

SECTOR ASSESSMENT (SUMMARY): TRANSPORT (ROAD TRANSPORT [NONURBAN])

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Landlocked Bhutan faces unique development challenges and opportunities. The country's small population of about 745,000 is dispersed throughout its mostly mountainous terrain.¹ With moderate to high seismic risk and formidable weather conditions, achieving economy of scale in service delivery is difficult, and building and maintaining vital infrastructure, particularly the road network, is costly. Bordered by India in the east, west, and south, Bhutan's international trade is heavily reliant on India, which accounts for 84% of Bhutan's exports, including electricity, and 73% of its imports. However, inadequate cross-border infrastructure hampers Bhutan's international trade and logistics flows; high transport costs and limited accessibility constrain the country's economic and social development.

a. Road Network and Traffic

2. Although road transport is the dominant transport mode for passengers and freight within the country and in the neighboring states of India, the density and coverage of the network is limited. The current network comprises about 10,888 kilometers (km) of roads divided into six major classes: (i) 1,974 km of primary national highways and 584 km of secondary national highways, (ii) 6 km of expressways, (iii) 1,504 km of *dzongkhag* (district) roads, (iv) 350 km of urban roads, (v) 5,240 km of roads that connect *gewogs* (blocks of villages), and (vi) 1,230 km of access roads. The national highways are single-lane or two-lane roads. Almost all national highways (93%), expressways (100%), and urban roads (90%), and about 20% of feeder roads and access roads, are paved. Nevertheless, access becomes difficult during the rainy season as narrow roads along steep hillsides are prone to landslides. The feeder and farm road network coverage has been expanded significantly in the past 10 years. Only four out of 205 *gewogs* are not connected by motorable road, and 80% of the rural population has access to essential services within 1 hour of travel time. However, almost 25% of the farm roads are in very poor condition.

3. The national highways are the backbone of the country's road network, comprising (i) the completed 540 km Northern East-West Highway (NEWH), which passes through the center of the country linking Thimphu with the central and eastern regions; (ii) a series of north-south corridors to the border with India, including the main access highway between Thimphu and Phuentsholing; and (iii) the 717 km Southern East-West Highway (SEWH), which runs along the border with India in the south. Only 185 km of the SEWH has been completed, while 194 km is under construction. Completion of the SEWH is critical to provide east-west connections in the south, which otherwise have to be made through India or by way of a long journey via the NEWH. This constrains economic and social development in the southeastern part of Bhutan, which is relatively poor, and where industrial estates and cross border facilities are located. The condition of the national highway network is rated fair to good in general, although road condition surveys indicate the existence of short sections that are rated poor.²

4. Vehicles are highly concentrated in Bhutan's western region, especially in Thimphu and Phuentsholing. Motor vehicle registrations increased from 22,504 in 2001 to 69,602 in December

¹ ADB. 2015. *Basic Statistics 2015*. Manila.

² ADB. 2011. *Technical Assistance to the Kingdom of Bhutan for Capacity Building of the Department of Roads*. Manila (TA 7374-BHU).

2014.³ With an increase in traffic volume, road safety has become a growing challenge. Road fatalities rose from 6.4 deaths per 10,000 registered vehicles in 2003 to about 11.0 per 10,000 in 2014—one of the highest rates in South Asia.

5. **Border crossings.** There are 16 border posts with India, but the main crossing points are at Phuentsholing, Gelephu, Nganglam, and Samdrup Jongkhar, connecting Bhutan's main north–south highways with the Indian national highway network. Located in Bhutan's western part, Phuentsholing is the busiest crossing, accounting for 45% of all cars, 55% of all trucks, and 28% of all buses crossing the border each day between Bhutan and India. The border facilities are not sufficient to accommodate the traffic, and congestion in the city of Phuentsholing is unavoidable. About 30% of the cross-border traffic in Phuentsholing comprises vehicles carrying materials and products bound for the Pasakha industrial estate, located 15 km east. Provision of direct access to Pasakha, a bypass road, and a mini dry port in Phuentsholing are necessary to facilitate freight transfer, which would improve Bhutan's trade competitiveness.

