

**PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: PIDA46601

Project Name	Anhui Road Maintenance Innovation and Demonstration Project (P153173)
Region	EAST ASIA AND PACIFIC
Country	China
Lending Instrument	Investment Project Financing
Project ID	P153173
Borrower(s)	People's Republic of China
Implementing Agency	Anhui Provincial Transport Department
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	21-Jul-2016
Date PID Approved/Disclosed	27-Jul-2016
Estimated Date of Appraisal Completion	20-May-2016
Estimated Date of Board Approval	01-Sep-2016
Appraisal Review Decision (from Decision Note)	The chair authorized the team to appraise the project.

I. Project Context

Country Context

1. China has achieved remarkable economic growth in the past three decades and has lifted more than 600 million people out of poverty. However, the growth has not been spread evenly throughout the country. Over 170 million people still live below the US\$1.25 per day international poverty line, and there are growing disparities between the more prosperous eastern/coastal regions and the western and central provinces. Income per capita in the western and central provinces is less than half of income per capita in some coastal provinces.

2. Anhui Province, while located in eastern China, has not been an equal beneficiary in the growth of the last three decades. Compared to its neighbors to the east, Zhejiang and Jiangsu Provinces, Anhui has lagged prominently behind in economic development. Anhui's Gross Domestic Product (GDP) reached US\$5,500 per capita in 2014, which was about 47 percent (US\$11,600) and 42 percent (US\$13,000) of the levels of the more prosperous Zhejiang and Jiangsu provinces respectively.

3. In order to reduce development disparities between regions and promote more inclusive growth and share the benefits of urbanization more widely, the Government of China launched the "Rise of Central China Plan" in 2004. The Plan aimed to accelerate the development of its central regions covering six provinces: Anhui, Shanxi, Henan, Hubei, Hunan and Jiangxi. In line with the

Government's initiative, Anhui Provincial Government launched a strategy of "Development of the East", focusing on transport as one of the priorities to expedite the province's connections with the more wealthy regions of the Yangtze Delta.

4. The May 2015 national development strategy "One Road, One Belt" to establish the New Silk Road Economic Belt, linking China with Europe through Central and Western Asia, is opening new opportunities for Anhui's development. The framework of "One Road, One Belt" characterizes Anhui Province as the inland region with vast landmass, rich human resources and strong industrial foundation that will prosper with a better transport corridor connecting the eastern, central and western regions.

Sectoral and institutional Context

5. The Highway Sector in China. The proposed project has been developed in the context of China's renewed focus on the maintenance of highway assets created during the last two decades, with an emphasis on asset management system reform and innovation. This is in line with the Government's top priorities in the 13th Five-Year Plan (2016-2020) that focuses on continued economic development with an emphasis on reform and innovation, quality over quantity, and fostering urbanization in a sustainable manner.

6. China currently has the second largest road network and the longest expressway network in the world. China's highway network has expanded greatly since economic reforms began in 1978, increasing from about 900,000 km in 1981 to a total of 4.46 million km in 2014. China's long-term target for total road length is about 5 million km. Future expansion will mostly be limited to completing missing links and extending the network to less developed regions in the western and central parts of China.

7. Sector Institutions. The Ministry of Transport (MoT) is responsible for the overall administration of the highway sector and the development of national sector plans, strategic programs, policies, and technical standards, while the provincial governments are responsible for developing, financing and maintaining national and provincial highways in their jurisdictions. The provincial Departments of Transport (DoTs) are overall responsible for the construction and maintenance of national and provincial highways (trunk highways) in their respective provinces, though some provinces have further decentralized some of these responsibilities. Lower level governments are responsible for rural and urban roads in their jurisdictions. China's expressway network is developed, operated and maintained by special purpose expressway companies that are established by each province, which collect tolls to repay capital costs and cover operation and maintenance expenditures.

8. Road maintenance in China has been underfunded and is carried out with little commercial sector participation and performance culture. Road maintenance is exposed to challenges such as: lack of scientific basis for asset maintenance planning and programming; little modernization; lack of a performance culture and accountability for results; and budgetary allocations for maintenance well below the required level. According to one study, China needs an estimated US\$90 billion for the construction and maintenance of non-tolled national and provincial roads and rural roads (US\$55 billion for construction and US\$35 billion for maintenance) each year from 2010 to 2020 under a "business as usual" scenario. However, current annual government road funding for the same period is estimated to be only US\$56 billion. This funding shortfall is recognized by the Chinese Government; MoT reported that in 2010 the budget allocated was about US\$32 billion, while the

demand was US\$48 billion.

