiarity. The Entities herewith remain fully responsible for the implementation of the State Law in their respective Entities.

Furthermore, it is important to stress again that the introduction of the Ministry for Mobility and Transport does not imply that the Ministries of Transport and Communications in both Entities lose their decision-making prerogatives. They remain in control over the decisions at the State level because they have to be consulted for every law passed at State level and a law is only valid if approved and accepted by both Entities. The two Entities remain also responsible for transport related issues at the

Entity level, as far as they do not conflict with issues that have to be dealt with at the level of the State. These responsibilities are clearly defined in the Dayton Agreement and only need to be implemented. Both Entities also have the responsibility for the implementation of and control over laws that are passed at the State level.

Although the relation with the Public Transport Corporation has to be further clarified, the proposed structure foresees a coordination cell to interact with the Transport Corporation. The latter will, in the proposed structure, have a consultative role for the Ministry for Mobility and Transport and advise on laws and strategies for transport in BiH. As demonstrated in the discussion of the Transport Corporation, both Entities will be represented in this Corporation so that they have also via this link influence / control on the decisions of the Ministry for Mobility and Transport.

7.7 PUBLIC PRIVATE PARTNERSHIP (PPP)

7.7.1 Introduction

In 1991, the European Parliament concluded that substantial financial resources were necessary in order to "... respond to the needs for coordinated programming and creation of large-scale European infrastructure networks, improvement of safety and enhancement of the environmental impact."

Since that time, it has become apparent that several TEN-priority projects face important obstacles of a financial nature and therefore risk postponement or even partial cancellation. Traditional public financing schemes are running into severe problems because of public budget consolidation. Public – private partnership schemes (PPP's), which were recommended by the Christophersen Group and endorsed by Essen to accelerate priority projects, also appear to be more difficult to realize than foreseen for various reasons.

In view of the stringent budgetary constraints in EU Member States and considering the urgent need to realize many of the targeted projects in the trans-European transport network, the possibility to combine public and private financing has received renewed interests. The idea of PPP financing has been studied by a High-Level Group chaired by Commissioner Kinnock (1997).

The aim of the High-Level Group has been to see how PPPs can best contribute to the objective of speeding up the implementation of the trans-European transport network as a vital instrument for European competitiveness and growth.

The High-Level Group has looked at experiences of a range of PPPs and at measures that could be taken to encourage their development. It was fully recognized that PPPs can take a wide variety of forms, depending on the specific characteristics of each project.

The conclusions of the High Level Expert Group were maintained in the recently published Draft Report on Public Private Partnerships by the Commission on Transport and Tourism European Parliament (COM(97)0453-C4-0020/98, rapporteur M. Danesin).

7.7.2 The Concept of Public Private Partnership

Comparing the various approaches (World Bank, EU, EIB, etc.), it can be suggested that all discussions are leading to a similar objective but the perspective differs, as demonstrated in Figure 7.6.

