SECTOR ASSESSMENT (SUMMARY): ROAD TRANSPORT

1. Sector Performance, Problems, and Opportunities

a. General

1. India's road network consists of three categories: (i) about 60,000 kilometers (km) of national highways; (ii) about 600,000 km of state highways and major district roads; and (iii) about 2.7 million km of mainly rural roads. Sustained underinvestment in road infrastructure in India has affected all levels of the network.[1] Rapid growth in traffic has led to congestion, road deterioration, and high transport costs. In rural areas, where 70% of India's population lives, many villages still rely on earthen tracks that are unsuitable for motorized traffic and become impassable during the rainy season because of their poorly finished surfaces; missing bridges; and inadequate, defective, or missing drains.

b. Rural Roads under the Prime Minister's Rural Roads Program

3. To address the rural connectivity issues after long-term underinvestment, in 2000 the Government of India launched the Prime Minister's Rural Road Program or Pradhan Mantri Gram Sadak Yojana (PMGSY). The first phase of the PMGSY (PMGSY-I) focused on providing all-weather connectivity to rural habitations.[2] The roads constructed under PMGSY-I are to create the "last mile" connectivity to villages in rural areas. A nationwide planning exercise conducted in 2000 to identify unconnected habitations, and roads eligible under PMGSY-I, found that about 330,000 rural habitations (40% of the total 850,000 rural habitations) lacked all-weather road connectivity. To maximize the impacts of the investment under PMGSY-I, the Ministry of Rural Development (MORD) established criteria to give priority to larger habitations. The original target was to provide all-weather road connections to all habitations with a population of 1,000 or more by 2003, and to all habitations with a population of 500 or more by 2007. In hilly or desert areas, or scheduled tribe areas as defined in Schedule V of the Constitution of India, the objective was to connect all habitations with a population of at least 250 by 2007.

5. The states that have substantially completed their respective PMGSY-I scope will be eligible to proceed to the second phase of the program (PMGSY-II), which focuses on improving rural communities' access to district centers and rural hubs to enable the creation of self-employment and livelihood opportunities. PMGSY-II will upgrade selected rural road corridors that meet certain criteria based on their economic potential and their role in facilitating such impacts. Their carriage width will be widened from 3.75 meters to 5.5 meters to make movements of people and goods safer and more efficient, and to cater for more traffic and larger vehicles.

6. Key indicators related to the road subsector in Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal, the states covered by the Second Rural Connectivity Investment Program (the investment program), are in Table 2. Assam has the poorest road network with only 12% of the roads surfaced, followed by Odisha (14% surfaced).

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[1] Since the Sixth Five-Year Plan, 1980–1985, annual investments in roads have varied between 0.6% and 1.5% of gross domestic product, averaging 1.1%.

[2] The PMGSY defines an all-weather road as one that is negotiable in any weather condition and has sufficient cross drains to drain the roadbed effectively.

Table 1: Key Road Subsector Indicators in Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal

Item	Assam	Chhattisgarh	Madhya Pradesh	Odisha	West Bengal
Area (km^2)	78,438	135,191	308,245	155,707	88,752
Population (million)[a]	29	23	69	40	87
Total road length (km)	230,334	74,434	165,740	215,404	211,770
Surfaced road length (km)	26,612	43,528	82,426	30,645	49,111
Surfaced road length (% of total)	12	58	50	14	23
Road density (km/km^2)	3	1	1	1	2
Surfaced road density (km/km^2)	0.34	0.32	0.27	0.20	0.55

km = kilometer, km^2 = square kilometer.
[a] Population figure estimates by the office of the Registrar General of India, Ministry of Home Affairs.
Source: Ministry of Shipping, Road Transport, and Highways. 2008. *Basic Road Statistics of India*. New Delhi.

d. Key Problems and Opportunities

7. **Funding gap.** Full achievement of investment program targets as originally scheduled has been constrained by limited funding availability. Currently available funding sources will not meet the needs of the PMGSY. Specifically, the latest estimate for the remaining PMGSY financing requirements to achieve its goal by 2016 in Assam, Chhattisgarh, Madhya Pradesh, Orissa, and West Bengal is about $7.95 billion, while available PMGSY funding for the same period is estimated to be around $5.04 billion. The first Rural Connectivity Investment Program (RCIP), approved in 2012, contributed around $0.800 billion to the funding for PMGSY-I.

