



# Report and Recommendation of the President to the Board of Directors

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Project Number: 42513-014  
November 2017

## Proposed Loan India: Karnataka State Highways Improvement III Project

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Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 21 October 2017)

Currency unit	–	Indian rupee/s (₹)
₹1.00	=	\$0.01535626
\$1.00		₹65.1200000

## ABBREVIATIONS

ADB	–	Asian Development Bank
CAG	–	comptroller and auditor general
CRN	–	core road network
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
GOK	–	Government of Karnataka
IEC	–	independent engineering consultant
ISO	–	International Organization for Standardization
km	–	kilometer
KPWD	–	Karnataka Public Works, Ports, and Inland Water Transport Department
NGO	–	nongovernment organization
PAM	–	project administration manual
PIU	–	project implementation unit
PPP	–	public–private partnership

## NOTES

- (i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2017 ends on 31 March 2017.
- (ii) In this report, "\$" refers to United States dollars.

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## CONTENTS

	<b>Page</b>
PROJECT AT A GLANCE	
I. THE PROPOSAL	1
II. THE PROJECT	1
A. Rationale	1
B. Impact and Outcome	3
C. Outputs	3
D. Summary Cost Estimates and Financing Plans	3
E. Implementation Arrangements	4
III. DUE DILIGENCE	6
A. Technical	6
B. Economic and Financial	6
C. Governance	7
D. Poverty, Social, and Gender	8
E. Safeguards	9
F. Summary of Risk Assessment and Risk Management Plan	10
IV. ASSURANCES	10
V. RECOMMENDATION	10
APPENDIXES	
1. Design and Monitoring Framework	11
2. List of Linked Documents	14

## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number:</b> 42513-014	
<b>Project Name</b>	Karnataka State Highways Improvement III Project	<b>Department /Division</b>	SARD/SATC
<b>Country Borrower</b>	IND India	<b>Executing Agency</b>	Government of Karnataka
<b>2. Sector</b>		<b>ADB Financing (\$ million)</b>	
✓ <b>Transport</b>	<b>Subsector(s)</b> Road transport (non-urban) Transport policies and institutional development		341.00 5.00
		<b>Total</b>	<b>346.00</b>
<b>3. Strategic Agenda</b>		<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive Global and regional transboundary environmental concerns	Adaptation (\$ million)	14.00
Environmentally sustainable growth (ESG)		Climate Change impact on the Project	Medium
<b>4. Drivers of Change</b>		<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD)	<b>Components</b> Institutional development	Some gender elements (SGE)	✓
Partnerships (PAR)	Implementation		
Private sector development (PSD)	Private Sector Public sector goods and services essential for private sector development		
<b>5. Poverty and SDG Targeting</b>		<b>Location Impact</b>	
Geographic Targeting	No	Rural	High
Household Targeting	No	Urban	Low
SDG Targeting	Yes		
SDG Goals	SDG9		
<b>6. Risk Categorization:</b>	Complex		
<b>7. Safeguard Categorization</b>	<b>Environment: B Involuntary Resettlement: A Indigenous Peoples: C</b>		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>346.00</b>	
Sovereign Project (Regular Loan): Ordinary capital resources		346.00	
<b>Cofinancing</b>		<b>107.00</b>	
Private Sector - Loan		107.00	
<b>Counterpart</b>		<b>202.00</b>	
Government		202.00	
<b>Total</b>		<b>655.00</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		Yes	
Use of country public financial management systems		Yes	

## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to India for the Karnataka State Highways Improvement III Project.

2. The project will improve about 419 kilometers (km) of state highways in the state of Karnataka, in line with the state's core road network (CRN) development plan. It will involve upgrading of identified state highways to two- and four-lane widths with paved shoulders, depending on traffic requirements, and reconstruction, widening, and strengthening of culverts and bridges. Contracts will be based on a hybrid-annuity model with a 7-year annuity period, post-construction (para. 8). The project will carry out a road safety audit to identify critical accident spots across state highways on the CRN, and implement suitable measures to improve these accident spots. The project will also strengthen institutional capacity and efficiency in Karnataka Public Works, Ports, and Inland Water Transport Department (KPWD).

## II. THE PROJECT

### A. Rationale

3. **State context.** Karnataka state in southwest India has an area of about 192,000 km<sup>2</sup> and a population of about 64 million.<sup>1</sup> Economically, Karnataka is one of India's better-performing states—the per capita net income is about 50% above the national average, and grew at over 10% per year during fiscal year (FY) 2012 - FY2016.<sup>2</sup> The population density is lower than the national average, and the sex ratio (number of females to males) is 968 per 1,000 males, vs. the national average of 940.<sup>3</sup> The unemployment and poverty rates are also lower than the national averages, and the state receives substantial foreign direct investment (third-highest nationally, after the National Capital Region and Maharashtra).

