

SECTOR ASSESSMENT (SUMMARY): ROAD TRANSPORT

1. Sector Performance, Problems, and Opportunities

a. Road Network and Traffic

1. Landlocked Bhutan faces unique development challenges and opportunities. The country's small population of about 720,000 is dispersed through mountainous terrain where seismic risks are high and weather conditions formidable¹. This makes it difficult to achieve economy of scale in service delivery and costly to build and maintain vital infrastructure, particularly the road network. Bordered by India in the east, west, and south, Bhutan is heavily reliant on its much larger neighbor for international trade. India is the destination of 84% of Bhutan's exports, including electricity, and the source of 73% of its imports. However, poor border crossing infrastructure has hampered trade and logistic flows. Consequently, the country's economic and social development has been constrained by high transport costs and poor accessibility.

2. Roads are the main mode of passenger and freight transport within the country and with neighboring states in India. The current network comprises about 10,577 kilometers (km) of roads, divided into six major classes: (i) 2,438 km of national highways, (ii) 6 km of expressways, (iii) 1,178 km of feeder roads, (iv) 350 km of urban roads, (v) 5,375 km of farm roads, and (vi) 1,230 km of access roads. Of this network, 93% of all national highways, 90% of urban roads, and 20% of feeder and access roads are sealed. However, use of the sealed network becomes difficult during the rainy season because narrow roads along steep hillsides are prone to landslides. The feeder and farm road network expanded significantly since 2000, and 201 of the country's 205 blocks of villages were connected by motorable roads in 2013. An estimated 80% of rural people have access to essential services in less than 1 hour of travel time. Connecting people to the national highway network will further improve this accessibility.

3. The national highways are the main arteries in the road network. The Northern East–West Highway (553 km) passes through the center of the country and links Thimphu, which is the capital city of Bhutan, with the central and eastern regions. Several north–south national highways run between points on the border with India and the Northern East–West Highway. These include the main access highway between Thimphu and Phuentsholing, the largest border city with India. The Southern East–West Highway (SEWH) will run for 717 km along the border with India in the south when it is complete, but only 185 km has been built so far. Another 194 km is under construction. Completion of the SEWH is critical. Transport between east and west in the country's south now often involves roundabout routes, either further south via India or a through a long indirect journey using the Northern East–West Highway to the north. This constrains economic and social development in the southeastern parts of Bhutan that are poorer than most other regions, as well as in places along the border with India that have industrial estates and cross-border facilities. The condition of the national highway network is rated fair to good in general. However, road condition surveys show that short sections are in bad condition.

4. The use of motor vehicles is highly concentrated in the western region of the country, especially in Thimphu and Phuentsholing. Nationally, registrations increased sharply from 22,504 in 2001 to 67,449 in 2012.² With traffic volume expanding, road safety has become a

¹ Asia Development Bank. 2013. *Basic Statistics 2013*. Manila.

² Government of Bhutan, Ministry of Information and Communication. 2013. *Annual Info-Comm and Transport Statistical Bulletin*. Thimphu.

growing challenge. The road fatality rate rose from 6.4 deaths per 10,000 registered vehicles in 2003 to about 17.0 per 10,000 vehicles in 2011.³

5. **Border crossings.** The main crossings among the 16 border points between Bhutan and India are at Phuentsholing, Gelephu, Nganglam, and Samdrup Jongkhar. These border crossings connect Bhutan's main north–south highways with the India's national highway network. Phuentsholing, in the west, is the busiest, accounting for 40% of the passenger vehicles, 55% of the trucks, and 28% of the buses crossing between Bhutan and India each day. The inadequacy of the border facilities in dealing with this traffic causes heavy congestion in the city. About 26% of the cross-border traffic at Phuentsholing carries materials and products to and from the Pasakha industrial estate, located 15 km to the east. Provision of direct access between the Pasakha industrial estate and India, a mini dry port in Phuentsholing, and a bypass road between a mini dry port and a national highway will reduce the transport costs for this freight and increase the movement of goods, which would in turn improve Bhutan's trade competitiveness.

6. **Regional cooperation and integration.** In 2001 ADB supported the establishment of the South Asia Subregional Economic Cooperation (SASEC) arrangement between Bangladesh, Bhutan, India, and Nepal. SASEC has emerged as an effective platform, and its transport and trade facilitation working group has been active. In a series of SASEC meetings, the members identified critical projects to be undertaken to develop and improve connections between the SASEC countries. The SASEC members cited the establishment of a mini dry port in Phuentsholing and construction of a direct access road between India and the Pasakha industrial estate as priorities.

b. Road Budget

7. The budget for the road sector during the 11th five-year plan for 2013–2018 is Nu15,996 million (about \$266 million). Of this, 85% is allocated for construction and improvement of roads and 15% for road asset management. The overall 2013 government budget was about \$640 million, of which \$80 million (about 12%) was allotted to the transport sector.

c. Road Sector Issues

8. **Road asset management.** Population density per square kilometer in Bhutan is about 18 persons, far less than the per-square-kilometer populations in other countries in the subregion (377 in India, 180 in Nepal, and 988 in Bangladesh).⁴ The difficulty of meeting the much higher per capita demand for road assets that results from this sparse density is exacerbated by the country's mountainous terrain, its June–September monsoon season, heavy snows during December–February, and geological instability that produces frequent landslides. The road sector must constantly invest in the full spectrum of asset management activities.

