

## SECTOR ASSESSMENT (SUMMARY): Transport, and Information and Communication Technology - Air Transport<sup>1</sup>

### Sector Road Map

#### 1. Sector Performance, Problems, and Opportunities

1. Landlocked Bhutan faces unique development challenges and opportunities. High external and domestic transport costs, and lack or limited accessibility have constrained the country's economic and social development. Vital infrastructure, particularly the road network, is costly to build and maintain. The country's small population of about 700,000,<sup>2</sup> the mountainous terrain, and formidable weather conditions make the goal of achieving economies of scale in service delivery difficult.

2. Paro International Airport (PIA), until recently the country's only operating airport and the only airport with international access, is located near Thimphu, the capital city, in the western region. The lack of domestic air connectivity means that other regions—in the center, south, and east—have limited access to regional and global markets. The tourism industry, for instance, a substantial economic contributor, is much better developed in the west. To redress this imbalance in accessibility, the Government of Bhutan has started developing three suitably spaced domestic airports—upgrading the existing airfield at Yonphula in the east, and constructing new airfields at Bumthang in the center and Gelephu in the south. Domestic flights started operating at Bumthang and Yonphula in December 2011, and are expected to start at Gelephu during 2012. This will expand the reach and travel flexibility for international tourists, and help improve access to remote areas of the country.

3. Due to difficult terrain and weather conditions, air navigation and airport development and operation in the country present unique challenges. PIA is located in a deep valley (Paro valley) about 65 kilometers by road from Thimphu. The surrounding hills rise as high as 4,800 meters, high winds at certain times of the year restrict aircraft operations to early in the day, and difficult and hazardous approaches into PIA must be operated entirely visually under visual flight rules. Aircraft operations at PIA are limited during the windy months to half-day operations, and sometimes restricted to periods of 4–6 hours. This seriously limits PIA capacity and the number of passengers who can fly in and out of the country at those times of the year. The three domestic airports have similar challenges and, due to limited initial government expenditure, current facilities are basic and only for initial air operation and passenger accommodation. Safety, security, and capacity must be strengthened to prepare for the anticipated increase in aircraft movements and passenger volume.

**Airports in Bhutan**

Location	Service	Altitude (meters)	Runway Length (meters)	Runway Width (meters)	Flight Rule
Bumthang	Domestic	2,580	1,200	30	Visual only
Gelephu	Domestic	221	1,500	30	Visual only
Paro	International	2,225	2,265	30	Visual only
Yonphula	Domestic	2,560	1,300	30	Visual only

Source: Department of Civil Aviation, Bhutan

<sup>1</sup> This summary is based on the draft final report for TA 7633-BHU Air Transport Connectivity Enhancement Project available upon request. Asian Development Bank. 2010. *Technical Assistance to the Kingdom of Bhutan for Air Transport Connectivity Enhancement Project*. Manila (TA 7633-BHU, \$600,000, approved on 5 November).

<sup>2</sup> Asian Development Bank. 2011. *Basic Statistics 2011*. Manila.

4. Drukair is currently the only international airline serving Bhutan, with all operations presently occurring through PIA. Established in 1981, Drukair has a very good safety record and has, at times, operated with multiple aircraft types in the difficult Paro operating environment. The current fleet represents the largest type of aircraft that the airline has operated, comprising two Airbus 319s and an ATR-42-500.<sup>3</sup> Drukair currently provides service to and from eight cities in four countries: Bangladesh (Dhaka), India (Bagdogra, Delhi, Gaya, Guwahati, and Kolkata), Nepal (Kathmandu), and Thailand (Bangkok). Of these, Bangkok is the largest market, providing 38.5% of the airline's total passengers in 2010. The government has selected Drukair and a new Bhutan-based airline company, Tashi Air, to provide scheduled flights for the recently introduced domestic service.

