

Sector Assessment

I. ROAD SECTOR

A. Sector Overview

1. About 90% of passenger and freight traffic in the state of Uttarakhand moves by road. There are freight and passenger rail connections to the neighboring states through four railheads in the state's southern low-lying plains region. The hilly and mountainous terrain that covers more than 90% of the state precludes the development of railway infrastructure catering to intrastate services.

2. The road subsector in Uttarakhand comprises road infrastructure, which is primarily administered by the Public Works Department (PWD), and transport services, which are overseen by the Transport Department. The PWD is responsible for planning, financing, constructing, and maintaining roads, bridges, and related government buildings.

3. The overall road network in the state covers 31,935 kilometers (km). It is administered by the PWD and comprises 1,151 km of national highways,¹ 3,788 km of state highways, 3,290 km of major district roads, 2,945 km of other district roads, 15,402 km of village roads, and 1,773 motor bridges. The PWD also administers 3,736 km of bridle roads and/or tracks and 1,073 bridle bridges. The Border Roads Organization manages about 1,623 km of national highways, state highways, and major and other district roads.

4. The Transport Department is responsible for issuing licenses for vehicles and operators and operating permits for private freight and passenger service operators, and managing the State Road Transport Corporation. Private operators provide the bulk of the freight and passenger services under permits issued by the state transport authorities. Privately operated passenger transport predominates in the rural hill areas.

5. Roads are the lifeline of the state. The quality of the road network in Uttarakhand has, however, been poor and constrains the state's economy. The mountainous terrain, rivers that are prone to flash floods, fragile geology and ecology, and lack of adequate funding for development and maintenance is further aggravated by flash floods, massive landslides, erosion, and caving of roads caused by cloudbursts and heavy rains during the monsoon period. The PWD faces a major challenge in keeping roads open during the monsoon season every year.

B. Damage Overview

6. The cloudbursts and torrential rains during 15–17 June 2013 have resulted in erosion of long stretches of roads, major landslides, caving of roads and pathways, and complete disruption of vehicular movement and road connectivity. A few rivers in the region have changed course significantly at many places and the unprecedented river flows have caused total erosion of the river banks and washed away large sections of roads and a significant number of bridges. The impact of the calamity has reached far downstream to areas throughout the state, where

¹ The Ministry of Road Transport and Highways has delegated the responsibility for national highways to the PWD.

roads have been damaged by inundation due to flooding. Damaged roads will require realignment at a number of locations and the widened rivers will require longer bridges.

7. The disaster has caused damage to about 2,174 roads, 85 motor bridges, and 140 bridle bridges and affected connectivity to about 4,200 villages. A large number of vehicles have been washed away, buried under debris, fallen down hillsides, or stranded at locations that have been cut off. Large areas of Uttarakhand were completely cut off and more than 100,000 people including tourists and pilgrims were stranded. The impacts on the affected population due to the loss of connectivity have been manifold. The food supply, health care, education, and livelihood of the affected population have been completely disrupted. Food and essential supplies to the cut-off areas are being delivered by helicopters landing at makeshift helipads.

8. The region of the disaster includes the holy pilgrimage circuit constituting Kedarnath, Badrinath, Gangotri, and Yamunotri, and road connectivity to these places has been the worst affected, completely disrupting the pilgrimage. Some of the popular trekking routes in the higher ranges of the Himalaya have also been affected and these trekking destinations have been cut off. Apart from the physical damage, the calamity has severely affected the livelihood of the people who depend solely on the flow of pilgrims and tourists.

C. Recovery Strategy

9. The Government of Uttarakhand with the assistance of the Government of India, border roads organization, armed forces, and central paramilitary forces undertook emergency response to the disaster. However, the complete breakdown of road connectivity severely affected the rescue operations and a large number of stranded persons had to be evacuated mainly by helicopters via makeshift temporary helipads. Many people had to be rescued via temporary ropeways across flowing rivers by the army, and many on foot.