4. **Transport network.** The state's topography, particularly the terrain along the western hill ranges, makes the road network a critical element of the transport infrastructure. Consultants supported by the Asian Development Bank (ADB) technical assistance for the Karnataka State Highway Network Improvement Strategy completed a study identifying the CRN, which totals about 24,000 km.<sup>4</sup> In comparison to the road network, the state's rail network is sparse, with only about 3,000 route km, most of which is single line. East–west rail connectivity is limited to one line—from Hassan in the hinterland to Mangalore on the west coast—emphasizing the dependence on the road network.

5. **Government strategy.** Although economic development in Karnataka has been stronger than the national average, it has also been uneven, being focused around the capital region of Bengaluru and Mysuru, and the coastal towns of Mangaluru and Udupi. Karnataka's road network serves to link the rural and urban economies. In its state road policy (2009), the Government of Karnataka (GOK) recognizes the importance of road development as an engine of economic growth, and proposed developing all state highways to a two-lane width.<sup>5</sup> GOK has used various means—including financing through the state budget, public–private partnerships (PPPs), the

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<sup>1</sup> Government of Karnataka (GOK), Directorate of Economics and Statistics. *Collection of Statistics*. 2015. <http://des.kar.nic.in/docs/sip/GSDP%202015-16AE.pdf>

<sup>2</sup> Government of India, Ministry of Finance. *Economic Survey, 2016-2017*. <http://indiabudget.nic.in/estatvol2.asp>. 2017.

<sup>3</sup> Government of India, Census. [http://censusindia.gov.in/2011-prov-results/data\\_files/india/Final\\_PPT\\_2011\\_chapter5.pdf](http://censusindia.gov.in/2011-prov-results/data_files/india/Final_PPT_2011_chapter5.pdf). 2011.

<sup>4</sup> ADB. 2009. *Technical Assistance to India for Karnataka State Highway Network Improvement Strategy*. India.

<sup>5</sup> Government of India, Public Works Department – Karnataka. 2009. *Karnataka Road Sector Policy (2009)*. Bengaluru.

World Bank, and ADB—to improve state roads. The first project financed by a multilateral agency was approved by the World Bank in 2001.<sup>6</sup> The second project is ongoing, and comprises a loan from ADB approved in 2010 and a loan from the World Bank approved in 2011.<sup>7</sup> Further details of the road sector in Karnataka are given in the Summary Sector Assessment.<sup>8</sup> The government's key objective is to upgrade the capacity and condition of the state highway system, improve maintenance, and increase road safety. Achieving these goals also requires that the state build the institutional capacity of the road agencies for planning, preparing, and implementing projects.

6. **Road institutions.** KPWD is the main GOK institution responsible for state roads. The Karnataka Road Development Corporation, Ltd. established KPWD in 1999 to promote surface infrastructure by taking up specific road works and bridges, and take up projects with PPPs. In addition, a project implementation unit (PIU) for the Karnataka State Highways Improvement Project (footnote 6) was established to undertake projects financed by multilateral agencies. The PIU, acting on behalf of GOK, will implement the present project.

7. **Priority road corridors.** The government's strategy calls for state highways to be improved to at least a two- or four-lane standard, depending on traffic. The CRN study initially prioritized roads across the state. The PIU subsequently commissioned a prefeasibility study to categorize and prioritize projects in the CRN. Based on these studies, the PIU identified nine key road corridors, portions of which could be taken up for upgrading on a priority basis. The corridors were chosen based on economic returns, connectivity to industrial and tourist centers, and other criteria. A feasibility study further assessed these roads and chose specific priority road sections, following which consultants recruited by the PIU prepared detailed project reports for these roads, which have now been proposed to ADB for financing.

8. **Value added by ADB assistance.** The project will continue and strengthen ADB engagement in the state and benefit the state's road program with continuity and consistency. The continued contribution by ADB to the development of the state's roads sector will increase inclusiveness by improving access to markets and basic services. The project is in line with the objective in the ADB country partnership strategy for India, 2018–2022 regarding development of the state CRN, with the objective of increased, more efficient, and sustainable movement of people and goods.<sup>9</sup> ADB would also add value through the proposed use of hybrid-annuity contracts to improve the sustainability of capital investments. Under hybrid-annuity contracts, 75% of the project cost would be paid to the contractor on a milestone basis during construction. The balance of the project cost and the cost of maintenance would be paid in specified semiannual payments over a period of 7 years following completion of construction. This approach shifts from traditional construction contracts to contracts focused on output delivery and sustainable asset maintenance. ADB participation will give comfort to the private sector with regards to the reliability of the contract regime and encourage partial private financing of construction. The project will also conduct a road safety audit on all CRN state highways, and implement measures to improve identified accident black spots to improve road safety. KPWD field and headquarters units are managing road projects of increasing scale, leading the government to improve KPWD's quality monitoring and management systems, including its environment management systems. ADB will support the assessment and process requirements for KPWD offices to attain conformity with

<sup>6</sup> World Bank. 2001. *Karnataka State Highways Improvement Project*. Washington, DC (P070421).