9. Many provinces in China have implemented the China Road Asset Management System (CRAMS), a Chinese version of an asset management system built around international practices, which offers several modules relevant to the management of roads and bridges. However, in several provinces, including Anhui, implementation has not been successful due to: (i) lack of staff capacity; (ii) weak integration with several other computerized systems that hold overlapping data with CRAMS; (iii) lack of budgets to maintain and upgrade CRAMS software; and (iv) lack of business reforms needed to adopt CRAMS outputs in decision-making. Maintenance decisions in many provinces are still based on basic reactive approaches, and not on more appropriate preventive asset management approaches. Moreover, the preventive maintenance approach is not integrated into the reconstruction and rehabilitation program.

10. The commercial sector (which includes State Owned Enterprises) is not involved in road maintenance planning or programming for highways and provincial roads. However, it delivers rehabilitation and periodic maintenance works through output based contracting methods (often referred to as "conventional" or "traditional" model). Routine maintenance works and small scale reconstruction are most often delivered by ineffective force account. The involvement of the commercial sector in programming has been piloted on a small scale, for instance through performance based contracting of routine maintenance works to contractors or to micro-enterprises.

11. MoT has recognized that highway maintenance has lagged behind highway construction and is now encouraging provincial DoTs to focus their financing and organizational resources toward maintaining the road network. Chinese road authorities are increasingly looking for efficient and effective methods for improving maintenance planning, programming and delivery.

12. The Anhui Highway Sector. Highway maintenance programming in Anhui Province is guided by Anhui Provincial Highway Maintenance Management, whose objectives are to: (i) maintain the Pavement Quality Index (PQI) of national and provincial highways at 80 percent or higher, with 90 percent of the roads in good condition; (ii) improve management capacity and maintenance; (iii) increase the annual length of roads receiving maintenance from 13 percent to 18 percent; (iv) repair at least 97 percent of all road damage from flooding, with less than 3 percent recurrent events; (v) reach 100 percent township administration of rural highway maintenance; (vi) complete emergency management systems; (vii) apply new technologies for 60 percent of works; and (viii) develop a highway maintenance manual. This project is designed to assist Anhui Highway Administration Bureau (AHAB) in meeting a selection of these objectives.

13. The highway network of Anhui Province has more than doubled over the last eight years, from over 71,000 km in 2006 to about 174,000 km by the end of 2014. The total network of national and provincial trunk roads, which are the focus of this project, now comprises over 13,000 km of paved roads. In 2014, passenger traffic volume accounted for 1.31 billion persons and freight volume accounted for 3.15 billion tons.

14. In 2014 over 6,800 km of national and provincial highways were inspected and evaluated for maintenance. The survey found that the average network PQI was 83.6 (good or better condition) and that only 76 percent of the roads have a PQI of 80 or higher (falling well below the goal of 90 percent or more), leaving 24 percent of the network in fair, poor or bad condition. As the survey was conducted only on the main corridors, the picture for the whole network may be worse. The

roads included in the project has an average PQI of 60, far lower than the average.

15. AHAB is responsible for the regulation and guidance of national and provincial trunk highway maintenance, while the transportation authorities of municipalities are responsible for the maintenance and supervision of trunk highways, as well as fund raising to supplement the subsidies provided by provincial governments.

16. While rehabilitation and periodic maintenance on a project basis is contracted to commercial enterprises using traditional output based (ad measurement) contracts, in-house (input-based) force account maintenance teams carry out routine maintenance works on trunk highways.

17. As part of a decentralization reform in Anhui, municipalities and counties are now responsible for a significant share of the road budget. The provincial finance department provides subsidies (derived from fuel tax and from the central government) to municipalities for periodic and rehabilitation repairs. These subsidies are allocated (earmarked) on a per km basis for specific projects at rates of US\$100,000 - 150,000 per km depending on road class. Municipalities and counties are responsible for the remaining expenses from general fiscal revenues.

18. Road budgets vary greatly from year to year (in 2010 the budget was about US\$170 million and in 2014 it was about US\$320 million), and are far below current estimated needs. The Provincial Highway Bureau estimates the total annual needs for rehabilitation and periodic maintenance to be about US\$630 million, i.e., about double the 2014 allocation. The allocation for routine maintenance and small scale reconstruction has been more stable at about US\$200 million a year. There is also a financing gap for these works and local authorities sometimes assist with own funds on an ad hoc basis to close or minimize the gap.

19. Challenges in Road Maintenance in Anhui. As in many other provinces in China, Anhui's focus on maintenance is recent, and the capacity for road maintenance is much lower than for road development. There are weaknesses in most asset management related capabilities, e.g., funding, systems, governance and maintenance delivery. The decentralization reform has resulted in some uncertainties about roles, accountability and coordination between different stakeholders, and has also pushed road asset management to administrative levels that are less developed compared to the provincial levels, which were formerly undertaking these obligations. As a result, road asset management is experiencing poor planning and design.