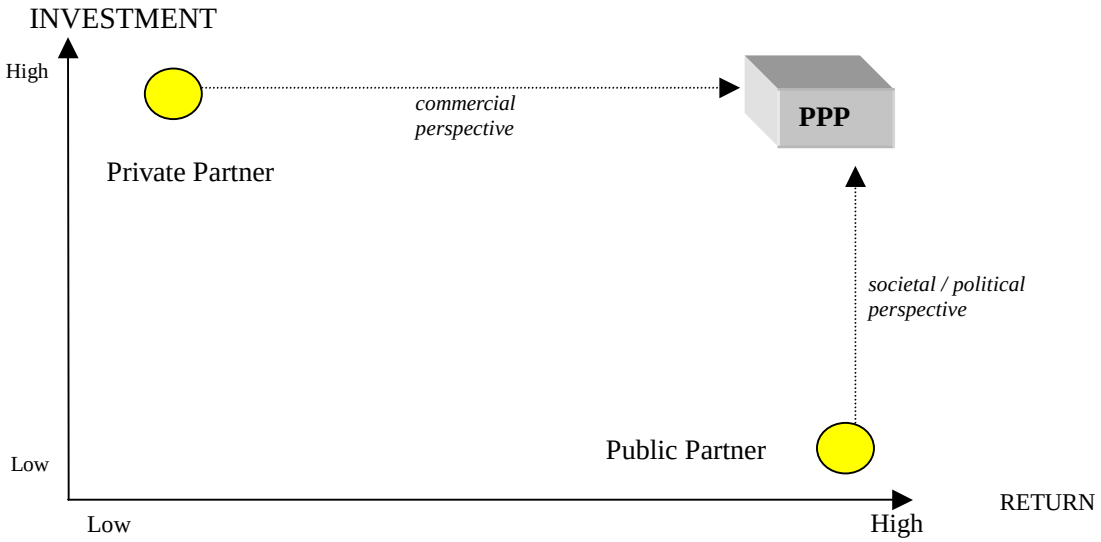


Figure 7.6 PPP – Perspectives

The *private partner* has a predominantly commercial perspective. Their first interest in participating in PPP's is to obtain an acceptable return on investment. Private investors evaluate the opportunity of investments according to following equation:

Expected Return = Risk Free Return + Risk Premium

The risk free rate is equal to the compensation of the time value of money and is measured in relation to the return on guaranteed fixed income investments such as treasury bills (*opportunity cost*). The risk premium is the sum of the market and unique risk.

At present, the risk for the private partner is substantially higher than in public works contracts. The risks are not only related to the financial return (which could be guaranteed by the public authorities), but also to the insecurity of public policy and changing regulations. They both substantially increase the uncertainty / risk of the project and gradually rises in relation to the duration of the project.

In many cases, the private sector still shies away from PPP's because the uncertainties (and thus risks) that are still too high compared to traditional collaboration forms between the public and private sector (cooperation).

The *public partner* prioritizes societal needs (cohesion and integration). Public authorities have a high interest in establishing PPP's because of the reduction of the (financial) risks in large infrastructure projects and the reduction of public financing

volume. In the traditional cooperation forms (concessions, licenses and public works contracts), the risks are predominantly for the public authorities. The Subgroup of the High-Level Expert Group argues that PPP should allocate "risk between the public and the private sector according to each party's ability to manage and bear each risk." This means that a PPP should be flexible in distributing risks, including the problem of project ownership. This view is supported by the EIB. According to the EIB, "…PPP's do not necessarily involve the private sector taking partial or total ownership of the projects. The private sector can participate in the implementation and operation of capital investment programs in other ways which can be equally valuable such as, for example, by sharing in the cost risk and / or the revenue risk or indeed in other risks of projects and still fully merit being described as a PPP." (Mr. Barrett, 1998, p 6). At the same time, the EIB advocates that PPP's "…are complex structures which require to be carefully though out to be successful and which need the full commitment of both the public and the private sector …" (Ibidem).

The EuDA, e.g., therefore strongly advocates the importance of a well-defined description of risks and engagements for each partner, different from traditional cooperation contracts.

The PPP can thus be considered as a specific type of public private collaboration that bridges the existing gap between the investment security that the private sector seeks and the engagements the public sector needs / wants to take in order to achieve its objectives.

The report by the High-Level Group provides the following definitions of public-private partnerships:

- A PPP is a partnership between various public administrations and public bodies on the one hand and legal persons subject to private law on the other for the purpose of designing, planning, constructing, financing, and/or operating an infrastructure project.

- A PPP is an arrangement, which encompasses financing and management by the private sector in the development, implementation, and operation of transport infrastructure projects.

Based upon the research conducted with the European Dredging Association, following definition has been developed for Public Private Partnership:

"The Public Private Partnership is a form of collaboration between a public and private partner for a well defined period of time and related to one or more specific phases of a planned project. The responsibilities of both the private and public partner are explicitly defined in the Partnership Agreement, including punitive damages for both partners in case of non compliance with the terms of the contract."

The key factor is that the project risks must be allocated to the public and private sector respectively according to each party's ability to manage such risks without destroying the economic balance of the project.