5. Overall, air transport activity in Bhutan is set to increase substantially as a result of the government's continued effort to brand and market the tourist attractions in the country and the new initiative under way to introduce domestic air links. In 2010, the air passenger volume at PIA reached about 127,181 passengers per annum (ppa), tripling from about 33,890 in 2000. Based on the updated air traffic forecast, if unconstrained by capacity,<sup>4</sup> total air passenger traffic could grow to about 491,200 ppa by 2020, of which approximately 12% (59,900 passengers) would be carried on the new domestic services. By 2030, total passenger traffic is forecast to increase on an unconstrained capacity basis to 915,100 ppa,<sup>5</sup> of which domestic passengers would account for 17.4% (159,600).

6. The Department of Civil Aviation (DCA), under the Ministry of Information and Communications, is responsible for administration of civil aviation and all matters concerning regulation and operation of the country's airports and airfields. While DCA has performed well, several critical areas have inadequacies, particularly institutional, legal, and regulatory frameworks, as well as DCA's role and capacity. DCA, since established in January 1986, has been responsible for providing regulatory and operating functions. This dual role, where DCA regulates its own operations, creates potential conflict of interest. In the interest of aviation safety and in keeping with best international practice, the regulatory and operating functions performed by DCA need to be separated more clearly. DCA is substantively understaffed in several areas, particularly regulation and inspection, and is unable to provide total and effective regulatory oversight of airworthiness, flight operations, and aerodromes regulation because of staff shortages, lack of qualified staff in several of the required areas of inspection, and inadequate training and skills upgrading. The Civil Aviation Act 2000, a revision of the first Civil Aviation Act enacted in 1990 and reenacted on 14 July 2000, serves as the enabling legislation for administration of civil aviation in Bhutan. The act is outdated as an instrument for regulating and administering civil aviation in several areas, and the Bhutan air navigation regulations have areas of inconsistency. The regulations are intended to interpret and apply the provisions of the act. They require reconciliation.

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<sup>3</sup> Due to the difficult maneuvering environment of the approaches into PIA, any aircraft larger than an Airbus 319 or equivalent would not have the maneuverability safety margins.

<sup>4</sup> The unconstrained scenario assumes the PAI runway will maintain current peak hour capacity of 4 aircraft movements per hour, and the tourist infrastructure will be able to accommodate an increasing number of tourists.

<sup>5</sup> The unconstrained scenario assumes PAI improvements will increase peak hour capacity from the 4 aircraft movements per hour currently to 5 by 2022, and to 6 by 2027.

## 2. Government's Sector Strategy

7. In following with the country's vision statement,<sup>6</sup> the government's Tenth Five-Year Plan (2008–2013) highlights development objectives for transport and communications. It focuses on enhancing connectivity to facilitate greater coverage of basic social services, including health and education in isolated regions, and improving transport efficiency—reducing travel time and cost—to boost domestic trade and cross-border transport. This will stimulate private sector development and generate employment opportunities for the poor.

8. During 2002–2004, the government developed a civil aviation master plan<sup>7</sup> to define, emphasize, and document the need for a well-developed air transport system in Bhutan, including domestic air services connecting urban and rural centers, and international services to connect Bhutan to other parts of the world. At that time, this was considered paramount in view of the inherent limitations of road transport given the mountainous terrain throughout the country. While the public road system in Bhutan has significantly improved since that time, the limitations of road transport in the mountainous terrain remain relevant to this day. Subsequently, during 2006–2008, the Bhutan Aviation Sector Capacity Development Project helped DCA implement a number of civil aviation master plan recommendations. It included a package to evaluate the potential of different sites for domestic airports in Bhutan. The prevailing government view at the time was that three sites should be developed for domestic operations, in addition to the existing international airport at Paro. This was seen as an attempt to spread the revenue expected from the development of domestic and international tourism roughly equally within Bhutan. Accordingly, the government selected three suitably spaced domestic airports in Bumthang, Gelephu, and Yonphula.<sup>8</sup>

9. The government plans to enhance the safety and security of air infrastructure and systems required to support aviation activity in the country to help continue the record of safety. The plan includes (i) consolidating security operations at airports, and establishing an effective emergency and disaster management system, (ii) developing search and rescue capabilities, (iii) managing Bhutanese airspace, and (iv) establishing a flight information region through required infrastructure and facilities. In view of the anticipated increase in aircraft movements and passenger volume, the government's goal is to continue the staged development of PIA and, under the Asian Development Bank (ADB) grant financing, undertake additional improvements at the three domestic airports to strengthen safety and security, and enhance capacity.