10. Although restoration of road connectivity is the most urgent and important need in Uttarakhand, in view of the nature of the damage, permanent rehabilitation and reconstruction of the damaged roads and bridges will be a difficult and time-consuming process for the state. Large parts of the state cover a high seismicity zone, are mountainous, with fragile geology and ecological sensitivity and experience cloudbursts, very heavy rainfall, and floods. Creating sustainable road and bridge infrastructure will require requisite geological and geotechnical studies; adequate provision of protection and river training works; use of appropriate, sustainable, low-cost road-building technologies; and construction of disaster-resilient structures.

11. In the longer term, the Government of Uttarakhand is also contemplating relocation of vulnerable habitations and adopting a multimodal transport system, ropeways tunnels, and viaducts. These would require detailed multidisciplinary studies and larger funding allocations. The Government of Uttarakhand is committed to undertaking sustainable redevelopment and reconstruction in an eco-friendly manner and build disaster-resilient infrastructure and facilities. However, the government is constrained by its limited capacity and will require increased planning, funding, and implementation capacity to undertake sustainable redevelopment and reconstruction, for which significant technical assistance and capacity building support will be required.

II. URBAN SECTOR

A. Sector Overview

12. Nearly one-third of the state's population lives in urban areas. As per the 2011 census, the state's urban population is 3.05 million out of a total population of 10.10 million. Uttarakhand's urban settlements include 75 statutory towns with a total population of 2.56 million. These include the municipal corporation of Dehradun, 32 nagar palika parishads (municipal council) (31 nagar panchayats (city council) , 9 cantonment boards, and 2 industrial townships. In addition, the 2011 census identified 41 census towns with a total population of 0.49 million.²

13. Of the state's urban population, 74% lives in the plains of southern Uttarakhand, including Dehradun, the capital. The majority of the towns and cities of the plains and the hills are popular tourist destinations or gateways to other tourism spots. Haridwar, Pantnagar, and Sitarganj are the key industrial urban hubs of the state. These industrial hubs and tourism provide the main opportunities for economic development in the urban centers of Uttarakhand. However, the basic infrastructure of these urban centers has not kept pace with the rapid growth in population, tourist traffic, and the construction boom, all of which have put the fragile ecosystem of the state under pressure.

14. About 80% of the urban population of Uttarakhand has access to piped water supply. While the state enjoys abundant water resources, service levels are low (average supply hours vary from 1 hour to 4 hours per day) because of improper planning, difficult terrain, capacity issues, and resource constraints. Sewerage coverage in the towns is limited; 25 towns have a centralized sewerage system with partial coverage, while other towns rely on individual septic tanks. None of the urban centers in the state has landfill sites of the quality mandated by the Municipal Solid Waste, 2000 Act. Because of land constraints, internal roads of most of the hilly towns are narrow with insufficient parking space.

15. Urban local bodies in the state are primarily responsible for providing urban infrastructure and services (except water supply and sewerage), including on-site sanitation, solid-waste management, drainage, road maintenance, street lighting, and slum improvement. Water supply and sewerage service provision is the responsibility of state water utilities i.e., Uttarakhand Pey Jal Nigam for capital works and Uttarakhand Jal Sansthan for operation and maintenance, which operate under the Drinking Water Department of the state.

16. To meet the challenges of urbanization, the state government is implementing a number of urban infrastructure projects with the assistance of the Asian Development Bank and Government of India.³ However, the implementation of these projects has been delayed because of the capacity constraints of state agencies. To address the issue, the state government has recently initiated a two-pronged action—engagement of qualified experts from the market, and on-the-job training of existing staff.

² Census towns are areas which are categorized as urban following criteria of population, density, and occupation. These areas are, however, still administered by rural local governance structures (*gram panchayats*).