8. **Road maintenance.** As the responsibility to manage the growing number of rural roads increases, the state governments inevitably require strengthening of their current institutional capacity, particularly in ensuring effective road maintenance. The first RCIP helped meet these challenges in the investment program states by establishing rural road network management units (RRNMUs) to manage and operate their rural road networks.[3] The proposed investment program will further strengthen their operations to help achieve the strategic objectives of the overall PMGSY from a road maintenance perspective.

9. **Road safety.** Road safety has been largely neglected in the past. Under the PMGSY, awareness campaigns were developed but proved unsuitable in the context and were not fully implemented. The states conducted a few road safety audits (RSAs) but these were not results oriented and did little to improve road designs from a safety aspect. Road safety awareness sessions need to be incorporated into the community participation framework, and RSAs must be integral to the design, construction, and maintenance of roads. A rural road safety manual, prepared under the first RCIP, highlights RSAs as a key feature, and the RRNMUs are expected to play a more significant role in ensuring road safety through RSAs and by incorporating audit recommendations in the mitigation plan.

10. **Quality control of design.** Under the PMGSY, quality control of design was routinely done by state technical agencies, but it became clear that more involvement and ownership of implementing agencies is needed to further improve the quality of design. Under the investment program, all implementing agencies will adopt a more stringent process of quality control. This

[3] ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranche Financing Facility, Technical Assistance, and Administration of Technical Assistance to India for the Rural Connectivity Investment Program*. Manila.

involves using a quality control toolkit to ensure that all essential items are properly studied and reflected in the road design. Design consultants will use a detailed subproject report template with incorporated checklists to improve design preparation. Design-brief checklists will be used during the transect walks—public consultations with communities along the proposed road alignment—to make sure that community concerns are accounted for in the design.

2. Government's Sector Strategy

11. India's Twelfth Five Year Plan sought faster, more inclusive, and sustainable economic growth.[4] The PMGSY was deemed a key program to achieve this (and has been a priority in several earlier development strategies). Specifically, the PMGSY is meant to help achieve the country's development goals by (i) reducing poverty through faster and more inclusive growth, (ii) expanding rural infrastructure to accelerate agricultural growth and boost the rural economy, (iii) creating jobs, and (iv) enabling social development by improving education, health, and social indicators. According to the June 2017 monitoring data, some 11,400 habitations remain unconnected nationwide, 5,500 of which are located in the investment program states. The implementation of PMGSY-II will further strengthen the government's initiative towards more inclusive economic growth. Under PMGSY-II, MORD has set the target of 50,000 km of rural roads to be upgraded by the end of 2018. So far, nine states have joined PMGSY-II, and about 25,000 km have been approved for implementation.

12. Since the Twelfth Five Year Plan ended on 31 March 2017, the government's development strategy has been guided by the Three Year Action Agenda for FY2018–FY2020.[5] The government has renewed its commitment to continuing the implementation of the PMGSY (which is considered a highly successful national flagship program) as key to achieving inclusive economic growth, particularly in rural areas. The government also recognizes the need to improve the monitoring of PMGSY implementation through its online management, monitoring, and accounting system.

3. ADB Sector Experience and Assistance Program

13. The recent engagement of ADB to support the overall government strategy in India's road subsector is summarized in Table 3.