10. The country has made progress in privatizing and corporatizing public sector enterprises. The offer to consider proposals from private airlines for domestic air service, and then the awarding to Tashi Air, a private company, the right to share and compete for the provision of domestic and international airline service with the national carrier, Drukair, is an example of efforts to stimulate progress through the private sector. In the future, the operations functions currently performed by DCA could be handed off to a commercial entity, incorporated as a government-owned company, free to function on a commercial basis.

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<sup>6</sup> Government of Bhutan. 1999. *Bhutan 2020: A Vision of Peace, Prosperity and Happiness*. Thimphu.

<sup>7</sup> Financed by the Swedish International Development Cooperation Agency under the project: Bhutan—Master Plan Study of the Civil Aviation.

<sup>8</sup> Airport Development Programme Master Plans for Yonphula and Bumthang carried out under the Bhutan Aviation Sector Capacity Development Project (2006–2008) financed by Swedish International Development Cooperation Agency, and the Gelephu Site Feasibility Study (2008) financed by the government.

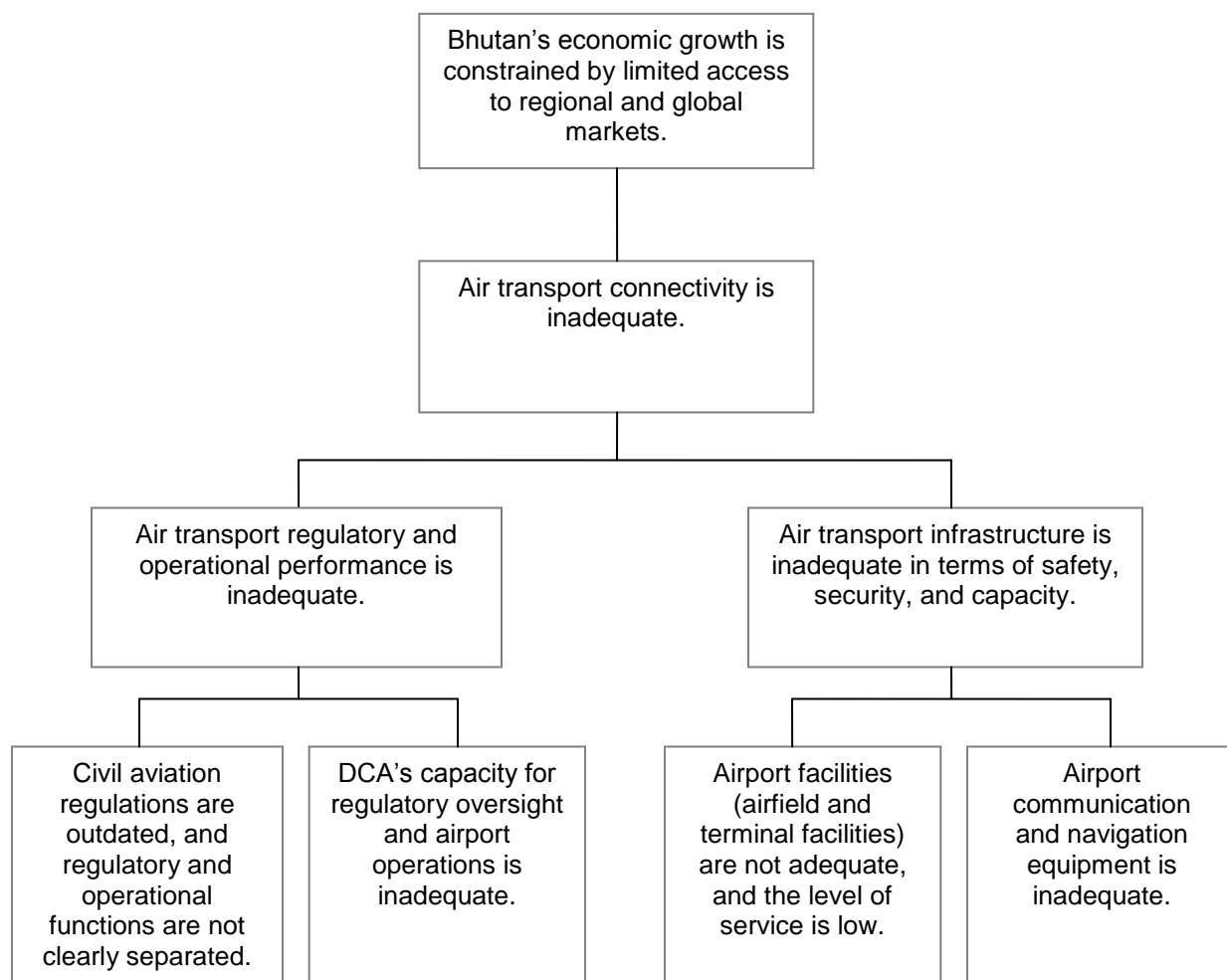
### **3. ADB Sector Experience and Assistance Program**