9. In general, the Department of Roads (DOR) has followed the principals of effective road asset management to plan, budget, program, and implement road maintenance activities. Adequate human and financial resources have been allocated to keep most of the arterial road network in acceptable condition. The DOR's budget for routine maintenance in 2013 was about

³ Government of Bhutan. 2013. *The State of the Nation 2012. Two Volumes. Fifth Annual Report of Lyonchhen Jigmi Yoezer Thimley to the 10th Session of the First Parliament.* Thimphu.

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

Nu185 million, which was enough to finance routine maintenance on all national highways.⁵ The budget allocated for periodic maintenance was Nu1,200 million in the 11th five-year plan. Given the experience under the previous plan, which covered 2008-2013, this allocation can be used to resurface about 1,000 km of the national highways.⁶ Based on the DOR's inventory database, about 72% of the road network will be maintained at fair or better condition by 2018 when the 11th plan ends. This is an acceptable level for sustainable long-term road asset management.

10. The proper institutional setup is in place to execute a full road asset management model. The 11th plan calls for strengthening the capacity in the road sector to plan, design, build, and maintain the road network. The plan has also accorded high priority to ensuring the sustainability of the road network through programmed routine and periodic maintenance. The DOR reorganized itself in January 2014 by creating a maintenance division for planning and implementing maintenance works.⁷ The maintenance division will assume the responsibility of road asset management including data collection, programming, project selection, implementation, and performance monitoring. A systematic approach to data collection is needed to gauge the condition of the network, but that the methodology used should be tailored to accommodate the DOR's normal operations. Continuous support for DOR road asset management from development partners will help to maintain the network adequately.

11. **Road safety.** Although the number of road crashes and deaths declined during 2007-2012, 1,350 crashes and 96 deaths were reported in 2012. The average number of road deaths over the period exceeded 15 deaths per 10,000 vehicles, compared with rates of fewer than 5 deaths per 10,000 vehicles in most developed countries. Further safety improvements are needed, and the government has initiated a long-term, multiagency road safety action plan. Decade of Action for Road Safety, which covers 2011-2020, is the Bhutan government initiative to improve the road safety in the country with Road Safety and Transport Authority (RSTA), traffic police, Department of Roads, Municipal Corporations and Ministry of Health.⁸ ADB is providing technical assistance to strengthen the government capacity in road safety.⁹

d. Subregional Road Connectivity

12. A 2007 regional multimodal transport study by the South Asian Association for Regional Cooperation¹⁰ identified priority transport corridors in the subregion. These included the corridor between the Thimphu in Bhutan and Kolkata in India, between Thimphu in Bhutan, Jaigaon in India and Chittagong in Bangladesh, and Samdrop Jongkhar in Bhutan, Guwahati in India, Dhaka in Bangladesh and Kolkata in India. Improving road connectivity between Bhutan and India and providing further connections to other SASEC countries is critical to expanding cross-border trade within South Asia.

⁵ Government of Bhutan, Ministry of Finance. 2013. *National Budget: Financial Year 2013-2014*. Thimphu. A recurrent budget of Nu325 million is allocated to the road sector, of which the DOR is allotted 185 million ngultrum 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 Nu. 1.11 million per km for resurfacing national highways.

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

⁸ Government of Bhutan. 2011. *Decade of Action for Road Safety (2011-2020)*. Thimphu.

⁹ ADB. 2011. *Technical Assistance to Kingdom of Bhutan and Nepal for South Asia Road Safety Programs, Phase 1*. Manila.

¹⁰ South Asian Association for Regional Cooperation Secretariat. 2007. *Regional Multimodal Transport Study*. Kathmandu. The study was prepared under ADB. 2004 *Technical Assistance for Promoting South Asian Regional Economic Cooperation*. Manila.