<sup>7</sup> The second project was a combination of ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant to India for the Karnataka State Highway Improvement Project*. Manila (Loan 2705-IND); and World Bank. 2011. *Second Karnataka State Highways Improvement Project*. Washington, DC (P070421).

<sup>8</sup> Summary Sector Assessment (accessible from the list of linked documents in Appendix 2).

<sup>9</sup> ADB. 2017. *Country Partnership Strategy: India, 2018–2022*. Manila.

International Organization for Standardization (ISO) 9001:2015 (quality management system) and ISO 14001:2015 (environmental management system) standards.<sup>10</sup> This will build institutional capacity in KPWD.

## B. Impact and Outcome

9. The project is aligned with the following impact: mobility and access to economic opportunities improved.<sup>11</sup> The project will have the following outcome: improved road transport efficiency and safety in Karnataka improved.<sup>12</sup>

## C. Outputs

10. **Output 1: State highways upgraded.** At least 419 km of state highways will be upgraded under hybrid-annuity contracts, designed to standard specifications of two lanes with paved shoulders or four lanes, depending on traffic volumes. These contracts will include 7-year performance-based maintenance obligations.

11. **Output 2: Road safety measures on state highways installed.** Road safety audits will be conducted on all state highways in the CRN to identify critical accident spots, with suitable measures implemented to improve these accident spots.

12. **Output 3: Institutional capacity and efficiency of the Karnataka Public Works, Ports, and Inland Water Transport Department improved.** ISO 9001:2015 and ISO 14001:2015 certifications will be processed for the division and subdivision levels in KPWD across Karnataka. For the project, a public response system and a complaint handling mechanism will be instituted.

## D. Summary Cost Estimates and Financing Plans

13. The project is estimated to cost \$655 million (Table 1).<sup>13</sup>

14. Detailed cost estimates by expenditure and by financier are included in the project administration manual (PAM).<sup>14</sup>

**Table 1: Summary Cost Estimates**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. State highways upgraded	594.00
2. Road safety on state highways installed	12.00
3. Institutional capacity and efficiency of KPWD improved	9.00
<b>Subtotal (A)</b>	<b>615.00</b>
<b>B. Contingencies<sup>c</sup></b>	<b>18.00</b>
<b>C. Financing Charges During Implementation<sup>d</sup></b>	<b>22.00</b>
<b>Total (A+B+C)<sup>e</sup></b>	<b>655.00</b>

KPWD = Karnataka Public Works, Ports, and Inland Water Transport Department.

<sup>10</sup> International Organization for Standardization. <https://www.iso.org/standards.html>

<sup>11</sup> Government of India, Niti Aayog. 2017. *Three-Year Action Agenda (2017—18 to 2019—20)*. New Delhi.

<sup>12</sup> The design and monitoring framework is in Appendix 1.

<sup>13</sup> Detailed cost estimates by financier and by year are included in Project Administration Manual (accessible from the linked documents in Appendix 2). The financing plans are made on the assumptions, discussed in detail with PIU and KPWD, that 75% of the estimated project cost would be met by ADB financing, and the balance of 25% would be through hybrid annuity contract payments over 7 years, post-construction.

<sup>14</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

- <sup>a</sup> Includes taxes and duties of about \$27 million. The government and the Asian Development Bank (ADB) will finance taxes and duties of \$27 million by cash contribution for civil works to upgrade state highways and improve road safety. The taxes and duties to be financed by ADB (i) are within the reasonable threshold identified during the country partnership strategy preparation process, (ii) represent only 4% of the investment plan, (iii) apply only to ADB-financed expenditures, and (iv) are considered material and relevant to the success of the project.
- <sup>b</sup> In mid-2017 prices as of January.
- <sup>c</sup> Physical contingencies computed at 2% for civil works. Price contingencies computed at 2% of local currency costs.
- <sup>d</sup> Includes interest and commitment charges. Interest during construction for the ordinary capital resources loan(s) is computed at the 5-year fixed swap rate plus a spread of 0.5% and maturity premium of 0.10%. Commitment charges for an ordinary capital resources loan are 0.15% per year on the undisbursed loan amount.
- <sup>e</sup> The summary of cost estimates is exclusive of the operation and maintenance, and interest payments to be paid to the concessionaire by the State Government, after construction completion.
- Source: Asian Development Bank estimates.

