

7. TRANSPORT

A. INTRODUCTION

7.1 Following substantial outlays in the aftermath of the war, expenditures on transport have fallen over the last several years in large part due to declining foreign assistance. Government decisions between financing capital improvements or operations and maintenance have also been a factor. Moreover, the overly complex institutional structure of the sector has raised transaction costs and has blunted the efficiency of spending. Expenditures on rehabilitation and maintenance have been inadequate, creating a substantial maintenance backlog, while the distribution of funds between the numerous spending bodies in the sector has not been made on strict economic merit. Investment plans, moreover, have typically been prepared without sufficient regard for the overall fiscal envelope, which will ultimately require rationing the most necessary outlays to fit fiscal reality. Little use of formal appraisal techniques at project level in some of the public sector bodies has also been an important constraint to efficient spending in some of the sub-sectors. All these factors combined keep the overall condition of transport infrastructure poor and inadequate for a country of the size of BH despite considerable expenditures in the sector over the last decade.

7.2 Recent developments are cause for concern. The government of the FBH is moving toward procuring passenger rolling stock at a cost that does not appear to take the entity's fiscal constraints fully into consideration. The rolling stock to be procured, moreover, will far exceed the technical capacity of the railroad network. Lack of a strategy for the development of the overall transport sector and the railroad sector in particular makes it hard to confirm these projects as a priority for the railroad sector. Other potential fiscal concerns, are raised by the authorities' plans to develop the road infrastructure within corridor Vc even if taken forward on a concession basis.. In light of these developments, the chapter argues that the governments will be well advised to proceed with any debt-financed public investment only within prioritized national and sector investment strategies, consistent with the available fiscal envelope. Involving the private sector is important, but a substantially improved institutional framework is a key pre-condition for the successful operation of public private partnerships (PPP). Moreover, open and transparent competitive bidding is a pre-requisite to ensuring that best value is obtained for the public resources available. In parallel, consolidation of the responsibilities of the spending bodies in the sector should be a priority.

7.3 This chapter reviews expenditures in the transport sector according to trends in recurrent and capital outlays, by mode of transport, and by sub-sector. The chapter then examines the road sector in more detail and estimates the annual financing needs for the road network to remove the maintenance backlog and keep the existing infrastructure in proper condition. The analysis demonstrates that outlays on the order of those in 2005 are needed to clear the maintenance backlog and upgrade the quality of the existing network, both of which should be a priority for the government, and should not be spent on further expansion. A similar analysis is carried out for the railroad sector. The chapter concludes with a summary of the recommendations.

B. INSTITUTIONAL CONTEXT AND PUBLIC EXPENDITURES ON TRANSPORT

7.4 After substantial donor-financed outlays in the aftermath of the war, expenditures on transport have fallen over the last several years as assistance has declined. As recorded in entity budgets and public investment programs, outlays peaked at 2.1 percent of adjusted GDP in 2002 before falling to 1 percent by 2005 (Figure 7.1 and Table 7.1). To the extent known, external financing accounted for a considerable share of capital investment in the transport sector over the past decade. Much of this investment has been used to rehabilitate or develop the national road network, where external financing from all sources amounted to €220 million during 1996-2004, or 92 percent of all capital expenditures on road infrastructure (Table 7.2). Including private sector outlays on transport, expenditures in BH are lower than in other countries in the region (Table 7.3). These differences reflect mainly larger government spending on road construction in the NMS. These countries, however, have a substantially larger fiscal envelope for making these outlays.

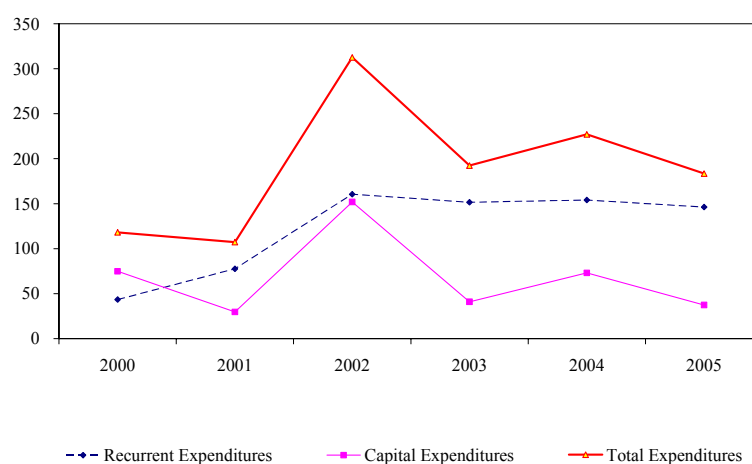
7.5 The current institutional structure of the transport sector is complex and costly, and in need of further improvement. At the state level, the Ministry of Communications and Transport established in 2003 supplements the entity Ministries of

Transport and Communications. In addition, at the operational level, there are three railway companies, six institutions in the aviation sector, and twelve public institutions in the road sector, excluding those organizations/bodies responsible for local and urban roads. Moreover, there are plans to establish a state-level Road Directorate to implement and manage the road infrastructure developments on Corridor Vc. Such a directorate should be established only as the first step in merging operational responsibilities in the sector, unless it is an independent commercially self-standing vehicle to manage the concession alone. Otherwise, the establishment of a new public road directorate at the national level could weaken existing entity road directorates, atomize scarce human and financial resources in the sector and blur lines of responsibilities.