7.7.3 PPP and Risk Allocation

Two main groups of public-private collaboration can be identified, namely the *cooperation* and the *partnership* (Figure 7.7). Each of these variants originates from the principle that the public sector transfers to the private sector a number of responsibilities related to a traditionally public activity. Both the public private cooperation and the public private partnership include a **contract** between the public and the private partners of a project. The difference between both is the content and structure of the agreement.

The cooperation agreement defines the contribution of the private partner(s), the period of the time of the contracts the financial contributions of both parties and other conditions. In many cases, the cooperation agreement specifies penalties for the private partner in case of non – compliance to the conditions of the contract. *What is generally missing in the cooperation agreement, is the well-defined and written description of the engagement of the public partner.* A public – private co–operation that includes also a description of possible penalties for the public partner in case of non-compliance differs the public private partnership from the cooperation. This aspect is directly related to the risk assessment of public private collaboration.

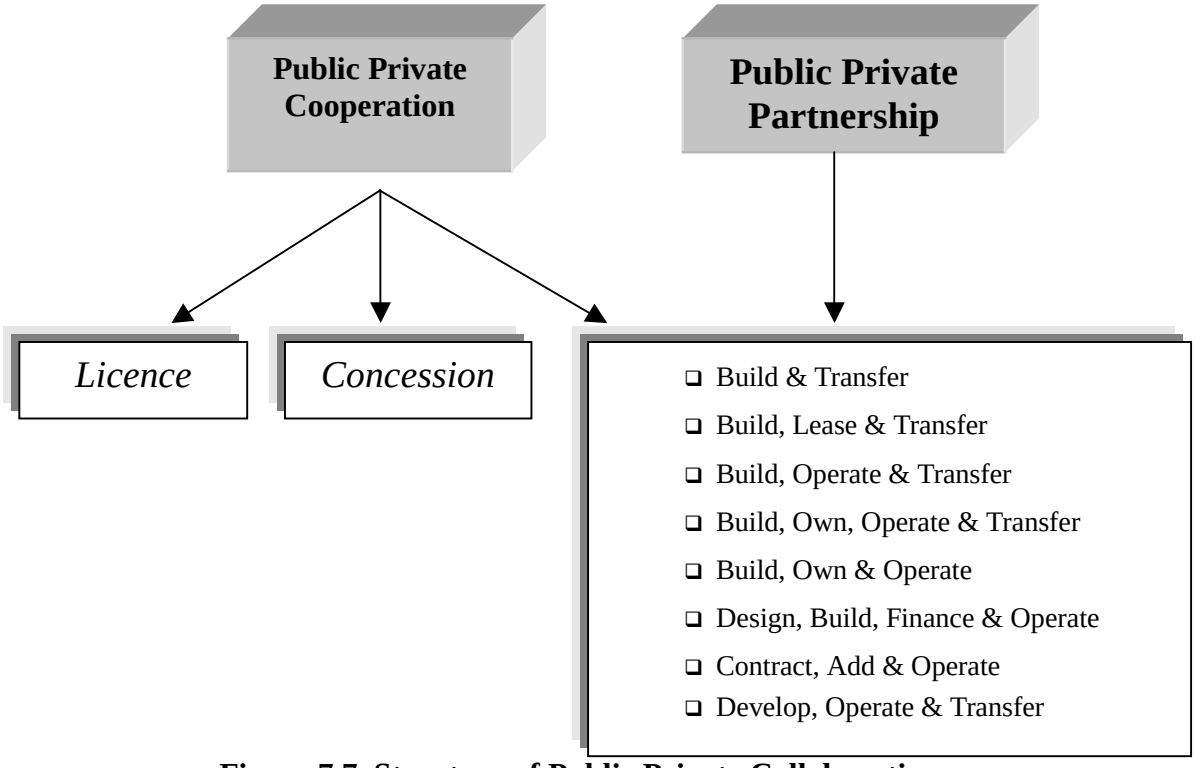


Figure 7.7 Structure of Public Private Collaboration

Two main types of risk can be identified in relation to the collaboration between public and private partners. The first is the project risk related to realizing large infrastructure projects.

One can distinguish:

- Technical risks (using new techniques or applying existing methodologies at a larger scale or under different conditions etc.);
- Scheduler risk (delays in execution); and
- Commercial risks (cost escalation, budget control, etc.).