14. Having created a vast rural road network under the PMGSY, it is now critical to ensure its sustainability and maintain the quality of the infrastructure assets. This situation introduces a major new dimension to ADB's further assistance to the PMGSY—the focus shifts from providing connectivity through physical assets to building the capacities needed for ensuring road sustainability, such as (i) establishing systematic and high-quality asset management, (ii) improving quality of design, (iii) incorporating road safety measures, (iv) promoting and leveraging suitable and locally resourced innovations, and (v) developing local knowledge to enable better decision making. The problem tree (p. 5) details the challenges that the proposed ADB assistance program faces.

[4] Government of India, Planning Commission. 2012. *Twelfth Five Year Plan (2012–2017)*. New Delhi.
[5] Government of India, National Institution for Transforming India (NITI) Aayog. 2017. *Draft Three Year Action Agenda* (2017–2018 to 2019–2020). New Delhi.

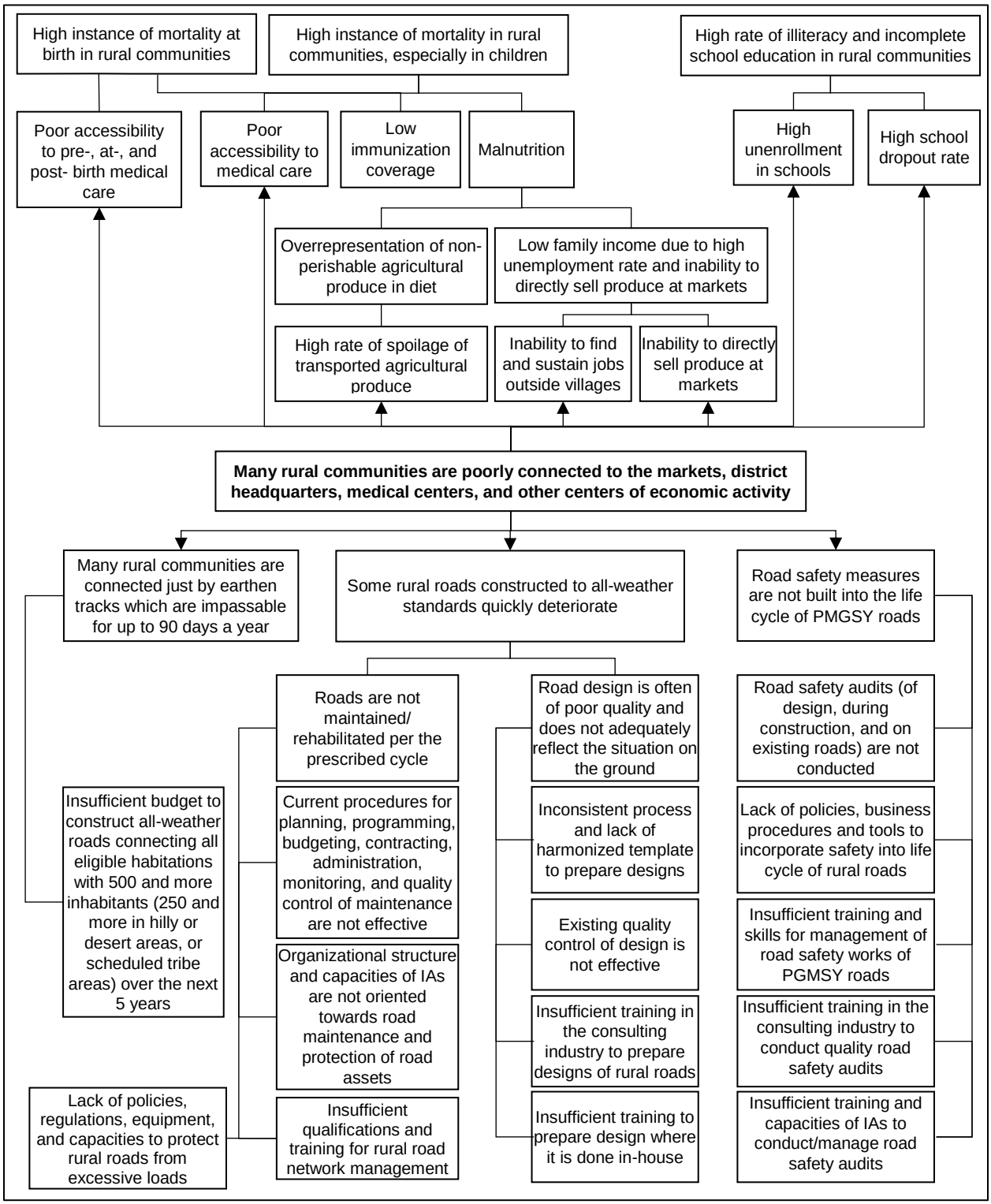
Table 2: Government Strategy and ADB Assistance