15. The government has requested a regular loan of \$346,000,000 from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years; an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a commitment charge of 0.15% per year; and such other terms and conditions set forth in the draft loan and project agreements. The government has requested that repayment will follow the straight-line repayment option. Based on the straight-line method, the average loan maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per annum.<sup>15</sup>

16. The summary financing plan is in Table 2. ADB will finance expenditures related to improvement of state highways, procurement, and consulting services (53% of the project cost). GOK has allocated counterpart financing for 31% of the cost, and the private sector contractors will contribute 16% through the hybrid annuity contract structure.

**Table 2: Summary Financing Plan**

<b>Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank		
Ordinary capital resources (regular loan)	346.00	53.00
Government of Karnataka	202.00	31.00
Private sector	107.00	16.00
<b>Total</b>	<b>655.00</b>	<b>100.00</b>

Sources: Government of Karnataka and Asian Development Bank estimates.

17. Climate adaptation is estimated to cost \$14 million. ADB will finance 75% of adaptation costs. Details are in the PAM (footnote 14).

## **E. Implementation Arrangements**

18. The implementation arrangements are summarized in Table 3 and described in detail in the PAM. The PIU will engage independent engineers (through a firm or consortium of firms) to manage each of the three hybrid-annuity contracts. All procurement of goods and works will be undertaken in accordance with the ADB Procurement Guidelines (2015, as amended from time to time). All consultants will be recruited in accordance with ADB Guidelines on the Use of Consultants (2013, as amended from time to time).

<sup>15</sup> The loan terms are subject to confirmation by the government.



**Table 3: Implementation Arrangements**

Aspects	Arrangements		
Implementation period	December 2017–December 2023		
Estimated completion date	31 December 2023		
Estimated loan closing date	30 June 2024		
Management			
(i) Executing agency	Government of Karnataka, acting through KPWD.		
(ii) Key implementing agency	The PIU headquarters at Bengaluru will be supported by field units at Bengaluru, Krishnarajapet, and Ranebennur. Each field unit headed by a superintending engineer or executive engineer, with support staff. Total of 60 full-time staff will be assigned to the project, with oversight and control from PIU headquarters at Bengaluru.		
Procurement	International competitive bidding	3 contracts	\$100,000,000–\$150,000,000 each
	National competitive bidding	1 contract	\$12,000,000
Consulting services	QCBS; full technical proposal	Independent engineering consultant (firms), about 1,000 person-months	\$9,000,000 (total, in three packages)
	QCBS, full technical proposal	Implementation support consultant, about 204 person-months	\$2,500,000
	QCBS, full technical proposal	Road safety consultant, 264 person-months	\$3,000,000
	QCBS, bio-data technical proposal	Quality certification systems, about 200 person-months	\$2,500,000 in four packages
	QCBS, bio-data technical proposal	Public response system and complaint handling mechanism system, about 80 person-months	\$1,000,000 in two packages
Retroactive financing and/or advance contracting	Works and consulting services		
Disbursement	The loan proceeds will be disbursed in accordance with the ADB Loan Disbursement Handbook (2017, as amended from time to time) and detailed arrangements agreed upon between the Government of India and ADB.		

ADB = Asian Development Bank, KPWD = Karnataka Public Works, Ports, and Inland Water Transport Department, PIU = project implementation unit, QCBS = quality- and cost-based selection.  
Source: Asian Development Bank.

19. The PIU has commenced procurement activities for consultant recruitment and the hybrid-annuity packages. Based on this, the Government of India requested retroactive financing for all project components. Up to 20% of the loan proceeds will be eligible for retroactive financing for expenditures incurred on works, equipment, and consulting services for the project, in accordance with agreed procedures, and during the 12-month period before the signing of the loan agreement. The government has been informed that approval of advance contracting and retroactive financing does not in any way commit ADB to finance the project.

### III. DUE DILIGENCE

#### A. Technical

20. The PIU has prior experience working with ADB and the World Bank, and the performance has been satisfactory. However, learning from previous projects indicated that delays in project implementation resulted from (a) finalizing project studies and procurement after approval; and (b) delays in land acquisition. This learning has been incorporated in substantial prior preparation for this project in terms of technical, procurement, and land acquisition related activities. The PIU engaged a consortium of consultants to prepare detailed design documents for roads proposed for ADB financing, incorporating requirements of economic, social, and environmental studies.

21. ADB engaged a consortium of international and national consultants under project preparatory technical assistance to conduct due diligence on various aspects of the project design and financial structure, and to ensure that work of the PIU consultants complies with ADB requirements.<sup>16</sup> The reviews included technical, environmental and social safeguards; economic assessment; procurement; and financial assessment. The engineering designs were prepared to improve geometry; address social and environmental impacts, including bypassing congested settlements; address road safety; and minimize climate change risks. The key climate risk in Karnataka is increased temperature, by an average of 1.8°C–2.2°C during 2021–2050.<sup>17</sup> Rainfall is expected to decrease over the monsoon season in northeastern and southwestern parts of the state and increase in others. To address climate risks to the roads, several adaptation measures—e.g., increased embankment height, improved bridges, and increased longitudinal and cross drains—are included in project design.