Most if not all of these risks can be borne by the private sector. There are, however, other categories of risk or uncertainty, in particular for transport infrastructure that are outside the control of the private sector:

- Planning and permits risk (delays in planning procedure, negative environmental impact assessment, not granting construction permits, etc.);
- Political risk (new government changes plans, etc.); and
- Regulatory risk (the design rules are changed, etc.).

These risks can be described as structural risks and cannot be imposed upon the private sector to be covered, in particular in view of the public character of the risks. Such risks should therefore be carried by the public sector to guarantee minimum conditions for project success. The difference between traditional cooperation and public private partnership should be sought in other domains than the role and contribution of each partner. Most studies do not explicitly define and qualify the **commitment of both partners sharing the risks and responsibilities.** In particular these elements differentiate the PPP from traditional forms of "cooperation" as demonstrated in Figure 7.8.

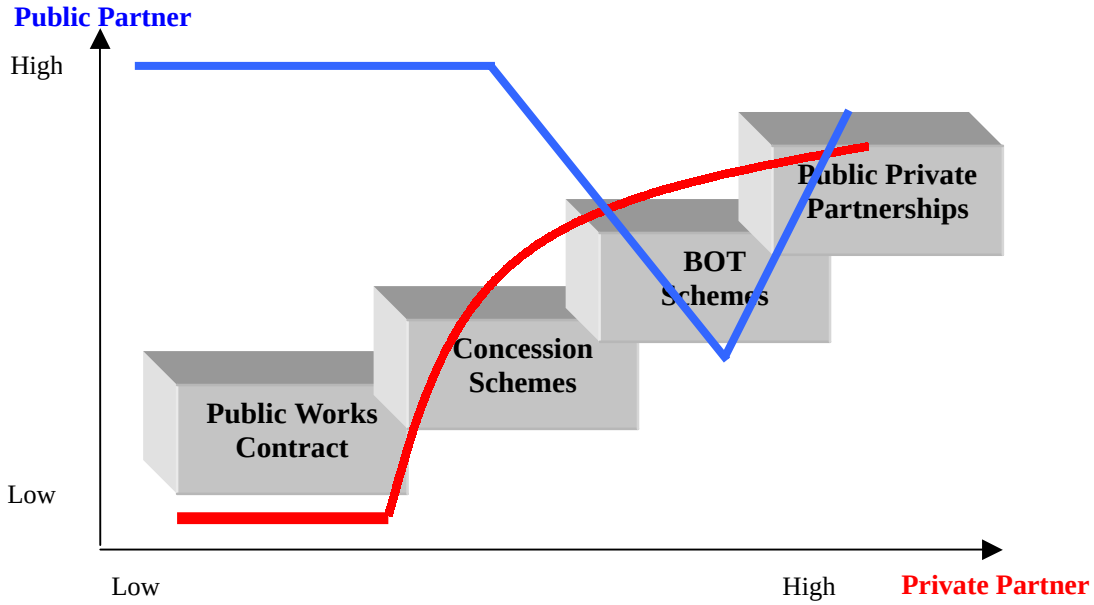


Figure 7.8 Commitment in Public Private Collaboration

The well-defined distribution of risks (and benefits) between the public and private partners is undoubtedly the key element for a successful PPP. A balanced risk distribution in accordance to each partner's capability will reduce the risk of failure. The level of participation of the stakeholders (type of cooperation scheme) is the crucial factor that increases or reduces the level of the project risk as demonstrated in Figure 7.9.