20. CRAMS is in place in most of the municipalities and data for the main roads are collected on a two-year cycle; however, the system output is not well used in decision-making and business processes have not been reformed to take advantage of the capabilities linked to CRAMS. It is reported that rehabilitation and periodic maintenance works are delivered effectively. However, the data used for their design is very basic, which raises concerns on the efficiency of investments. Moreover, quality problems have been reported. Routine maintenance is applied with low efficiency, which the road authorities find difficult to improve given that work is done in-house, the work force is aging, and there are constraints in hiring replacements to retiring staff.

21. National regulations require provinces to maintain maintenance emergency capabilities. The centers in Anhui are outdated (aging equipment), understaffed, and lack skilled personnel, leading to road closures longer than necessary during emergencies.

22. In order to support the recent increased focus on maintenance, recognizing the significant challenges with many of the asset management related capabilities, and the need of improving performance, Anhui Province has proposed a project focusing on: improving road management capacity at lower levels of administration; improving maintenance delivery through maintenance commercialization; adopting new preventive maintenance technologies; and improving emergency response capabilities.

II. Proposed Development Objectives

The Project Development Objective (PDO) is to improve highway maintenance delivery and asset management capacity in the participating municipalities and county in Anhui Province.

III. Project Description

Component Name

Component A: Road Asset Management System Upgrade

Comments (optional)

This component will finance improvements in business processes through, inter alia: (a) the preparation of analyses and studies, system design, and provision of technical assistance; (b) the development and/or upgrading of computerized asset management systems, including road databases, asset management applications, and information publishing systems; (c) systems operation and management; and (d) training related to systems operation.

Component Name

Component B: Road Maintenance Commercialization

Comments (optional)

This component will finance: (a) rehabilitation, upgrading and maintenance of about 775 km of selected roads in the participating municipalities/county (such as base reconstruction, resurfacing, paving and/or asphalt concrete overlaying, as the case may be, including associated shoulder, sidewalks, drainage, masonry, signage, lighting and ancillary works plus road safety improvements), utilizing a Performance-Based Contracting modality; and (b) provision of technical assistance, including the carrying out of related studies.

Component Name

Component C: Innovative and Preventive Maintenance Technologies

Comments (optional)

This component will finance: (a) application of innovative maintenance technologies for improvement, rehabilitation and resurfacing works on about 447 km of selected national and provincial roads, using traditional ad-measurement contracting models; and (b) provision of technical assistance, including the carrying out of related studies.

Component Name

Component D: Emergency Response Capacity

Comments (optional)

This component will finance: (a) construction of maintenance emergency response centers in Hefei and Chouzhou municipalities; (b) installation of required maintenance emergency equipment in six (6) emergency centers; and (c) development of emergency management systems in the participating municipalities/county, and provision of related technical assistance.

Component Name

Component E: Institutional Capacity Building

Comments (optional)

This component will finance provision of Project implementation support, including technical assistance activities, carrying out of sector strategic studies, monitoring and evaluation, as well as project management-related training, capacity building, and study tours.

IV. Financing (in USD Million)

Total Project Cost:	296.40	Total Bank Financing:	150.00
Financing Gap:	1.62		
For Loans/Credits/Others			Amount
Borrower			144.78
International Bank for Reconstruction and Development			150.00
Total			294.78

V. Implementation

Anhui Provincial Transport Department (APTD) will continue to provide strategic guidance and advice during implementation of the proposed project. The Foreign Capital Utilization Office (FCUO) will serve as provincial Project Management Office (PMO) and will be jointly responsible for day-to-day project implementation together with AHAB. While FCUO will provide overall coordination, AHAB will provide sectorial administration, instructions and supervision of project activities. FCUO and AHAB will be responsible for project management, procurement, safeguards, monitoring and reporting, and communication with the Bank. AHAB will be responsible for implementation of Components A and E (Studies); FCUO will be responsible for implementation of Component E (Training).

Highway Bureaus of the respective project municipalities and county will serve as Project Implementing Units (PIUs) and will implement project activities in their jurisdiction under the provincial PMO and AHAB and will be overseen by the transport authorities (Municipal/County Department of Transport) in each municipality/county. Each municipality and county will setup coordination commission under their Transport Bureaus to provide coordination within their respective jurisdiction.

Quarterly progress meetings will be held with all stakeholders. In addition to this, regular meetings will be conducted (based on an "as needed" basis; though in the beginning more frequent than later in the project), which will provide a mechanism to share knowledge and learning between participating municipalities and county, and undertake workshops and training on focused topics.

VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	x	
Natural Habitats OP/BP 4.04	x	
Forests OP/BP 4.36		x
Pest Management OP 4.09		x
Physical Cultural Resources OP/BP 4.11	x	
Indigenous Peoples OP/BP 4.10		x

Involuntary Resettlement OP/BP 4.12	x	
Safety of Dams OP/BP 4.37		x
Projects on International Waterways OP/BP 7.50		x
Projects in Disputed Areas OP/BP 7.60		x

Comments (optional)**VII. Contact point****World Bank**

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