7.6 The institutional structure and delineation of responsibilities in the road sector is particularly complicated. The road network is delineated into three categories: trunk roads, regional roads and local roads. The trunk road network extends some 3,739km, of which 1,958km is managed by the FBH Road Directorate (FBHRD) and the rest by the RS Road Directorate (RSRD). About 96 percent of the trunk road network is asphalt-paved. The regional road network totals some 4,907 km, of which 2,724 km falls within the FBH and 2,183 km within the RS. The ten cantonal institutions are responsible for the regional road network within the FBH, while the RSRD is responsible for the regional road network in the RS. The local road network (13,730km) is the responsibility of the municipalities in both the FBH and the RS.

Figure 7.1. BH: Recurrent and Capital Expenditures, 2000-2005

(In millions of KM)



Sources: BH authorities and World Bank staff estimates.

Table 7.1. BH: Transport Sector Expenditures, 2000-2005
(In millions of KM)

| Agency | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--|------|------|------|------|------|------|
| State Ministry of Transport and Telecommunications | | | | | | |
| Capital Expenditures | 75 | 2 | 126 | 12 | 18 | 0 |
| Road sector | 73 | 2 | 112 | 8 | 15 | 0 |
| Railway sector | 0 | 0 | 0 | 0 | 0 | 0 |
| Inland water transport | 0 | 0 | 0 | 0 | 0 | 0 |
| Civil aviation | 2 | 0 | 14 | 4 | 3 | 0 |
| Total expenditures | 75 | 2 | 126 | 12 | 18 | 0 |
| FBH Ministry of Transportation | | | | | | |
| Capital expenditures | 0 | 6 | 1 | 5 | 6 | 1 |
| Road Sector (FBHRD) | 0 | 6 | 1 | 5 | 6 | 1 |
| Railway sector (ZFBH) | 0 | 0 | 0 | 0 | 0 | 0 |
| Inland water transport | 0 | 0 | 0 | 0 | 0 | 0 |
| Civil aviation | 0 | 0 | 0 | 0 | 0 | 0 |
| Recurrent Expenditures | 13 | 21 | 35 | 38 | 39 | 27 |
| Road sector (FBHRD) | 0 | 7 | 20 | 24 | 25 | 27 |
| Railway sector (ZFBH) | 13 | 14 | 15 | 14 | 14 | 0 |
| Inland water transport | | 0 | 0 | 0 | 0 | 0 |
| Civil aviation | 0 | 0 | 0 | 0 | 0 | 0 |
| Total expenditures | 13 | 27 | 36 | 43 | 45 | 28 |
| Cantons (roads) | 0 | 0 | 35 | 47 | 50 | 49 |
| Municipalities (roads) | 0 | 0 | 25 | 33 | 36 | 35 |
| RS Ministry of Transportation | | | | | | |
| Capital expenditures | 0 | 21 | 25 | 24 | 50 | 36 |
| Road sector (RSRD) | 0 | 21 | 25 | 24 | 50 | 36 |
| Railway sector | | | | | | |
| Inland water transport | | | | | | |
| Civil aviation | 0 | 0 | 0 | 0 | 0 | 3 |
| Recurrent expenditures | 30 | 57 | 67 | 34 | 29 | 36 |
| Road sector (RSRD) | 0 | 31 | 37 | 33 | 29 | 36 |
| Railway sector | 30 | 26 | 29 | | | |
| Inland water transport | | | | | | |
| Civil aviation | 0 | 0 | 0 | 0 | 0 | 0 |
| Total expenditures | 30 | 78 | 92 | 58 | 78 | 75 |
| Municipalities (roads) | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall outlays on transportation | 118 | 107 | 313 | 193 | 227 | 187 |
| (In percent of adjusted GDP) | 0.9 | 0.8 | 2.1 | 1.2 | 1.3 | 1.0 |

Source: BH authorities and World Bank staff estimates.

7.7 The railway sector also has an ungainly structure. Following independence from Yugoslavia, a BH company was formed to manage the country's railroad network. This company split into three government-owned companies after the DPA. A national railway public corporation, BHZJK, was

established in 1998 to coordinate and regulate between the three companies.¹ In 2001, the FBH adopted a new railway law that merged two railways into Zeljeznice FBH (ZFBH), but the railway in the RS part, the Zeljeznice RS (ZRS), remained separate. Thus, today, the country has two railway companies and a national coordinating body.

7.8 Civil aviation is also governed by three organizations.

The BH Directorate of Civil Aviation (BHDCA) was established in 1997 within the BH Ministry of Communication and Transport to help BH carry out its obligations as a member of the International Civil Aviation Organization (ICAO) and a signatory of the Convention on International Civil Aviation (Chicago Convention). BHDCA's relations with the entities' own Directorates of Civil Aviation (DCA) are regulated by BH Civil Aviation Law.²

7.9 The institutional structure for the inland water transport sector is currently under revision.

The inland water transport sector in BH has been regulated through the relevant entity laws and formally supervised by the port director's offices within the entity ministries of transportation.³ The Law governing the sector at the state level is currently under preparation.

7.10 All told, there are substantial opportunities for consolidating policy making and operational responsibilities in the sector. This should help improve the allocation of resources, strengthen accountability and reduce administrative expenditures. As a first step, the authorities should consider the possibility for consolidating the responsibility for the management of the regional roads from the cantons to the FBHRD.