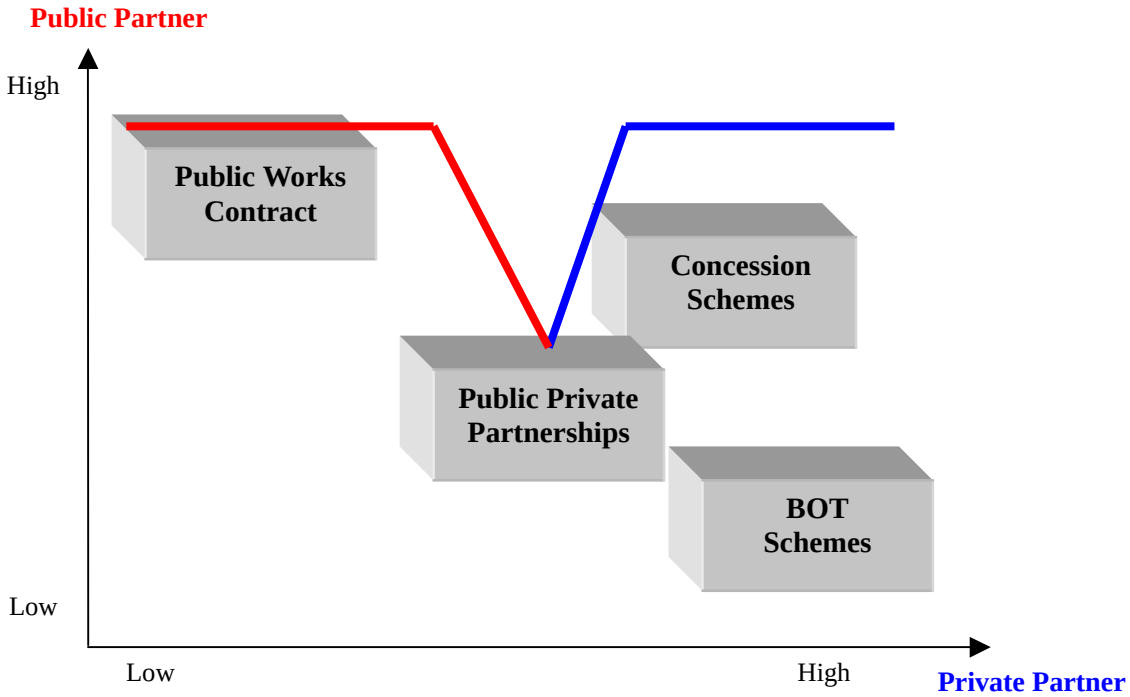


Figure 7.9 Distribution of Risks

To assess the risks and organizational implications of PPP's, it is useful to distinguish between four entities in the process:

- Public partner(s)
- Private partner(s)
- Investor(s)
- Private contractor(s)

An important remark should be made here. A clear difference must to be made between the private partner(s) and the private contractor(s). The private partner(s) are international and multi-disciplinary companies that actively participate in the financing of projects. The logical objective of financial participation is to generate long-term revenues of the projects in which they participate. The private contractors are companies that do not (or cannot) invest in the realization of the project. Their participation is "limited" to the construction of the infrastructure according to the specifications provided by the consortium that manages the project. It is clear that this difference incorporates an apparent distinction between the roles of both in a PPP.

Three different types of PPP can be distinguished, based upon the participation level of the four stakeholders. The first type is the "**basic PPP**" where the public and private partner teams up for operating a specific project and outsource all non-core activities to outsiders. The second is the "**controlled PPP**" where the provider of the financial resources is formally included in the project and is able to participate in the decision making process and therewith in the controlling of the project's risks. Finally, the third type of PPP incorporates all stakeholders during the life cycle and can be considered an "**integrated PPP**":

i) The basic PPP is the cleanest form and enables the public private partnership to scan the market to find the best available option in terms of investor(s) and contractor(s).

ii) The controlled PPP is the strongest form of collaboration given that the investor is a partner in the PPP and will constantly monitor the project in order to secure its expected return on investment. The investor will act as a continuous auditor.

iii) The integrated PPP incorporates also the constructor(s) as a partner. An important question here is the level of involvement during the project lifecycle.

The risks for each partner vary according to the structure of the PPP (basic, controlled or integrated PPP). The other partners predominantly confront the **public partner** with a possible non-compliance with the stipulations of the PPP contract. Depending on the type of partnership, the level of risk for the public partner could be reduced to an acceptable level. In case of the basic PPP, the risk is reduced given that the private partner has substantial financial resources allocated in the project. Both partners can scan the market for the best investors and contractors to execute the construction according to the financial provisions made in the design phase. However, the risks

remain substantial, given that the public partner is highly depending upon the private partner's willingness to continue with the project. Similar to the case of the UK High Speed Connection, the private partner can exit projects in case they consider the project no longer commercially viable or conversely, the private partner may have to file project bankruptcy sometime during the long lasting undertaking. Consequently, there are also political risks related to the basic approach to public private partnerships. The opposition could for example use the project for political disputes or environmental issues could become a disturbing factor.