13. Customs procedures are not considered the primary cause of delays at many of the ports and borders between the countries in the subregion. These delays are more due to (i) a lack of border infrastructure and poor traffic planning, (ii) the inadequate handling capacity of land ports at borders, and (iii) the need for more cross-border transport agreements. ADB has provided loans and grants to help governments enhance cross-border trucking operations and customs procedures.¹¹

2. Government's Sector Strategy

14. The government's Road Sector Master Plan, 2007–2027¹² was prepared in 2006 with Asian Development Bank (ADB) assistance.¹³ The plan presents a 20-year program for expanding, upgrading, and maintaining the network. In line with this long-term plan, the main aims in the road sector under the 11th five-year plan are to complete the national highway grid, using environment-friendly technology; build and upgrade roads that connect to hydropower projects; and enhance the safety, reliability, and quality of the road network. The first investment priority under the plan is the construction and upgrading of the SEWH, which will require almost Nu7,300 million (about \$122 million), or about 54% of capital expenditures for the road sector during the plan period. Together with the plan to improve the border trade facilities, this will streamline transport and remove inefficiencies at land-border crossings, thus improving domestic and international trade. It will also provide greatly needed better access to the country's remote southeastern communities. The government also aims to reduce the road fatality rate to less than 5 deaths per 10,000 vehicles by 2020 from 17 recorded in 2011.

3. ADB Sector Experience and Assistance Program

15. Three ADB-assisted road projects have been completed in Bhutan. ADB's Road Network Project II, approved in 2009, is ongoing.¹⁴ These helped to improve the Northern East–West Highway and the north–south highways, expand feeder roads, and build parts of the SEWH. Ten ADB technical assistance projects have provided support strategy development, road asset management, and road safety in the road sector. These have raised awareness of key aspects of developing the road sector, but adequate implementation should be further supported.

16. ADB will continue to help the government enhance the main road network, particularly the SEWH. To support the government's goal to boost international and regional trade, ADB will provide support to improve subregional road connectivity with neighboring countries, including transit facilities and logistics in and around Phuentsholing and Pasakha. Environmental safeguards and climate change considerations will be mainstreamed in the design of ADB's investment projects.

17. ADB will continue to facilitate consultations between Bhutan and neighboring countries through regular regional transport forums. ADB will also help (i) strengthen the road asset management system and the resources needed to ensure its sustainability; and (ii) improve road safety conditions, mainly by institutionalizing road safety audits.

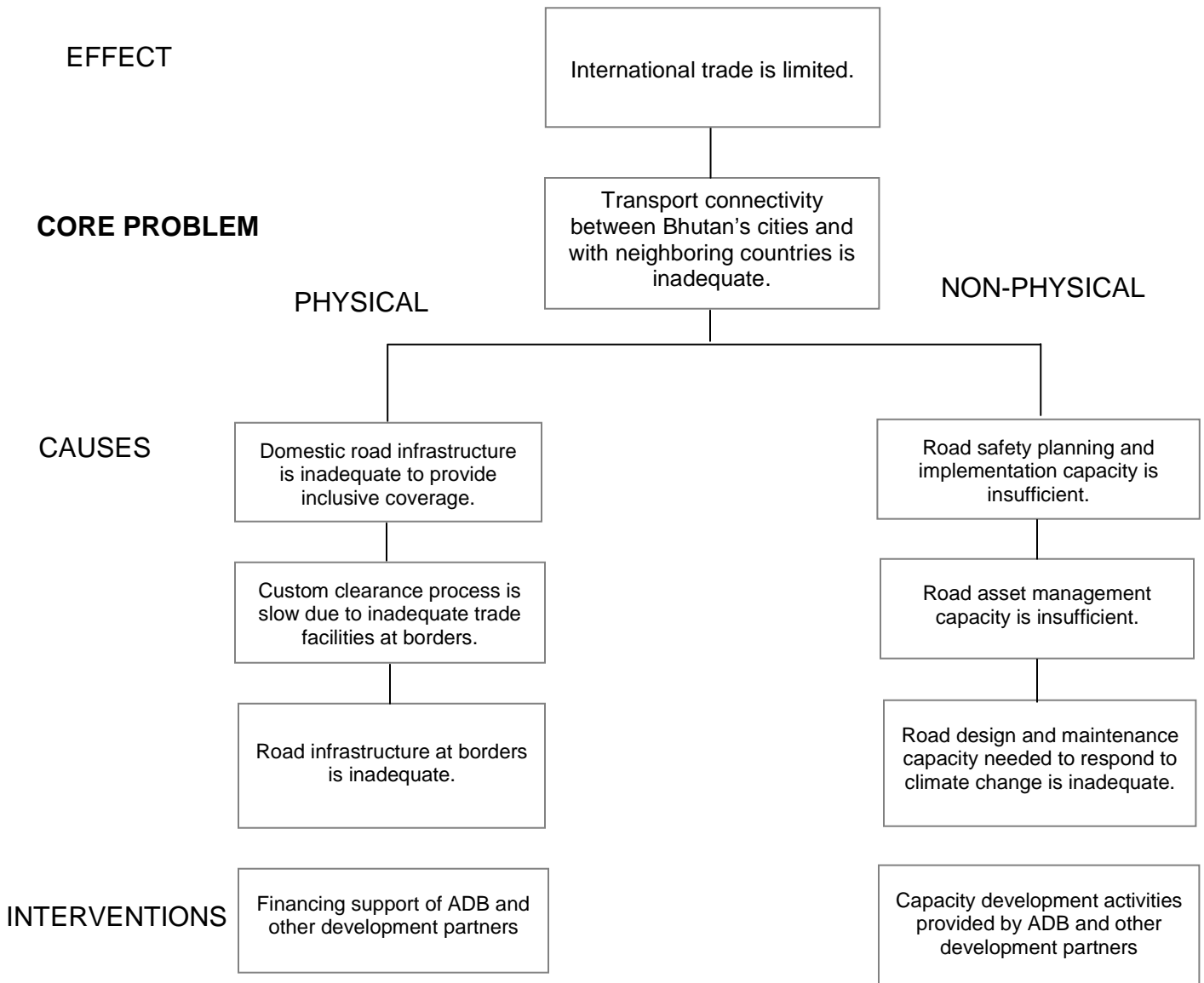
¹¹ ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loans and Grants for SASEC Trade Facilitation Program*. Manila.