7.11 The private sector has an important role to play in infrastructure investment. BH's ability to improve the coverage and quality of infrastructure and to sustain those improvements, given the limitations imposed by fiscal constraints, will require a greater involvement of PPPs in service delivery. This will entail greater levels of competition in service provision, better regulation, oversight and contractual adherence. Enhancing the effectiveness of infrastructure provision can be achieved in several ways, including via the competition for the right to build (e.g., infrastructure for all modes) and the competition for the right to provide service (e.g., franchises to operate public transport or sections of

Table 7.2. Transport Expenditures by Sector, 2000-2005
(In millions of KM)

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|------------------|------|------|------|------|------|------|
| Roads | 73 | 68 | 254 | 174 | 210 | 184 |
| Railways | 43 | 39 | 44 | 14 | 14 | 0 |
| Inland Transport | 0 | 0 | 0 | 0 | 0 | 0 |
| Civil Aviation | 2 | 0 | 14 | 4 | 4 | 0 |

Sources: BH authorities and World Bank staff estimates.

Table 7.3. Expenditure Outlays in Transport, Government and Private (In percent of GDP)

| Country | Transport Expenditure |
|------------------------|-----------------------|
| Albania | 1.9 |
| Bosnia and Herzegovina | 1.6 |
| Bulgaria | 2.0 |
| Czech Republic | 4.1 |
| Hungary | 4.3 |
| Slovak Republic | 2.0 |
| Slovenia | 2.3 |

Source: National authorities and staff estimates.

¹See: Agreement Between the FBH and the RS on the Establishment of a Joint Railway Public Corporation in Accordance with the Dayton Peace Agreement, Annex 9.

² Entered into force on Feb 7, 2004 and published in BH Official Gazette No 2/04.

³ The Law on Inland Navigation (RS Official Gazette RS 58/01); the Law on Inland and Maritime Navigation of FBH (FBH Official Gazette No. 73/2005, from November 28, 2005).

tolled highway). The introduction of the private sector to infrastructure provision and use is vital to the attainment of improvements in quality and scope of the transport infrastructure and services. To make private involvement a success, the authorities need to strengthen further the institutional framework for PPP, strengthen the concession law and improve transparency.⁴

C. THE QUALITY OF TRANSPORT INFRASTRUCTURE

7.12 Given the fiscal and institutional environment described above, it is hardly surprising that the quality of infrastructure appears to be poor despite large past outlays in the sector. This judgment reflects both perceptions by users and comparisons of outcomes, including traffic accidents and time of delivery of products.

The Road Infrastructure

7.13 Reflecting the country’s mountainous terrain, the current road network in terms of density would appear to be broadly adequate for a country of the size of BH. As measured by length of roads per population, BH compares well against countries in the region but falls short of OECD levels (Table 7.4). On a different measure of road density, length of roads per 1000 sq. km, BH compares less favorably against the same comparators. Such comparisons need to be made with caution, however, given the substantially different physical characteristics of the countries involved.

7.14 The condition of the road network remains poor. This applies to a full 19 percent of the main and regional paved road network (Table 7.5).⁵ In addition, 68 of 410 bridges inspected and 17 of 160 tunnels present serious safety issues; moreover, urgent work is needed at another 13 tunnels. Only one-half of the main road network and a smaller share of the regional network is in a good condition.

7.15 The poor quality of infrastructure, together with poor driver behavior and limited driver education, has resulted in a very high rate of serious injuries and death, a serious social and public health issue in BH. Other factors contributing to the high accident rate include poor or non-existent enforcement, a rapid growth in car ownership and demand, and an overall poor quality of the automobile park. In 2004, there were 436 fatalities resulting from road traffic accidents and 8,470 injuries. Whilst recent figures suggest an

Table 7.4. Coverage of Road Infrastructure 1/

| | Road Density | |
|-------------------------------|--------------------|---------------------|
| | (Km/1000 sq km) | (Km/1000 People) |
| BH | 427 | 5.6 |
| Albania | 657 | 3.5 |
| Czech Republic | 1646 | 12.5 |
| Croatia | 506 | 6.4 |
| Estonia | 1320 | 41.2 |
| Hungary | 1733 | 15.7 |
| FYR Macedonia | 341 | 4.3 |
| SaM | 494 | 4.8 |
| Slovenia | 1006 | 10.2 |
| ECA Upper middle income | 580 1076 | 8.6 9.2 |
| OECD | 1340 | 17.3 |

Source: WDI and IEF databases.

1/ Latest observation available, 1997-2003.

⁴ IPSA (2005) “Motorway in Corridor Vc Preparation of Planning and Study Documentation. Lot no 5”, Sarajevo.

⁵ BCEOM, (2006) *Roads, Bridges and Tunnels Database*, A study undertaken within the World Bank Project “Road Management and Safety.” This figure is certainly an underestimate as only 65 per cent of the regional road network was included, with the worst sections in terms of condition excluded.

improvement, poor data collection, moreover, similarly to other countries, suggests that underreporting is substantial and the actual number of casualties may be higher. Compared with other ECA countries, BH appears to have one of the worst road safety records, with a fatality rate almost double that of the neighboring countries (Figure 7.2). This position, despite relatively low (but rising) levels of both vehicle ownership and motorization suggests that road safety is unlikely to improve unless there is a comprehensive and robust response by all stakeholders, most notably the governments.