The risk of financial collapse could be reduced when the investors are included in the PPP-structure from the beginning of the project (Controlled PPP), enabling them to constantly monitor the financial progress of the project and in particular monitor the financial solvability and transactions of the private partner. In that type of partnership, the private partner will be a large international holding who will be forced to be in the first place a financial partner with the objective of future exploitation, and only in a secondary stages a construction partner. For the construction of the project, the market can still be scanned for the best construction company, which could be a division or daughter company of the private partner, but can also be fully independent. The constant monitoring of the financial solvability of the private partner by the investor will reduce the risks for the public partner of financial collapse of the project and consequently avoid to a certain level possible political difficulties.

The integrated PPP cannot further reduce the problem of financial insolvency of the project. On the contrary, basic contractors could encounter financial difficulties because of the time lag between investment and future revenues. In addition, the flexibility of selecting the best constructor is reduced because they are included as partner in the project and cannot be surpassed in the selection process for constructors. However, if the constructor is also responsible for the maintenance of the infrastructure during the project lifecycle, his engagement and sustainability in the PPP increases again, hence reducing the commercial risks related to the project. In this case, the constructor becomes a full partner sharing the risks and revenues exactly according to the other stakeholders. Simultaneously, basic construction works could still be outsourced to external contractors.

It can therefore be concluded that the controlled or the integrated PPP is the optimal selection for the public partner, given that the participation from the start of the project of the investor(s) and contractor(s) will increase the (financial) stability of the project.

It is logical that the **private partner** will carefully assess the commercial viability of a project before engaging in such a venture. But for the private partner, structural risks come on top of the project risk. The potential impact of political evolutions during the life cycle of a PPP is difficult if not impossible to calculate. This means that a decision to engage in a PPP is based upon a fuzzy perception of the possibility that changes in political and / or environmental regulations or a change in government could alter the existing PPP-agreement. These uncertainties must be explicitly covered by the partnership agreement. This problem remains in each type of PPP (basic, controlled or integrated). A basic PPP will facilitate private partner participation given that both partners are or should be financially solid. The private partner, in case the relationship is

not clearly defined, can always exit the project if the evolution is not according to preliminary calculations or f changes in the political constellation increase the initially estimated level of political risk. The example of the London HST connection proves that the basic PPP offers no major difficulties to exit a project and the possibilities of the public partner to react to this decision remain limited.

The best option for the private partner is also the controlled PPP, where a financial institution such as the EIB participates in order to guarantee the financial solvability of the project, as is the case in the LUSOPONTE project. The full participation of the investor from the beginning of the project will also for the private partner generate stability and reduce his level of risk. This reduction is not only on the financial level, but also on the political level. The integrated PPP is also an interesting option in case the main constructor becomes engaged during the entire project lifecycle via a maintenance contract for the infrastructure.

For the private partner, the participation of the investor in the controlled PPP increases stability and consequently reduces the project risks, both in financial as in political terms. For private partners in PPP's, the risk is the deciding factor for a participation and the expansion of the project with the main constructors could further reduce the possibility of the private partner to exit the project in case the initial conditions of the project change.

The greatest risks could well be run by the **investor** or equity provider, whether he is a partner in the PPP or an outsider. In each PPP-type, the investor provides the necessary financial resources to realize the project and is therefore fully dependent of the PPP-partners. Project and structural risks are particularly high in the Basic PPP, given that a dispute between the private and public partner could alter the initial conditions of the project and endanger the continuation of the project and consequently the future financial returns. The Channel Tunnel is a clear example. Already during the construction phase of the project, it became clear that the commercial forecasts were over-estimated and that the returns would not suffice to repay the loans as was calculated. Both the public and private partners have to be blamed for this situation. In order to "secure" their investment, the consortium of banks has been extending loans, erasing existing debts and extending interest payments for a long period of time to alleviate the financial burden on the project and secure their investment in the future. Until the present day, the private investors have not yet seen any revenues on the investment. If the investor is a full partner in the controlled PPP, the financial risks reduce because investors would have (partial) control over the activities and hence influence decisions that could endanger his initial investment. The participation of the consortium of private and public banks as well as private financial investors is a stabilizing. Also in the integrated PPP, the risks for the investors can be further reduced, given that in this combination, the investors can even "control" the constructors and in particular check upon their financial solvability before accepting constructors as full project partners.