11. ADB's first assistance for air transport in Bhutan will start in 2012 with implementation of capacity development technical assistance targeted at strengthening regulatory and operational performance by improving institutional, legal, and regulatory frameworks, as well as upgrading DCA's technical capacity.<sup>9</sup> Activities planned include (i) prepare updates for the Civil Aviation Act 2000 and applicable Bhutan air navigation regulations to reflect current needs; (ii) formulate a framework for restructuring DCA and draft necessary legislation to enable effective separation of the regulatory and operating functions, and provide the necessary autonomy; and (iii) provide technical training in the critical areas of regulatory oversight and airport operations. ADB's overall objective is to ensure optimum sector performance given the anticipated traffic growth and the commencement of domestic airport operations.

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<sup>9</sup> ADB. 2011. *Technical Assistance to the Kingdom of Bhutan for Strengthening Air Transport Regulatory and Operational Performance*. Manila. (TA 7945-BHU, \$300,000, approved on 5 December).

### Problem Tree for Transport, and Information and Communication Technology - Air Transport



DCA = Department of Civil Aviation.  
Source: Asian Development Bank.

### Sector Results Framework (Transport, and Information and Communication Technology - Air Transport, 2012–2013)

Country Sector Outcome		Country Sector Outputs		ADB Sector Operations	
Outcomes with ADB Contributions	Indicators with Targets and Baselines	Outputs with ADB Contribution	Indicators with Incremental Targets	Planned and Ongoing ADB Interventions	Main Outputs Expected from ADB Contributions
Improved transport connectivity	Number of air passengers per year increases to 230,000 international and 20,000 domestic (2005 baseline for international 70,000 and for domestic nil)	Improved air transport	Number of operating domestic airports increased to four (2005 baseline: nil)	<p><b>Planned key activity areas</b></p> <p>Domestic airports (85% of funds)</p> <p>Air transport policies, reforms, and capacity strengthening (15%)</p> <p><b>Pipeline projects with estimated amounts</b></p> <p>Air Transport Connectivity Enhancement Project, 2012 (\$6.92 million)</p> <p><b>Ongoing projects with approved amounts</b></p> <p>Technical Assistance for Air Transport Connectivity Enhancement Project (\$0.6 million)</p> <p>Technical Assistance for Strengthening Air Transport Regulatory and Operational Performance, 2011 (\$0.3 million)</p>	<p><b>Planned key activity areas</b></p> <p>Domestic airports improved</p> <p>Institutional capacity improved</p> <p><b>Pipeline projects</b></p> <p>One or more domestic airports improved</p> <p><b>Ongoing projects</b></p> <p>Preparing for improvements of one or more domestic airports</p> <p>Civil Aviation Act and regulations improved</p>

ADB = Asian Development Bank.  
Source: Asian Development Bank.