The Railway Sector

7.16 Similarly to the rest of the transport sector, the railway infrastructure suffered extensive damage during the war, followed by lack of maintenance and investment during the late 1990s. Some of the infrastructure and rolling stock needs have been addressed, but many assets are in poor condition and await overhauling or scrapping.⁶ The length of the railway network is 1,031km, with 587km within the FBH, 416km

within the RS and 27km within the Brčko District (Table 7.6). The majority of this network is in poor condition, resulting, *inter alia*, in widespread restrictions on the operational speed.

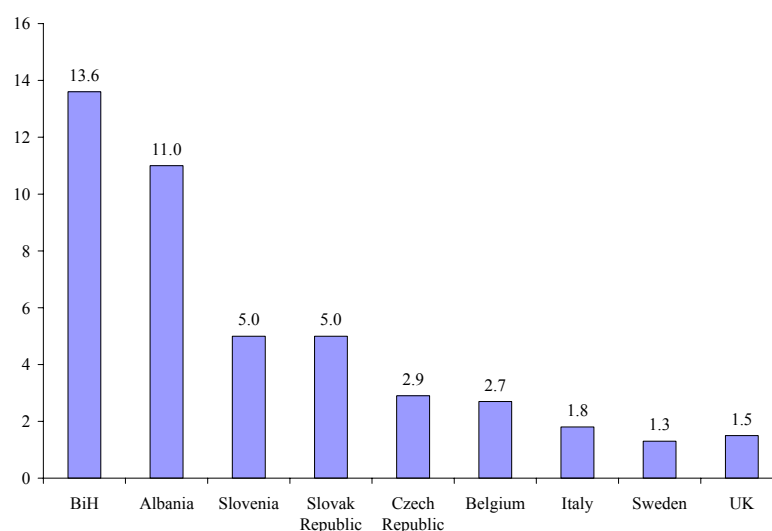
Table 7.5. Condition of the Main and Regional Road Network, 2004 1/

| Category | Good (<3 IRI) | Fair (3<IRI<4.5) | Poor (>4.5 IRI) | Total |
|-------------------------|------------------|---------------------|--------------------|-------|
| Main Roads (km) | 1865 | 1180 | 641 | 3686 |
| (In % of each category) | 50.6 | 32.0 | 17.4 | 100 |
| Regional Roads (km) | 1035 | 848 | 513 | 2396 |
| (In % of each category) | 43.2 | 35.4 | 21.4 | 100 |

Source: BCEOM, 2005.

1/ IRI = International Roughness Index.

Figure 7.2. Traffic Deaths per 10,000 Vehicles 1/



Source: Various; 1/ All 2002 except 2003 BiH, and 2005 Albania..

⁶Railways Recovery Project financed by the EIB and the EBRD and the Emergency Transport Reconstruction Project financed by the World Bank.

7.17 Financial performance is also poor, with operating expenses exceeding revenues even after taking into account operating subsidies.

Both the ZFBH and the ZRS are loss making, with cost structures not supported by current traffic volumes and revenues. The bulk of operating revenues are generated by freight

traffic, which, in the case of the ZFBH, is used to cross subsidize the loss-making passenger services. Both companies are subsidized by the respective entity government, but to a different degree. In the ZRS, subsidies account for 70 percent of total revenues and cover about the same percentage of operating expenses, while for the ZFBH the subsidy accounts for 20 percent of revenues and covers 13 percent of operating costs. Financial losses are aggravated by serious depreciation of assets due to lack of resources to cover rehabilitation.

7.18 Poor operating performance reflects in part the fact that traffic volumes have fallen to well-below pre-war levels.

Since the end of the war, the loss of a considerable amount of freight transport, the main source of the railways' revenues, has severely affected the railways' financial performance. Nonetheless, there has been no corresponding adjustment in the network size or services. Freight traffic on the network is characterized by significant volumes of heavy industrial products (e.g., coal, metals) moving for short distances within the entity with an average haul distance of 46km. The restart of production at BH Steel and the pickup in production at Aluminij Mostar makes it likely that some modest recovery is under way for commercial traffic. Passenger traffic has slumped badly, by contrast, with volumes in 2004 at less than 5 percent of pre-war levels, little changed since 2001 (Table 7.7). Rapid motorization has also contributed to passenger traffic loss, a trend that is likely to continue.

7.19 Absent any commensurate restructuring, productivity has dropped, with overstaffing an endemic problem in both railway companies.

The two railway companies currently employ 7,400 people (3,900 in the ZFBH and 3,500 in the ZRS), down from 14,000 before the war. With traffic volumes for both passengers and freight a tenth of prewar levels, however, productivity per employee has fallen sharply (Table 7.8). Productivity also substantially lags benchmark European railways. Traffic units per employee are 57,000 for the ZRS

Table 7.6. BH: Characteristics of the Railway Network, 2005

| | BH | Brcko | FBH | RS |
|---|-------|-------|-------|-------|
| Total Length | 1030 | 27 | 587 | 416 |
| (In percent of the BH total) | 100.0 | 2.6 | 57.0 | 40.4 |
| Electrified Lines | 775.0 | 0.0 | 438.8 | 336.2 |
| (In percent of the total in the jurisdiction) | 75.2 | 0.0 | 74.7 | 80.8 |
| Non-electrified Lines | 255.4 | 26.9 | 148.4 | 80.1 |
| (In percent of the total in the jurisdiction) | 24.8 | 100.0 | 25.3 | 19.2 |
| Double-Track Lines | 87.8 | 0.0 | 68.5 | 19.3 |
| (In percent of the total in the jurisdiction) | 8.5 | 0.0 | 11.7 | 4.6 |

Source: State Ministry of Transport and Communications.