#### B. Economic and Financial

22. **Economic analysis.** The project's economic evaluation followed the standard practice of comparing life cycle costs in with- and without-project scenarios, using a 9% discount rate and the economic internal rate of return (EIRR) as decision criteria in accordance with ADB guidelines.<sup>18</sup> The economic analysis was conducted using the highway development model 4 (HDM-4), which estimates road agency costs and road user costs to assess the economic viability of project roads using input data on traffic, road geometry, pavement structure and condition, road maintenance and improvement costs, and vehicle operating costs. Value added from improved transport links, resulting in new industries and employment, are captured through benefits from generated traffic. The EIRR of the overall project is estimated to be about 21.4%, and ranges from 17.7% to 24.4% for the project roads.

23. Sensitivity analysis was carried out to investigate the project's economic viability in the face of adverse changes in costs, benefits, and key economic evaluation parameters. The following scenarios were assessed: (i) construction cost increased by 20%; (ii) vehicle operating cost and travel time savings reduced by 20%; (iii) construction cost increased by 20%, and vehicle operating cost and travel time savings reduced by 20%; (iv) a 2-year delay in construction; (v) value of time decreased by 20%; and (vi) considering carbon dioxide emissions in the analysis. The EIRR of all project roads remains above 9% in all cases, demonstrating the overall robustness of the project, which is economically viable with adverse variations in costs and benefits.

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<sup>16</sup> ADB. 2014. Technical Assistance for the Preparation of Karnataka State Highways Improvement III. India.

<sup>17</sup> Government of Karnataka. 2011. *Karnataka State Action Plan on Climate Change*. Bengaluru.

<sup>18</sup> ADB. 2017. *Guidelines for the Economic Analysis of Projects*. Manila.

24. **Financial sustainability.** The project is not revenue-generating. Maintenance norms require about \$1,500 annually per lane-km for state highways and \$1,000 per lane-km for major district roads,<sup>19</sup> including routine maintenance (35%), periodic maintenance (50%), and special maintenance (15%).<sup>20</sup> During FY2016, the budget allocated to KPWD for routine maintenance of roads and bridges was about \$390 million, of which about \$190 million was for the maintenance of state highways and major district roads. The annual maintenance requirements in Karnataka are estimated at about \$950 million per year, in line with actual expenditures for routine and special maintenance. The annual average incremental recurrent costs of the project are otherwise estimated to represent about 1.0% of the maintenance budget of KPWD, and it is reasonable to expect that the budget allocated will be sufficient to meet the maintenance costs of the project. In addition, the project contracts are on a hybrid-annuity model, and the contracts include 7 years of post-construction operation and maintenance that meets key performance targets for the project roads. The project thus promotes sustainable maintenance of the project roads by the private sector, under the supervision of KPWD.

### C. Governance

25. **Institutional capacity.** The PIU was set up to implement a World Bank project (footnote 6), and has continued as a special-purpose entity to implement multilateral bank projects. Although a division of the KPWD and not an incorporated entity, the PIU operates reasonably autonomously. It falls under the jurisdiction of the minister for KPWD, and administratively under the KPWD principal secretary. It is headed by a chief project officer from the Indian Administrative Services, supported by a project director with a rank of chief engineer. Substantive PIU decisions are made through a two-level process involving a steering committee headed by the KPWD principal secretary and a project governing board headed by the chief secretary of the state of Karnataka. While the decision structure is more complex and distributed than an independent incorporated entity might be, it has more power than a direct government department would, and is better suited to implementing multilateral projects. The PIU has experience with multilateral projects, good technical capacity, and an established decision-making structure.

26. **Financial management.** The PIU is quite familiar with ADB and World Bank requirements. Fund flows are entirely through the budgetary process and the government treasury. All transactions are recorded by government accounting systems, and ultimately reflected in the state government accounts. These are subject to statutory audit by the comptroller and auditor general (CAG) of India in line with India's constitutional provisions. Audited accounts are placed before the state legislature. In addition, transaction audits are also carried out periodically during the year by the state accountant general to ensure relevant codes and standards are conformed with. The PIU also prepares quarterly and annual financial statements for individual multilateral agency projects. A financial management system based on Tally (off-the-shelf accounting software) is used. A firm of chartered accountants has been appointed to carry out internal audit in line with World Bank and ADB requirements. Annual statements of project accounts are subject to audit by the accountant general (an arm of the CAG at the state level) as per the auditing standards promulgated by the CAG. A review of the audits from FY2013 to FY2016 indicates no major adverse audit comments. However, an identified weakness is that the financial oversight positions in the PIU (intended to be staffed by government officers) are vacant. Assurances will be included for filling these vacancies prior to project commencement. The financial management risk is rated *moderate* under the circumstances.