³ ADB. 2008. *Loan to India for Uttarakhand Urban Sector Development Investment Program - Project 1*. Manila; ADB.2011. *Loan to India for Uttarakhand Urban Sector Development Investment Program - Project 2*. Manila

B. Damage Overview

17. The urban infrastructure in 41 of the 116 towns has been affected by the floods. It has caused damage to intake wells and treatment plants of the water supply schemes in the mountainous districts of Chamoli, Rudraprayag, Pauri Tehri, and Uttarkashi as a result of scouring and heavy deposition of silt. The per capita water supply in the urban areas of these districts has been reduced by 20–50 liters per person per day. About 112,000 people have been directly affected by the damage to the water supply schemes. In total, 50 raw water intake stations and tube wells and 40 km of pipelines have been damaged. Damage to the sewerage schemes is relatively minor, other than some losses in the ongoing works.

18. In addition to damaging the water supply network, the flood also washed away or destroyed about 21 km of urban roads and 24 km of drains across 28 towns of the state. However, the impact of the damage to urban roads and roadside drains are not significant, and regular traffic flow has not been affected.

19. Preliminary analysis indicates that the expenditure required for restoring the damaged urban infrastructure in Chamoli, Rudraprayag, Uttarkashi, and Pauri districts will account for 80% of the overall reconstruction cost of the sector, of which the major share will be required for rehabilitation of the water supply systems.

C. Recovery Strategy

20. The state government has taken interim measures to temporarily restore the piped water supply system in most of the affected towns, and in a few locations is providing water through tankers or by other means. For complete restoration of the water supply systems, the state government has decided to upgrade those to the service level standards of the Government of India, with a medium-term planning horizon. The ongoing sewerage schemes which have been damaged will be rebuilt using the resources from the respective programs. The works related to temporary restoration of urban roads have been completed. The state government has taken a holistic approach to complete reconstruction and upgrading of these assets and combined these works with the state highway and district roads rehabilitation program of the respective region or district.

III. TOURISM SECTOR

A. Sector Overview

21. Tourism is one of the fastest growing industries and a major driver of economic growth and livelihood promotion in Uttarakhand, and is the most important activity in the nonfarming sector. The contribution of tourism to state gross domestic product is about 22.48%.⁴ The aesthetic appeal of the land and the state's sociocultural heritage give Uttarakhand immense tourism potential. The state is replete with religious and mythological sites that are a rich legacy of the cultural past. The state has always attracted tourists on pilgrimage; in fact, the land is often referred to as the land of the divine—Dev Bhumi.

22. Recognizing the immense tourism potential of the state and its significance in the economic development process, the state government has adopted a pragmatic tourism policy framework. The policy has a vision of placing Uttarakhand on the tourism map of the world as a leading tourist destination. There is active participation of the private sector in the industry and in the local host communities in developing tourism as a major source of employment and income and revenue generation.

23. The majority of the towns and cities of the plains and the hills are popular tourist destinations or the gateways to other tourism spots. The pilgrim towns of Haridwar and Rishikesh draw a large number of visitors. Other pilgrim destinations in the state are Badrinath, Kedarnath, Gangotri, and Yamunotri. Though pilgrimage accounts for the biggest segment, the state is also blessed with enormous resources for cultural, adventure, wildlife, nature, and leisure tourism, and has a wide variety of entertainment and sporting activities which attract domestic as well as foreign tourists. Lakes are another important aspect of Uttarakhand tourism, and the high lakes are a great attraction for trekkers.