Table 7.7. BH: Passenger and Freight Volumes, 1990-2004

| | 1990 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|------|------|------|------|------|------|------|------|------|
| Passengers (In millions of passengers per km) | | | | | | | | | |
| ZBH | ... | 6 | 4 | 10 | 9 | 12 | 15 | 19 | 19 |
| ZRS | ... | 34 | 52 | 41 | 38 | 41 | 38 | 36 | 34 |
| Total | 1382 | 40 | 56 | 51 | 47 | 53 | 53 | 55 | 53 |
| Freight (In millions of tones per km) | | | | | | | | | |
| ZBH | ... | 47 | 73 | 115 | 140 | 159 | 177 | 212 | 445 |
| ZRS | ... | 3 | 14 | 31 | 74 | 105 | 116 | 100 | 167 |
| Total | 4009 | 50 | 87 | 146 | 214 | 264 | 293 | 312 | 612 |

Source: UIC database.

(59,000 for the ZFBH), compared with 600,000 in Austria and Denmark. Traffic units per track equal 0.5 for the ZRS (0.8 for ZFBH) compared with 1 and 1.1 for the Croatian and Serbian railways respectively, and 2.3 for benchmark railways in Denmark and Germany.

7.20 Users also perceive the quality to be poor. A recent survey of user perceptions of railway infrastructure resulted in a score of 1.5 for BH (on a scale of 1 being the lowest and 7 the highest). BH ranks 98th of 104 countries, below all countries in the region (Table 7.9).

The Civil Aviation Sector

7.21 Investment in the civil aviation sector has been substantial, amounting to KM100 million during 1996-2004, or 0.2 percent of GDP a year on average, to help repair extensive damage and meet international obligations. Most of the outlays were for the reconstruction and maintenance of the infrastructure of the four airports (Sarajevo, Tuzla, Banja Luka and Mostar) and the installation of essential aviation equipment.

7.22 Investment in civil aviation has been substantial, but the outlays were spread thinly by trying to return all airports to operational standard. This judgment is yet to be validated, given the substantially lower level of traffic, especially at the three airports outside the capital Sarajevo. Bringing all airports to operational standard crowded out more focused investment on improving further the infrastructure at a key facility, such as the Sarajevo airport, leading users to perceive the quality of infrastructure in the civil aviation sector as poor. Users rate the quality of infrastructure at 1.9 according to the World Competitiveness Survey on a scale of 1 being the lowest and 7 the highest. As a result, BH ranks 93rd of 104 countries.

D. HOW EFFICIENT IS THE EXPENDITURE PROCESS FOR THE TRANSPORT SECTOR?

7.23 Poor transport outcomes are the downstream reflection of critical deficiencies in the planning and budgetary process. These deficiencies include: (i) the absence of a process for formulation and revision of a sound sector strategy; (ii) weaknesses in project identification and assessment; (iii) poor budgetary control; and (iv) limited systems for the professional management of assets in some of the sub-sectors.

Table 7.8. Selected Productivity Indices for Selected Railways, 2003

| Railways | Traffic Units per track-km | Traffic Units per '000 Employees |
|---------------|----------------------------|----------------------------------|
| Kosovo | 0.2 | ... |
| Albania | 0.3 | 60.6 |
| ZRS | 0.5 | 57.1 |
| FYR Macedonia | 0.5 | 116.1 |
| Montenegro | 0.6 | ... |
| ZFBH | 0.8 | 59.4 |
| Croatia | 1.0 | 262.4 |
| Serbia | 1.1 | 123.8 |
| Sweden | 1.2 | ... |
| Finland | 1.5 | 973.7 |
| Denmark | 2.3 | 893.7 |
| Germany | 2.3 | 615.4 |

Sources: National authorities, ZFBH and ZRS.

Table 7.9. Ratings of Infrastructure Quality, Selected Countries 1/

| | Railway | Air |
|----------------|---------|-----|
| Austria | 5.3 | 6.1 |
| BH | 1.5 | 1.9 |
| Croatia | 2.2 | 3.7 |
| Czech Republic | 4.6 | 5.1 |
| Hungary | 3.4 | 3.9 |
| FYR Macedonia | 2.3 | 3.4 |
| Romania | 3.5 | 4.1 |
| SaM | 1.9 | 3.3 |
| Slovenia | 3.7 | 4.4 |

Source: World Competitiveness Survey, 2003/2004.

1/ On a scale from 1=the lowest to 7=the highest.

The EBRD and the World Bank, together with bilateral donors, are working with the State Ministry of Transport and Communications to define a Strategy and Policy for the transport sector. This study will also include a detailed action plan with prioritization of key investments over the medium and longer term within the available financing envelope. It will also be consistent with the BH Medium-Term Development Strategy. The realization of this study will be a welcome and substantive contribution to the development of the transport sector in BH, but the authorities need to build the capacity to update this plan as necessary without similar levels of external support.