Item	Primary Network: National Highways	Secondary Network: State Highways and Major District Roads	Tertiary Network: Rural Roads
Length (km)	60,000	600,000	2,700,000
Government scheme and immediate target	NHDP I (Golden Quadrilateral) by 2007 NHDP II (north–south and east–west corridors) by 2009 NHDP III 1st phase by 2009 SARDP-NE phase A to be completed by 2012	SARDP-NE to be completed by 2012 For other states, allocation of financial support for capital investment and maintenance	PMGSY: connect all habitations with a population of 500 or more. In hilly or desert areas, or scheduled tribe areas, the objective is to connect all habitations with a population of at least 250.
Length targeted for improvement	6,000 km under NHDP I 7,300 km under NHDP II 10,000 km under NHDP III 3,251 km under SARDP-NE	2,500 km in the northeastern region under SARDP-NE	Overall targets: 536,000 all-weather rural roads to be constructed under PMGSY-I; 50,000 km of rural roads to be upgraded by 2018 under PMGSY II.
ADB assistance	For NHDP II East–West Corridor: ($320 million in 2002); National Highway Corridor (Sector) ($400 million in 2003); National Highway Sector II ($400 million in 2004); National Highway Corridor (Sector) supplementary ($100 million in 2009) SASEC Road Connectivity ($500 million in 2014)	West Bengal ($79.2 million in 2001); Madhya Pradesh ($150 million in 2002); Chhattisgarh ($180 million in 2003); Uttaranchal ($550 million MFF in 2006, third tranche for 2011); Madhya Pradesh II ($320 million in 2007); Bihar ($420 million in 2008); Jharkhand ($200 million in 2009); Bihar II ($300 million in 2010); Karnataka ($315 million in 2010); Madhya Pradesh III ($300 million in 2011); North Eastern States ($200 million in 2011); Bihar (additional financing $301 million in 2012); Madhya Pradesh ($350 million in 2014); Jharkhand ($200 million in 2015); Uttar Pradesh ($300 million in 2016); Madhya Pradesh ($350 million in 2016); and Rajasthan ($500 million in 2017).	Rural Roads Sector I: $400 million (2003, Chhattisgarh and Madhya Pradesh), closed in 2009 Rural Roads II Investment Program: $750 million MFF (2005; Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal), closed in 2015. The first Rural Connectivity Investment Program: $800 million, tranche 1: $252 million in 2012, tranche 2: $275 million in 2014, and tranche 3: $273 million in 2015. The loans and the facility are expected to be closed by June 2018. The second Rural Connectivity Investment Program (proposed): $500 million, tranche 1: $250 million.

ADB = Asian Development Bank, km = kilometer, MFF = multitranche financing facility, NHDP = National Highway Development Program, PMGSY = Pradhan Mantri Gram Sadak Yojana (Prime Minister's Rural Roads Program), SARDP-NE = Special Accelerated Road Development Program for the North Eastern Region, SASEC = South Asia Subregional Economic Cooperation.

Sources: Government of India, Planning Commission. 2008. *Eleventh Five Year Plan, 2007–2012*. New Delhi; and Asian Development Bank.

Problem Tree for Rural Roads Subsector in India



IA = implementing agency, PMGSY = Pradhan Mantri Gram Sadak Yojana (Prime Minister's Rural Roads Program).