6. **Regional cooperation and integration.** The Asian Development Bank (ADB) supported the establishment of the South Asia Subregional Economic Cooperation (SASEC), consisting of Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka. SASEC has emerged as an effective platform for regional cooperation with active SASEC Transport and SASEC Trade Facilitation Working Groups. In a series of SASEC meetings, critical needs were identified to develop regional cooperation and integration projects connecting SASEC countries, including the need to develop a mini dry port in Phuentsholing and a direct access road from India to the Pasakha industrial estate.

b. Road Budget

7. The budget allocated for the road sector during the period covered by the Eleventh Five Year Plan, 2013–2018 is Nu15,996 million, of which 85% is for construction and improvement of roads and 15% is for road asset management. For FY2015-16, the government has allocated Nu5,717 million to the road sector, accounting for 11% of its total budget of Nu50,713 million.

c. Road Sector Issues

8. **Road asset management.** The road network serves a population density of about 18 persons per square km, which is far less than other countries in the region (988 in Bangladesh, 377 in India, and 180 in Nepal).⁴ The demand for road infrastructure per capita is therefore higher than most countries worldwide. Given that such demand is combined with challenging environmental conditions, including mountainous terrain, a monsoon season from June to September, heavy snow from December to February, and frequent landslides, the road sector has to constantly invest in a full spectrum of asset management activities.

9. In general, the Department of Roads (DOR) has planned, budgeted, programmed, and implemented road maintenance activities, and its human and financial resources have been allocated at an adequate level to keep the majority of the arterial road network in an acceptable condition. The DOR's budget for routine maintenance in FY2015-16 is about Nu286 million,

³ Government of Bhutan, Ministry of Information and Communications. 2015. *Annual Info-Comm and Transport Statistical Bulletin, 6th Edition*. Thimphu.

⁴ Government of Bhutan, Gross National Happiness Commission. 2013. *Eleventh Five Year Plan, 2013–2018, Volume I: Main Document*. Thimphu.

which is adequate to cover all roads and bridges.⁵ The DOR's total budget allocation for routine maintenance is Nu1,200 million in the Eleventh Five Year Plan. Given the experience during the period covered by the Tenth Five Year Plan, 2008–2013, the budget of the Eleventh Five Year Plan can be used to resurface about 1,000 km of the national highways.⁶ Based on the DOR's inventory database, upon completion of the Eleventh Five Year Plan in 2018, about 72% of the road network will be maintained in fair or better condition, which is considered acceptable and sustainable for long-term road asset management.

10. Proper institutional setup is in place to execute a full road asset management model. The government, in the Eleventh Five Year Plan, decided to strengthen the capacity of the road sector to plan, design, build, and maintain a national road network, and accorded high priority to supporting its sustainability through programmed routine and periodic maintenance. The DOR reorganized itself in January 2014 by creating a maintenance division for planning and implementing the maintenance works.⁷ The maintenance division will assume responsibility for road asset management using data collection, programming, project selection, implementation, and performance monitoring.

11. Additionally, a systematic approach for data collection is needed to gauge the condition of the road network; this approach should be tailored to fit the DOR's normal operations. The technology and implementation arrangements of road maintenance can be further strengthened to improve the quality of works. Continuous support from all development partners on road asset management will help the DOR maintain the road network at an acceptable level.

12. **Road safety.** Although there has been a downward trend in annual total road crashes and deaths in the last 5 years, the average number of annual road deaths exceeds 11 deaths per 10,000 vehicles, which is higher than rates in most developed countries, where rates are lower than 5 deaths per 10,000 vehicles. Further improvement is needed, and the government has initiated a long-term, multiagency road safety action plan.⁸ ADB is providing technical assistance to strengthen the capacity of Bhutan's Road Safety and Transport Authority, the Traffic Division of the Royal Bhutan Police, and the DOR in road safety.⁹

d. Subregional Road Connectivity

13. The South Asian Association for Regional Cooperation Regional Multimodal Transport Study has determined priority corridors in the region, which include the (i) Thimphu–Phuentsholing–Jaigoan–Kolkata/Haldia, (ii) Thimphu–Phuentsholing–Jaigaon–Burimari–Mongla/Chittagong, and (iii) Samdrop Jongkhar–Guwahati–Shilong–Sylhet–Dhaka–Kolkata corridors.¹⁰ The improvement to road connectivity between Bhutan and India,

⁵ Government of Bhutan. Ministry of Finance. 2015. *National Budget: Financial Year 2015–16*. Thimphu. A budget of Nu5,717 million is allocated to the road sector, of which the DOR allocates Nu286 million for routine maintenance.

⁶ Government of Bhutan, Ministry of Works and Human Settlement. 2012. *Annual Report: 4th Year of the 10th Plan (July 2011–June 2012)*. Thimphu. The report recorded an average price of Nu1.11 million per km for resurfacing national highways.