7.24 The limited use of formal techniques of economic appraisal in project identification and prioritization is one of the main weaknesses in the budgetary process. Recent World Bank technical assistance for the establishment of a database on roads and structures has partially addressed this need in the road sector. Setting up such a system is a prerequisite for a professional approach to asset management. The general approach involves the introduction of robust data collection systems on the condition and use of the assets. The identification of priorities for maintenance expenditures in the sector can then be made on the basis of a sound assessment of economic viability, given the available budgetary envelope, using the Highway Development and Management Model. Such systems have been established in both entity RDs, and early indications suggest that they are likely to become an integral part of the management of their respective networks. Although a similar data collection exercise has been undertaken for the secondary roads, the cantons have not adopted such systems. Project identification and prioritization at cantonal level remains based on subjective criteria.

7.25 The project identification and prioritization system employed in the railway sector is less sophisticated. The two railway companies prepare an initial list of priority projects, which may, or may not, be broadly consistent with the Strategic Plan and the Mid-Term Development Plan prepared by experts within the respective railways companies. Within these documents, projects are defined based on the forecast of the level of transport demand and this forecast gives an indication of the relative level of use of the infrastructure by each section of the network. Comparison of the traffic capacity and traffic needs indicates which segment of the network needs additional works to accommodate the expected traffic. The costs of these works are estimated based on standards calculated for each segment. The documents are reviewed by the management, accepted by the management board, forwarded to the respective entity ministries of transportation, and subsequently to the entity governments and parliaments. Once accepted, these documents are used as the basis for the annual operational plan of operations and investments.

E. THE EXPENDITURE REQUIREMENTS AND REVENUES OF THE TRANSPORT SECTOR

7.26 The demand for transport is projected to continue to grow rapidly. One recent study⁷ projected traffic volumes through 2025 and estimated that **road traffic** in BH would increase threefold, by the end of the period, with traffic in and around the major urban areas growing 5 percent a year. On the **railway network**, freight traffic volume is projected to increase markedly in the short to medium term. Four major companies in BH rely heavily on the Pan-European Rail Corridor Vc to import raw materials and export goods, and three of these companies have been sold to strategic foreign investors who intend to resume and boost production. By contrast, passenger volumes have been static since 2001 and are unlikely to increase substantially. **Air traffic** is forecast to grow rapidly, tripling through the end of the period.

⁷ COWI, 2003, *The Regional Balkans Infrastructure Study* (REBIS), a study undertaken for the European Union.

7.27 This section estimates the expenditure needs of the road and railroad sectors. The estimates reflect the importance of these sectors as a share of overall transport expenditures and the current lack of a comprehensive sector policy and strategy. There are no high priority projects for the **civil aviation** sector. The Public Investment Program of the FBH government details projects with regular priority valued at €70 million during 2006-10, mostly funded by foreign donors. These projects include upgrades of the airports in Sarajevo, Tuzla and Mostar, the latter two to international standards. For the **inland transport sector**, projected expenditures amount to €0.3 million during 2006-10.

Road Sector

7.28 The expenditure needs of the road sector are large, reflecting the historic neglect of maintenance. In addition, the governments plan new investment, often without prioritization and regard for the overall fiscal envelope. The assessment of projected expenditures is based on three sets of calculations. The first set estimates the annual expenditures necessary to clear the current maintenance backlog and return the network, of size commensurate with current and projected demand, to good condition. The second set calculates the recurrent expenditure needs in terms of routine and periodic maintenance to ensure that the assets remain in operational condition. **These two sets of expenditures are regarded as necessary and would be the priority expenditures in the sector.** Finally, this section also presents estimates of the capital expenditures planned by the government to develop the road network. These estimates exclude the additional expenditures associated with the development of roads along Corridor Vc, as this project remains at feasibility stage at this time and significant outlays are not expected before 2009 or 2010.⁸

7.29 The expenditure requirements to clear the backlog maintenance and maintain the road network are calculated in a World Bank sponsored study (Table 7.10).⁹ These outlays are needed to return the existing network and structures to good condition, together with necessary routine and winter maintenance, and scheduled periodic maintenance for the next five years. The estimated annual expenditure needs on the main and regional road network only amount to some KM137 million a year for the next five years. An additional KM24 million a year is required to maintain the local road network, excluding outlays required to clear the maintenance backlog for local roads.

7.30 A fuller picture of the expenditure requirements would necessitate calculations of outlays to develop further the road

Table 7.10. BH Road Network: Estimated Maintenance Expenditure Needs, 2006-2010
(In millions of KM)

| Category | 2006 | 2007 | 2008 | 2009 | 2010 |
|-----------------------------|------------|------------|------------|------------|------------|
| Main Roads | | | | | |
| Periodic maintenance | 60 | 60 | 60 | 60 | 60 |
| Routine maintenance | 22 | 22 | 22 | 22 | 22 |
| Winter maintenance | 14 | 14 | 14 | 14 | 14 |
| Regional Roads | | | | | |
| Periodic maintenance | 15 | 15 | 15 | 15 | 15 |
| Routine maintenance | 16 | 16 | 16 | 16 | 16 |
| Winter maintenance | 10 | 10 | 10 | 10 | 10 |
| Local Roads | | | | | |
| All maintenance | 24 | 24 | 24 | 24 | 24 |
| Total Annual Outlays | 161 | 161 | 161 | 161 | 161 |

Source: BCEOM, 2005.