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<sup>19</sup> Calculated based on bill of quantities, and 2016 unit rates, and on guidelines from the Indian Road Congress. *Design, Construction and Maintenance of Flexible pavements*. 2009. Delhi.

<sup>20</sup> GOK. KPWD. *Management Information System Annual Report 2015–16*. Bangalore.

27. **Procurement.** The PIU is experienced with procurement and consultant recruitment for ADB and World Bank projects, as well as in the use of various forms of PPPs for road projects. Goods and works will be procured in accordance with ADB Procurement Guidelines. All hybrid-annuity contracts for roads will be procured through international competitive bidding, using e-procurement processes. All consulting firms will be recruited in accordance with ADB Guidelines on the Use of Consultants using quality- and cost-based selection, with a quality–cost ratio of 80:20. Advance procurement actions for the three works contracts packages commenced in February 2017, while recruitment of the independent engineering consultants (IECs) commenced in June 2016. The procurement plan for the project is in the PAM.

28. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and the GOK. The specific policy requirements and supplementary measures are described in the PAM.

#### **D. Poverty, Social, and Gender**

29. **Poverty.** The project's zone of influence includes 12 districts with a population of about 28.4 million, living mostly in rural areas. In 2011, 8% to 25% of the population in these districts lived in poverty.<sup>21</sup> Agriculture, business, and wage labor are the main sources of livelihood in the project area. Most households have access to electricity and piped water, and most (70%–90%) regularly use public transport (e.g., buses and taxis); although many (15%–40%, depending on community) own a motorcycle, less than 4% have a private vehicle. Residents living along the roads indicated that the lack of adequate footpaths, lighting, and blind curves were important safety hazards, especially at night. The project will improve the safety of road users and pedestrians and provide residents, especially the poor and vulnerable, with improved access to economic opportunities and social service facilities, such as government agencies, health centers, and schools. An efficient road network linking villages, towns, and cities will provide stronger links between remote, poor regions, and more developed markets and urban hubs.

30. **Gender.** The project is categorized as having *some gender elements*. Overall, gender indicators in Karnataka surpass national-level indicators, including the sex ratio (para 3), maternal mortality rate (144 per 100,000 births in 2010–2012, compared with 178 nationally), and female literacy rate (68%, compared with 65% nationally). During project preparation, women were actively consulted, with 130 women participating in focus group discussions on all roads. These interactions confirmed that most women use public transportation regularly and perceived it as a safe transport mode. Women highlighted the need for safer roads and more frequent and reliable public transportation. Public transportation does not fall under the scope of the project, but the project will construct bus shelters and waiting areas. Pedestrian- and gender-friendly elements include: (i) proper signage, marked crossings, footpaths, and bus shelters; (ii) ensuring at least 40% of participants in community awareness activities (human trafficking and HIV/AIDS prevention, and road safety) and consultations are women and girls; and (iii) monitoring the employment of women in construction and maintenance activities.

31. **HIV/AIDS.** The project is expanding existing corridors, and is thus not expected to significantly increase the incidence of HIV/AIDS, sexually transmitted infections, and human trafficking. However, given that the prevalence of HIV/AIDS and human trafficking in Karnataka is high relative to the rest of India, community awareness campaigns on HIV/AIDS and human trafficking prevention will be carried out by the resettlement nongovernment organizations (NGOs), and prevention and assistance programs will be put in place by the contractors for their

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<sup>21</sup> Government of Karnataka, Planning, Programme Monitoring and Statistics Department. *Millennium Development Goals, Report of Karnataka. 2014*. Bengaluru.

workers, in coordination with existing local programs. Karnataka is one of five states with the highest HIV/AIDS prevalence rate (0.52 among adults aged 15-49 years, compared with a national average of 0.27). Human trafficking is an important problem in Karnataka, which had 10% of the reported cases in India in 2014.

32. **Road safety awareness.** Safety features and warning signs are included in the technical design. In addition, the project will include a community road safety awareness campaign to sensitize the communities and high-risk groups along the corridor about the dangers for pedestrians and drivers. This will be conducted by the resettlement NGOs.