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

¹³ ADB. 2003. *Technical Assistance to the Kingdom of Bhutan for Preparing the Road Network Expansion Project*. Manila.

¹⁴ ADB. 2009. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant to Kingdom of Bhutan for Road Network Project II*. Manila.

PROBLEM TREE



Sector Results Framework (Transport, 2014–2018)

Country Sector Outcomes		Country Sector Outputs		ADB Sector Operations	
Sector Outcomes with ADB Contribution	Indicators with Targets and Baselines	Sector Outputs with ADB Contribution	Indicators with Incremental Targets	Planned and Ongoing ADB Interventions	Main Outputs Expected from ADB Interventions
Safe and more efficient movement of people and goods	<p>Land transport 205 <i>gewogs</i> (blocks of villages) connected to road network by 2018 (2013 baseline: 201)</p> <p>Values of exports (excluding electricity) increases to Nu28 billion annually by 2018 (2012 baseline: Nu15 billion)</p> <p>Air transport Number of air passengers per year increases to 300,000 international and 4,000 domestic by 2018 (2012 baseline: for international 181,659 and for domestic 881)</p> <p>Urban transport Public transport ridership increases to 30% of passenger traffic by 2018 (2012 baseline: 11.8%)</p>	Land and air transport infrastructure expanded and improved	<p>717 km of southern east–west national highway completed by 2018 (2012 baseline: 185 km)</p> <p>3 dry ports developed by 2018 (2012 baseline: 0)</p> <p>Number of domestic airports increases to 8, including 5 STOL airstrips by 2018 (2011 baseline: 1)</p> <p>Eco-friendly public transport services established in 4 urban centers by 2018 (2013 baseline: 0)</p>	<p>Planned key activity areas National roads, district roads (68% of funds) External trade, road transport services (26% of funds) Airports, air transport policies and reforms (6% of funds)</p> <p>Pipeline projects with estimated amounts 1. SASEC road connectivity project (\$50.35 million) 2. TA for preparing the SASEC transport, trade facilitation, and logistics project (\$0.7 million) 3. TA for sustainable urban transport strategy (\$0.3 million) 4. Air transport connectivity enhancement project (additional financing) (\$4 million) 5. SASEC transport, trade facilitation, and logistics project (\$88.98 million)</p> <p>Ongoing projects with approved amounts 1. Road Network Project II (\$38 million) 2. Air Transport Connectivity Enhancement Project, 2012 (\$6.92 million) 3. TA for Air Transport Connectivity Enhancement Project (\$0.6 million) 4. TA for Strengthening Air Transport Regulatory and Operational Performance (\$0.3 million)</p>	<p>Planned key activity areas About 283 km of Southern East–West Highway and 55 km of feeder roads built</p> <p>About 3 km of urban road built</p> <p>2 land ports and/or custom stations developed</p> <p>Capacity of government engineers for road asset management and design and maintenance of safe and climate-resilient roads improved</p> <p>Capacity, safety, and security improved at three domestic airports</p> <p>Pipeline projects About 150 km of Southern East–West highways built</p> <p>A land port at Phuentsholing and a land custom station developed</p> <p>About 3 km of urban road built</p> <p>Ongoing projects About 133 km of national highways and 55 km of feeder roads built or upgraded</p> <p>3 domestic airports improved Civil aviation act and regulations improved</p>

ADB = Asian Development Bank, km= kilometer, TA = technical assistance, SASEC = South Asia Subregional Economic Cooperation, STOL = short takeoff and landing.
Sources: Asian Development Bank and Government of Bhutan.