⁸ MoCT, IPSA Institute Ltd., and Civil Engineering Institute of Croatia (2006), *Corridor Vc Motorway, Feasibility Study*, Draft Final Report.

⁹ BCEOM, 2005, *Road, Bridges and Tunnels Database for Bosnia and Herzegovina*, Final Report.

network. Estimates of need can be produced in several ways. The simplest approach is to use benchmarks to assess the extent of total expenditures in the sector *vis-à-vis* a defined set of comparator countries. These comparisons need to be made with care, however, given the substantial geographical differences among the countries. For example, a more mountainous terrain in BH than in, for example, Poland, would mean that the densities of the optimal transport networks would be different. The density would be lower still, given BH's fiscal constraints and the much higher costs of expanding the network in a difficult terrain. The authorities in BH will be well advised to reconsider the role of the private sector in developing the road infrastructure. The available government resource envelope does not seem to leave much room for increasing meaningfully outlays on transport unless sizable reductions in spending in other areas are carried out, combined with increased private sector involvement.

7.31 The authorities' plans to develop the road infrastructure assume that a total of KM400 million will be spent during 2005-2008 on high priority projects, an amount equivalent to 0.6 percent of GDP a year. These outlays are in addition to the maintenance expenditures discussed in the previous sections and would bring average expenditures on the road network to 2.6 percent of GDP a year. The lack of a sector policy and strategy makes it difficult to assess the merits of any one of these investments, however. The governments will be strongly advised to carefully consider any future expenditure only after a sector policy and strategy are developed and only within the limits of the overall fiscal envelope. It is to be noted that at this time the returns on investments in rehabilitation are considerably higher, on average, than the returns on upgrading or new road construction.

Railroad Sector

7.32 Committed and planned capital expenditures in the railway sector are significant, but as in the road sector, there is no prioritization consistent with the available resources. Table 7.11 summarizes the necessary and committed maintenance and capital expenditures in the railway sector, based on the actual spending plans of the two entity railways. The capital investment on infrastructure reflects the rehabilitation of the Konjic-Mostar and Šamac-Doboj sections of corridor Vc, together with signaling and telecommunication systems along these lines and the east west lines, within the recently agreed credit for €153 million from the EBRD and the EIB.

Table 7.11. BH Railways: Projected Expenditures, 2006-2010
(In millions of KM)

| Category | 2006 | 2007 | 2008 | 2009 | 2010 |
|--------------------------------------|------|------|------|------|------|
| Maintenance Expenditure | | | | | |
| FBH Railway | 64 | 62 | 60 | 64 | 66 |
| RS Railway | 22 | 24 | 25 | 27 | 29 |
| Capital Expenditures – Track 1/ | | | | | |
| FBH Railway | 3 | 11 | 18 | 70 | 75 |
| RS Railway | 2 | 7 | 11 | 44 | 44 |
| Capital Expenditures – Rolling Stock | | | | | |
| FBH Railway 2/ | 31 | | | | |
| RS Railway | | | | | |
| Total Planned Expenditures | 122 | 104 | 114 | 205 | 214 |

Source: ZFBH, ZRS and World Bank staff estimates.

1/ Reflects only committed expenditures under the EBRD/EIB Loan.

2/ Reflects proposed purchase of ex-Intercity Mark III passenger coaches from the UK.

Revenues and Financing Gap

7.33 The existing structure and level of revenues in the road sector appears inadequate to meet the needs of maintaining and expanding the network in the FBH.

Articles 85-93 of the Law on Roads in the FBH define the sources of financing for road maintenance and construction and provides for the terms of distribution of those funds to the specific users. In practice, almost all of the revenues are raised from two sources, vehicle registration fees and formerly fuel duty, now a share of the excise raised by the ITA. Under the former law, 40 percent of total revenues are allocated to the FBHRD, 35 percent to the cantonal RDs, and the remaining share to the municipalities. Further, of the total amount of money allocated to the FBH road sector in 2005 (KM122 million), 40 percent was allocated to main roads to cover both maintenance and development expenditures and the remainder to regional and municipal roads. The former figure is equal to only half the amount needed to keep main roads in good condition, resulting in deterioration of road quality and accumulation of maintenance backlog. The World Bank study suggests that a distribution of 60 percent to the FBHRD (rather than the 40 percent under the law on roads), 25 percent to the cantonal RDs (35 under the law) and 15 percent to the municipalities (20 percent) is more reflective of the maintenance needs of the different kinds of roads. The change in revenue distribution brought about by the establishment of the ITA allows an opportunity to correct this imbalance.

7.34 The scale and distribution of revenues to the RS road sector is somewhat more reflective of both need and demand. The revenue sources for the road network in the RS are also defined in the relevant law on public roads. The primary sources of revenue are again fuel excise and vehicle registration fees. The RSRD receives vehicle registration fees and a share of the excise from the single account of the ITA. The RD then shares the funds with the RS municipalities.