## E. Safeguards

33. In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows.<sup>22</sup>

34. **Environment (category B).** The project scope involves improvement of existing state highways to standard two-lane width, with some four-lane sections. The project roads do not pass through environmentally sensitive areas, and no significant and irreversible environmental impacts are expected. Five initial environmental examination (IEE) reports, including an environmental management plan (EMP), have been prepared for the five project roads and disclosed on the ADB website. Approximately 16,000 trees, including 866 considered large and old, will be removed. Best efforts (through measures such as eccentric widening) have been made to minimize removal of large old trees in the project design. Compensatory afforestation of 68,455 trees will be carried out. Other anticipated environmental impacts during construction entail typical road construction-related issues, such as generation of dust, noise, exhaust, and waste from construction and worker camps; water contamination; occupational health and safety; erosion; and siltation. Key operational impacts are increased noise levels and safety issues. To address these, noise barriers have been proposed and appropriate road safety features included in the project design. Mitigation measures to address all construction- and operation-related impacts have been included in the EMPs, which are part of the bidding documents, with implementation mandatory for the contractor. The project includes innovative environmental measures such as the use of plastic waste in the bitumen mix in urban road sections, where feasible. Meaningful consultations have been conducted during project preparation, and all concerns voiced by affected persons and stakeholders have been incorporated in the project design. The existing grievance redress mechanism being used by the PIU will be followed under this project.

35. **Involuntary resettlement (category A).** The project will require the acquisition of 544.63 hectares of land, including 463.58 hectares of private land. A total of 5,684 households (24,224 persons) will be affected. Most (75%) of affected households are titleholders, with about 60% of affected households below poverty level.

36. The project will use direct purchase to acquire private land and assets based on the provisions of national law and the ADB Safeguard Policy Statement; should negotiations fail, land and assets will be acquired in accordance with the same law and policy.<sup>23</sup> Resettlement plans were prepared for all five roads and disclosed on the ADB website; they address identified impacts and reflect lessons from previous projects, including measures to ensure compensations at replacement cost, utility shifting and reconstruction assistance, special measures for vulnerable

<sup>22</sup> ADB. Safeguard Categories. <https://www.adb.org/site/safeguards/safeguard-categories>.

<sup>23</sup> Section 46 of India's Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and ADB. 2009. *Safeguard Policy Statement*. Manila (Appendix 2, p. 48, para. 25).

households, and a livelihood improvement program.<sup>24</sup> GOK will finance all direct purchase, resettlement activities and utility shifting. Assessment of project impacts and proposed mitigation measures are both adequate.

37. **Indigenous peoples (category C).** Karnataka's tribal population makes up 6.95% of the total. The roads do not cross customary or tribal land. The social impact assessment and census survey confirmed that 5.5% of affected households are scheduled tribes, and that these households hold similar occupations and religious beliefs as the wider society.

38. **Implementation aspects.** The PIU EMP implementation unit will oversee implementation of project environment safeguards, with support from the implementation support consultant. The PIU Social Development and Resettlement Cell has 17 staff and will conduct direct purchase and resettlement activities, supported by three NGOs and social experts from the IECs; the latter will include a team of environmental, resettlement and social development specialists to supervise implementation of the EMP by the contractor and the resettlement plans. Details on safeguard implementation arrangements and key positions are in the PAM. The PIU is familiar and experienced with international resettlement and environmental standards. An initial coordination and training safeguards workshop will be carried out by ADB and the IECs, prior to construction, for PIU staff and the contractors. If required, training will also be conducted during construction.

#### **F. Summary of Risk Assessment and Risk Management Plan**

39. Major risks and mitigating measures are described in detail in the risk assessment and risk management plan.<sup>25</sup> The assessment categorizes all risks as *moderate* or *low*, with the integrated benefits and impacts expected to outweigh the costs.

### **IV. ASSURANCES**

40. The government and GOK have assured ADB that implementation of the project shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and loan documents.

41. The government and GOK have agreed with ADB on certain covenants for the project, which are set forth in the draft loan and project agreements.

### **V. RECOMMENDATION**

42. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$346,000,000 to India for the Karnataka State Highways Improvement III Project, from ADB's ordinary capital resources, in regular terms, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao  
President

16 November 2017

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<sup>24</sup> Resettlement Plan (accessible from the list of linked documents in Appendix 2).