⁷ Before the reorganization, the DOR had comprised four divisions: survey and design, investigation and development, roads, and bridges. In January 2014, the four divisions were reorganized into four new divisions: planning, design, construction, and maintenance.

⁸ Government of Bhutan, Road Safety and Transport Authority, Traffic Division of the Royal Bhutan Police, DOR, municipal corporations, and the Ministry of Health. 2011. *Decade of Action for Road Safety, 2011–2020*. Thimphu.

⁹ ADB. 2011. *Technical Assistance for South Asia Road Safety Programs*. Manila (TA 8027-REG).

¹⁰ South Asian Association for Regional Cooperation Secretariat. 2006. *SAARC Regional Multimodal Transport Study*. Kathmandu. The study was prepared under ADB. 2004. *Technical Assistance for Promoting South Asian Regional Economic Cooperation*. Manila (TA 6187-REG).

and further connectivity with other SASEC countries, is critical to expand intra-regional trade in South Asia.

14. Customs procedures are not considered as the primary cause of delays at many of the ports and borders, but they compound delays due to (i) lack of border infrastructure and traffic planning, (ii) insufficient handling capacity of land ports at borders, and (iii) lack of cross-border transport agreements. ADB has provided loans and grants to help governments in the region enhance cross-border trucking operations and customs procedures.¹¹

2. Government's Sector Strategy

15. The government's Road Sector Master Plan, 2007–2027, prepared in 2006 with ADB assistance, presents a 20-year program for network expansion, upgrades, and maintenance.¹² Accordingly, the main thrusts of the road sector in the Eleventh Five Year Plan are to (i) complete the national highway grid using environmentally-friendly technology; (ii) construct and upgrade roads connecting to hydropower projects; and (iii) enhance the safety, reliability, and quality of roads. The first investment priority of the Eleventh Five Year Plan is for construction and upgrades of the SEWH, requiring almost Nu7,300 million, or about 54% of required capital expenditures for the road sector. Together with the plan to improve the border trade facilities, this investment will not only provide access to the remote southeastern communities, but will also remove the inefficiencies at land border crossings, which will improve domestic and international trade.

16. Regarding road safety, the government aims to reduce the fatality rate to less than 5 per 10,000 vehicles by 2020 (footnote 9).

3. ADB Sector Experience and Assistance Program

17. Since 1993, four ADB-assisted road projects have been completed: the East–West Highway Maintenance Road Project approved in 1993, the Road Improvement Project approved in 2000, the Road Network Project approved in 2005, and the Road Network Project II approved in 2009.¹³ These helped to improve the NEWH and north–south highways, expand feeder roads, and construct parts of the SEWH. Additionally, ADB provided 10 technical assistance projects to Bhutan in the areas of sector strategy development, road asset management, and road safety. These technical assistance projects have raised awareness of the importance of key aspects of the road sector's development, but further efforts should be made for adequate implementation.¹⁴

18. ADB will continue to assist the government in enhancing the main road network, especially the SEWH. To support the government's goal of boosting international and regional

¹¹ ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loans and Grants for SASEC Trade Facilitation Program*. Manila.

¹² Government of Bhutan, Ministry of Works and Human Settlement. 2006. *Road Sector Master Plan (2007–2027)*. Thimphu.

¹³ ADB. 1993. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grants for East-West Highway Maintenance Project*. Manila; ADB. 2000. *Report and Recommendation of the President to the Board of Directors: Proposed Loan for the Road Improvement Project*. Manila; ADB. 2005. *Report and Recommendation of the President to the Board of Directors: on a Proposed Loan and Technical Assistance Grant for the Road Network Project*. Manila; ADB. 2009. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant for Road Network Project II*. Manila

¹⁴ While ADB has focused on the capacity development of the DOR, which is responsible for developing and maintaining the major trunk roads network, an ongoing World Bank project is supporting the capacity of the Ministry of Agriculture and Forests, which is responsible for farm roads.

trade, ADB will provide targeted support to improve subregional road connectivity with neighboring countries, including transit facilities and logistics in and around Phuentsholing and Pasakha. In designing investment projects, environmental safeguards and climate change considerations will be mainstreamed.

19. ADB will continue to facilitate consultative processes with neighboring countries through regular regional transport forums. ADB will also support (i) strengthening the road asset management system and associated resources to help sustain the system, and (ii) improving road safety conditions mainly through institutionalizing road safety audits.

Problem Tree for Transport (Road Transport [Nonurban])