24. The unplanned growth of places as centers of tourism has had a severe and negative impact on the environment. To meet this challenge, the state government is implementing the Infrastructure Development Investment Program for Tourism⁵ with the assistance of the Asian Development Bank. The investment program targets increased economic growth and provision of livelihood opportunities for local communities through tourism infrastructure development with a focus on preservation and development of natural and cultural heritage and incidental services in the states of Himachal Pradesh, Punjab, Tamil Nadu, and Uttarakhand to develop tourism as a key driver of economic growth.⁶

B. Damage Overview

25. Tourism is the largest livelihood provider in Uttarakhand and this disaster, which hit during the peak tourist season, has had a devastating impact on the industry. In addition to impacting thousands of lives, the tragedy has badly hit the industry stakeholders, especially those involved in religious tourism. The state does not have a proper statistical system on tourism, and no scientific study of the carrying capacity of the different areas has been carried

⁴ Economic and Statistics Department. Government of Uttarakhand.

⁵ ADB.2010. *MFF to India for Infrastructure Development Investment Program for Tourism*. Manila

⁶ The allocations are \$66.61 million to Himachal Pradesh, \$61.98 million to Punjab, \$59.79 million to Tamil Nadu, and \$61.62 million to Uttarakhand. The Department of Tourism of the Government of Uttarakhand is the executing agency and the Uttarakhand Tourism Promotion Board is the implementing agency for the project in Uttarakhand.

out. The region of the disaster includes the holy pilgrimage circuit of the Char Dham Yatra⁷. The road connectivity to these places has been the worst affected and has completely disrupted the visit of pilgrims to these holy places. It is reported that the Char Dham Yatra had attracted more than 150,000 pilgrims at the time of the calamity. With the roads and bridges being washed away and landslides occurring in several places, more than 100,000 pilgrims and tourists were stated to be stranded. It took a massive effort on the part of the state government to undertake immediate and large-scale rescue operations. Because of the treacherous mountainous terrain, incessant rains, zero or low visibility, unpredictable weather conditions, damaged roads and communication systems, and lack of proper helipads and/or landing facilities, severely hampered the rescue operation in the world.⁸

26. The damage is extensive and varied. In addition to the physical damage, the disaster has also severely affected the livelihood of the people dependent solely on the flow of pilgrims and tourists. With the destruction of infrastructure and loss of livelihoods, tourism in the state has taken a severe beating and the effect has also flowed on to other tourism destinations in the state. The hospitality industry has suffered a severe setback because of massive cancellations of earlier bookings after the disaster, even in the unaffected popular destinations of the state.

27. The damage and loss could be broadly classified as follows:

- (i) loss of infrastructure (government and private),
- (ii) direct loss to stakeholders (hotel and other service industries related to tourism such as tour operators, travel agents, taxi drivers, guides, and shopkeepers),
- (iii) loss of livelihoods along the entire chain dependent on pilgrimage and adventure tourism in the impacted areas,
- (iv) loss of revenue and tax, and
- (v) loss of tourism reputation of the state as a whole.

C. Recovery Strategy

28. The state is developing a framework for promoting climatically resilient tourism. The existing network of temporary helipads will be strengthened and it is proposed that new helipads, ropeways, and other supporting structures and multipurpose shelters will be constructed. It is proposed that village- and community-based tourism will be promoted to reduce the need for large investments in hotels and also provide sustainable livelihoods. The state proposes development of tourist biometrics and regulation software at various entry points to track and regulate the numbers of tourists. The state also proposes to conduct studies to (i) define the carrying and absorption capacities of higher-reaches destinations, (ii) develop micro plans for the middle-reaches destinations to convert them into base camps for the higher-reaches destinations so as to stagger tourist numbers, and (iii) improve the facilities in the towns and villages near the gateways to major destinations. A comprehensive media campaign is also planned to revive the image of tourism in the state.

⁷ Four pilgrimage destinations—Yamunotri, Gangotri, Kedarnath, and Badrinath—collectively known as Char Dham draw large numbers of pilgrims each year, becoming an important hub of religious travel in northern India.

⁸ Twenty civil and 59 military aircraft were used for air evacuation. In all, 72 permanent and temporary helipads were mobilized for evacuation and dropping of relief material. Approximately 30,000 people were rescued by air and around 150,000 people were moved through 6,000 vehicles mobilized to facilitate to road transport.