<sup>25</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

### DESIGN AND MONITORING FRAMEWORK

<b>Impact the Project is Aligned with</b>			
Mobility and access to economic opportunities improved (Three-Year Action Agenda) <sup>a</sup>			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting Mechanisms</b>	<b>Risks</b>
<b>Outcome</b> Road transport efficiency and safety in Karnataka improved	By 2024: a. Movement of people and goods on rehabilitated roads, as measured by annual average daily traffic, increased by 40% (2015 baseline: 3,967 PCU/day) b. Average travel time on the project roads reduced by 20% (2015 baseline: 1.8 minutes/km) c. Vehicle operating cost (economic) on the project roads reduced by 25% (2015 baseline: ₹7.70 per km for cars and ₹20.60 per km for medium trucks) d. Fatalities on the project roads reduced by 10% (2015 baseline: 0.05 fatalities/PCU/day).	a.–d. Completion report, submitted by independent engineering consultant and approved by KPWD	Transport demand is impacted by severe economic reversals in Karnataka.
<b>Outputs</b> 1. State highways upgraded	By 2023: 1a. At least 419 km of state highways upgraded to 2 lanes with paved shoulders or 4 lanes under hybrid-annuity contracts (2017 baseline: 0) 1b. Road safety features benefitting the elderly, women, children and the disabled installed in at least 22 locations <sup>b</sup> (2017 baseline: 0)	1a.–b. Quarterly progress reports by the project implementation unit	Major turnover in key project staff during implementation
2. Road safety measures on state highways installed	By 2023: 2a. Road safety audit completed on state highways in the core road network. (2017 baseline: Not completed) 2b. Accident mitigation measures implemented for at	2a.–b. Quarterly progress reports by the project implementation unit	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	least 12 identified accident spots (2017 baseline: 0)		
3. Institutional capacity and efficiency of KPWD improved	By 2023: 3a. Certification documentation and audit for ISO 9001:2015 completed in at least 150 sub-divisional offices of KPWD. (2017 baseline: 0)  3b. Certification and documentation and audit for ISO 14001:2015 completed in at least 40 divisional offices in KPWD. (2017 baseline: 0)  By 2019: 3c. Public response system and complaint-handling mechanism established (2017 baseline: Not established)	3a.–c. Completion certificate by KPWD	
<p><b>Key Activities with Milestones</b></p> <p><b>1. State highways upgraded</b>                      1.1 Select, engage and mobilize independent engineering consultants by Q1 2018.                      1.2 Award contracts for upgrading about 41 km of state highways by Q2 2018 and complete construction by Q4 2023.                      1.3 Conduct post-implementation measurement of indicators by KPWD by Q4 2024.</p> <p><b>2. Road safety measures on state highways installed</b>                      2.1 Recruit consultants for conducting road safety audit by Q4 2018.                      2.2 Complete road safety audit and identification of improvement measures by Q1 2020.                      2.3 Complete implementation of identified road safety measures by Q4 2023.</p> <p><b>3. Institutional capacity and efficiency of KPWD improved</b>                      3.1 Mobilize consultants for public response system by Q4 2018.                      3.2 Commence design of public response system and complaint handling mechanism by Q1 2019.                      3.3 Establish public response system and complaint handling mechanism by Q4 2019.                      3.4 Mobilize consultants for systems assessment and certification by Q1 2021.                      3.5 Commence certification audit and documentation by Q2 2022.                      3.6 Complete implementation of ISO 9001:2015 and ISO 14001:2015 in identified divisional and sub-divisional offices of KPWD by Q1 2023.</p>			



<p><b>Project Management Activities</b></p> <p>Establish project implementation units by Q1 2018.</p> <p>Make available counterpart funds by Q1 2018.</p> <p>Complete resettlement plan activities by Q3 2019.</p>
<p><b>Inputs</b></p> <p>Asian Development Bank: \$346 million (loan)</p> <p>Government of Karnataka: \$202 million</p> <p>Private sector: \$107 million</p>
<p><b>Assumptions for Partner Financing</b></p> <p>Not applicable</p>

ISO = International Organization for Standardization; km = kilometer; KPWD = Karnataka Public Works, Ports, and Inland Water Transport Department; PCU = passenger car units; Q = quarter.

<sup>a</sup> Government of India, Niti Aayog. 2017. *Three-Year Action Agenda (2017–18 to 2019–20)*. New Delhi.

<sup>b</sup> Features include covered drains, footpaths, marked pedestrian crossings and walkways, safety warning signs, bus shelters, and safety signage.

Source: Asian Development Bank.

### LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=42513-014-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Transport (Road Transport [Nonurban])
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Economic and Financial Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Risk Assessment and Risk Management Plan
11. Initial Environmental Examination: Chintamani–Andhra Pradesh border road
12. Initial Environmental Examination: Kollegal–Hannur road
13. Initial Environmental Examination: Gadag–Honnali road
14. Initial Environmental Examination: Magadi–(near) Somwarpet road
15. Initial Environmental Examination: Bengaluru–Magadi—SH85-NH75 road via Chikkamudigere and Iyandahalli
16. Resettlement Plan: Magadi–(near) Somwarpet road
17. Resettlement Plan: Chintamani–Andhra Pradesh border road
18. Resettlement Plan: Kollegal–Hannur road
19. Resettlement Plan: Bengaluru–Magadi–SH85-NH75 road via Chikkamudigere and Iyandahalli
20. Resettlement Plan: Gadag–Honalli road