The best option for the investor is the participation in the project from the beginning, either in the controlled or the integrated PPP. The former remains the best option, given that this construction avoids the risks related to the financial solvability of the constructors, who have to "cover" the wide gap in time between investment and expected

returns. However, even as a partner, the fact remains that he provides the financial resources and therefore is the most vulnerable partner to possible changes.

Finally, there is the **contractor**. The best option for the contractor is to avoid any participation in the project (basic and controlled PPP). As an independent contractor, he is mainly faced with risks related to the regulations under which he has to operate. If the contractor has the necessary know-how and skills for large infrastructure projects, he is undoubtedly familiar with all regulations and conditions related to the construction works. The fact that regulations could change during the preparation of a dossier is no argument of increased risk, given that it can be argued that professional constructors are constantly informed / updated about (changes in) the regulations for his profession. The only risk for the constructor is related to the construction investment. In case the public and private partners in the PPP structure do not meet the contractual agreements, the project could be abandoned and the contractor could lose his construction investment. In fact, where (a) separate contractor(s) is (are) used for the construction, there is little difference for him between a PPP, a public infrastructure project or even a private construction job. However, his risk increases if the constructor participates in the project during the entire lifecycle via a maintenance contract. In this case, the advantages of long-term revenues via the maintenance contract will be the deciding risk assessment factor.

The risks for the constructor are generally limited as long as he remains an outsider from the project. In this case, the period of his involvement is confined to the beginning of the project, when both political and commercial risks remain limited. In case of a partnership (integrated PPP), the constructor increases his risks but will at the same time increase long-term expected revenues from the project.

7.7.4 Conclusions

The overall risks cannot be fully excluded for all companies and institutions participating in a transport infrastructure investment. The selection of the optimal PPP structure will remain a project-based decision for which no general assessment rules exist, and this for two particular reasons. On the one hand, the level of concrete participation of project partners in a PPP will determine the total risks. But on the other hand, increasing the number of partners in the PPP reduces the flexibility of the partnership to scan the market for the best opportunities (investors, contractors, operators, etc).

Therefore, **preparing a PPP is an important success-factor**. Using a study syndicate to prepare the project is an interesting option to avoid complications during the project. In addition to evaluate the (financial) viability of the investment, the study syndicate could also assess the existing schemes for public private collaboration and if necessary, new systems can be developed according to the structural needs of the project in terms of partners, engagements and commitments etc. ***The key factor is that the project risks must be allocated to the public and private sector respectively according to each party's ability to manage such risks without destroying the economic balance of the project.***

7.8 FOLLOW-UP FOR THE MASTER PLAN IMPLEMENTATION

The Transport Master Plan should be properly implemented and continually monitored, with periodic revisions, if necessary, to cope with unforeseen changes in the socioeconomic environment. This important task is assumed chiefly by each Entity. Therefore, Entity Ministry of Transport and Communications (MOTC) should have a Policy and Planning Unit mandated to:

- Coordinate project implementation among relevant authorities/organizations, and chair the Transport Technical Committee (the ad-hoc Technical Committee for the JICA Master Plan Study should be continuously maintained);
- Study transport policy issues and measures, and advise Ministerial decision-making;
- Study the legislative framework for Public Private Partnership (PPP) and administratively support the implementation of PPP projects;
- Conduct a series of regulated traffic surveys and maintain a comprehensive transport data-base to analyze current transport problems;
- Monitor BiHTMAP periodically with empirical and theoretical bases;
- Manage the capacity building program; and
- Govern other planning-related administrations.