7.35 Revenues in the railway sector are similarly limited and do not cover the costs of operating the services. Unless the relations between railways companies and the governments are reformed, capital and maintenance expenditure would need to be funded entirely via transfers from the general government if they are to be carried out. Both entity railway companies are running a significant operating loss (excluding infrastructure costs), and the loss is covered by government subsidies. Neither of the two railways generates sufficient revenues to contribute anything to the investment plans in the sector.

7.36 Given current spending plans, there is a significant financing gap in the sector. The gap is projected to remain broadly unchanged in nominal terms near KM250 million during 2006-2010, but narrow as a share of GDP from 1.7 percent to 1.3 percent (Table 7.12). These projections are based on very conservative expenditure estimates, encompassing only the costs of returning the main and regional road networks to good condition; adequate expenditures for routine, winter and periodic maintenance on the main and regional road networks; and high priority capital expenditures, as identified by the governments. Projected expenditures do not include the cost of restoring the local road network to a good condition, or exceptional expenditures that might occur, such as addressing landslides. Most importantly, further development expenditures of the main network, such as outlays to build sections of corridor Vc, are not included. Fiscal constraints would require that any outlays in that area are carefully prioritized relative to needs in the other sectors. The importance of the private sector to network development remains paramount, after strengthening the institutional framework and capacities in key areas.

Table 7.12. BH: Road and Railroad Revenues and Financing Gap, 2006-2010
(In millions of KM)

| | 2006 | 2007 | 2008 | 2009 | 2010 |
|--------------------------------------|------|------|------|------|------|
| Roads | | | | | |
| Projected Revenues | 158 | 164 | 171 | 177 | 184 |
| FBH Cantons (Regional Roads) | 34 | 35 | 37 | 38 | 40 |
| FBH Municipalities (Local Roads) | 24 | 25 | 26 | 27 | 28 |
| FBH Cantons (Trunk Roads) | 38 | 40 | 41 | 43 | 44 |
| RS Road Directorate (All roads) | 50 | 52 | 54 | 56 | 58 |
| RS Local Authorities (Local Roads) | 12 | 12 | 13 | 13 | 14 |
| Projected Expenditures | 255 | 261 | 261 | 261 | 261 |
| Estimated Financing Gap | 97 | 97 | 90 | 84 | 77 |
| Railroads | | | | | |
| Projected Expenditures | 159 | 166 | 165 | 171 | 175 |
| Estimated Financing Gap | 159 | 166 | 165 | 171 | 175 |
| Estimated Total Sector Financing Gap | 256 | 263 | 255 | 255 | 252 |
| (In percent of GDP) | 1.7 | 1.6 | 1.5 | 1.4 | 1.3 |

Source: World Bank staff estimates.

7.37 The financing gap implies that the authorities will need additional resources to carry out their plans. The financing gap in the road sector is broadly similar to the KM100 million a year the authorities plan to spend through 2008 on expanding the network. For the railroad sector, all projected expenditures have to be covered from general resources. Pressures to move forward with further developments of the sector are a key input for the fiscal sustainability analysis carried out in Chapter 2.

F. RECOMMENDATIONS

7.38 This chapter finds that the overall condition of the transport infrastructure remains poor despite considerable expenditures in the sector over the last decade. The key recommendations of the study are summarized in the following paragraphs.

- **Given substantial fiscal pressures, carefully consider increases in public investment and weigh them against other priorities.** All public investments, in particular those that are debt-financed, need to be made within well-planned and prioritized national and sectoral investment strategies, consistent with the fiscal envelope available to the government.

- **Place greater emphasis on improving the condition of the current transport network, on reducing backlog maintenance, on reducing vehicle operating costs and journey time, and on improving access to markets and basic services.**

- **As a priority, strengthen the institutional framework for PPP.** The over-riding objective should be to protect the fiscal stability by limiting the government's fiscal exposure wherever possible.

Other objectives include the need to shift the risk allocation away from taxpayers and toward providers and users, and the need to improve the efficacy of agencies involved in financing of infrastructure.

- **Work toward consolidation in policy making and operational responsibilities in the sector at all levels.** A first step in the FBH would be for the responsibility for the management of the regional roads to be passed to the BHRD.

- **Develop a comprehensive policy and strategy framework for the whole transport sector to identify priorities and provide an indication of appropriate implementation schedules.** This process should also include the strengthening of capacity in the public sector institutions to facilitate: (i) the revision of a sound sector strategy; (ii) the use of formal project appraisal to assist in the identification and prioritization of projects; and (iii) the operational establishment of robust asset management systems in the operational agencies.

- **Consider revising the existing provision in the FBH law on roads to shift resources to the main road networks carrying the most traffic.** The existing provision provides for a fixed allocation of road revenues, with 40 percent going to the FBHRD, 35 percent to the cantonal RDs and the remainder to the municipalities.

- **Mortality and morbidity resulting from road traffic accidents are serious social and public health issues in BH.** Addressing this problem will require increased resources, greater co-ordination between stakeholders to improve road conditions, driver behavior and enforcement, and increased awareness of safety at each stage of the project cycle.

- **Finalize the reorganization of the aviation structure (one directorate and one provider) in accordance with the set plan;**

- **Implement the Law on Railways, with a rational and functional organization structure, in order to reduce the existing institutional inefficiencies, and enhance operational efficiency; and**

- **Accelerate the adoption of the Law on Roads and the Law on Inland Waterways, which will facilitate improved institutional structure and operation.**