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## The World Bank

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Report No. P-6215-CHA

#### MEMORANDUM AND RECOMMENDATION

OF THE

PRESIDENT OF THE

#### INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

TO THE

EXECUTIVE DIRECTORS

ON A

PROPOSED LOAN

IN AN AMOUNT EQUIVALENT TO \$380 MILLION

TO

THE PEOPLE'S REPUBLIC OF CHINA

FOR A

NATIONAL HIGHWAY PROJECT

MARCH 22, 1994

MICROGRAPHICS

Report No: P- 6215 CN

Type: MOP

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#### CURRENCY EQUIVALENTS

(as of March 1994)

Currency name = Renminbi

Currency unit = Yuan (Y) = 100 Fen

\$1.00 = Y 8.70 \$0.115 = Y 1.00

#### FISCAL YEAR

January 1 - December 31

#### WEIGHTS AND MEASURES

1 meter (m) = 3.28 feet (ft) l kilometer (km) = 0.62 mile (mi) 1 square meter (m<sup>2</sup>) = 10.76 square feet (sq ft) 1 square kilometer (km²) = 0.4 square miles (sq mi)  $1 \text{ hectare (ha)} = 0.01 \text{ km}^2$ = 2.47 acres (ac) = 15 mu 1 mu = 666.7 sq m = 0.0667 ha l kilogram (kg) = 2.2046 pounds (1bs) 1 metric ton (m ton) = 2,204 pounds (1bs)

#### ABBREVIATIONS AND ACRONYMS

EAP - Environmental Assessment
EAP - Environmental Action Plan
GOU - Government of China

GOVAI - Gross Output Value of Agriculture and Industry

IRIP - Interconnecting Roads Improvement Program

MOC - Ministry of Communications
NTHS - National Trunk Highway System

#### CHINA

#### NATIONAL HIGHWAY PROJECT

#### Loan and Project Summary

Borrower: People's Republic of China

Beneficiaries: Hebei Province and Henan Province

Amount: \$380 million equivalent

Terms: 20 years, including 5 years of grace, at the Bank's standard

variable interest rate

Financing Plan:		Local	Foreign (\$ million)	<u>Total</u>
	Hebei Provincial Government	252.8	7.2	260.0
	Henan Provincial Government	139.6	2.8	142.4
	Central Government	112.3	-	112.3
	IBRD - Hebei Province	-	240.0	240.0
	IBRD - Henan Province	•	140.0	140.0
	Total Financing	504.7	390.0	<u>894.7</u>

Economic Rate

of Return: 24 percent

Poverty Category: Not applicable

Staff Appraisal

Report: Report No. 12552-CHA

Maps: IBRD 24851, 24852, 24853, 24944

# MEMORANDUM AND RECOMMENDATION OF THE PRESIDENT OF THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT TO THE EXECUTIVE DIRECTORS ON A PROPOSED LOAN TO THE PEOPLE'S REPUBLIC OF CHINA FOR A NATIONAL HIGHWAY PROJECT

- I submit for your approval the following memorandum and recommendation on a proposed loan to the People's Republic of China for the equivalent of \$380 million to help finance the National Highway Project. The loan would be at the Bank's standard variable interest rate, with a maturity of 20 years, including five years of grace. The proceeds of the loan would be onlent to Hebei and Henan Provinces for 20 years, including five years of grace, at a rate equivalent to 85 percent of the rate payable to the Bank by the Borrower with a 0.75 percent per annum commitment fee on the unwithdrawn balance. Hebei and Henan Provinces would bear the foreign exchange risk.
- Country and Sector Background. China has consistently achieved strong economic growth since structural reform commenced in the late 1970s, which has placed severe pressure on the transport sector and revealed serious capacity constraints limiting development and trade in important corridors. Past transport investment, limited to a low 1.5 percent of GDP, concentrated mainly on railways leaving highway networks underdeveloped. Railway capacity constraints coupled with emergence of a strong, diverse rural industry sector as well as growing interprovincial trade and mobility has greatly accelerated demand for road transport facilities, which are gaining prominence in recent investment plans. This pattern is true of Hebei and Henan Provinces, which contain 151 million people, applying especially in the heavily traveled north-south corridor along National Highway 107 (NH107) connecting Beijing and Hong Kong.
- Investment in and operation of China's highway network is chiefly a 3. responsibility of provincial and local governments guided by the central State Planning Commission and Ministry of Communications. In addition to improvement and maintenance of local networks, the government's current highway planning and investment strategy centers on the phased development of a national trunk highway system (NTHS). In the long term, 12 interprovincial trunk roads totaling 30,000 km would be upgraded in stages to bring early relief to bottlenecks in congested corridors serving heavy demand, including this proposed biprovincial undertaking by Hebei and Henan for NH107. To date, only a tiny fraction of the NTHS program has been addressed under the Eighth National Development Plan (1991-95) but investment is expected to accelerate sharply during the Ninth Plan period. Issues slowing the modernization and expansion of China's highway infrastructure, and being addressed through the Bank's assistance program, include institutional reform, financial constraints and inexperience in planning and construction of intercity expressways.
- 4. Both Hebei and Henan Provinces, in addition to ensuring adequate road maintenance, have given priority to improving their trunk road systems as well as expanding their interconnecting and rural road networks to provide better access and thereby stimulate economic activity and personal mobility.

Importantly, to ensure more efficient planning and utilization of their highway investments, they are also giving attention to removing administrative and physical barriers to interprovincial trade as well as improving their highway planning capabilities and interprovincial coordination of highway construction works.

- Project Objectives. The project has been designed to (a) relieve transport congestion and improve the integration of interregional commerce by assisting in the development of a key element of the NTHS in the principal North-South transport corridor; (b) facilitate access within the area of influence, ensuring that the benefits of improving the trunk road extend to a wide area by rehabilitating and expanding the critical sections of the major roads interconnecting with the section of National Highway 107 concerned; (c) strengthen the interprovincial coordination of trunk road operations and promote the free flow of goods and travelers between Hebei and Henan by implementing a coordination program and providing technical assistance for interprovincial traffic facilitation; and (d) improve road investment planning, by improving highway capacity guidelines, and construction management and maintenance by strengthening the provincial highway agencies and providing technical assistance.
- Project Description. The project comprises (a) the construction of the 340 km Shijiazhuang-Xinxiang four-lane divided, access-controlled highway, of which 216 km are in Hebei Province and 124 km in Henan Province; (b) an Interconnecting Roads Improvement Program (IRIP) in Hebei and Henan for upgrading 14 provincial highways (160 km) interconnecting at interchanges with the Shijiazhuang-Xinxiang highway; (c) construction supervision of the highway and the IRIP components; (d) the coordination of the interprovincial highway operations and a study of facilitation of interprovincial traffic flows; (e) a study of highway capacity; (f) staff training; and (g) purchase of equipment for highway operation and maintenance, road laboratories, road data bank, and pavement management system.
- 7. Project Implementation. The proposed project would be carried out by Hebei and Henan Provinces. The project cost is estimated at \$894.7 million equivalent, with a foreign exchange component of \$390.0 million equivalent (44 percent), excluding taxes and duties of about \$12.4 million equivalent. Taxes and duties would not be financed from the proceeds of the loan. The Bank would finance \$380.0 million equivalent (97 percent of the foreign exchange and 42 percent of the total cost), of which \$240.0 million would be for Hebei Province and \$140.0 million for Henan. Retroactive financing of \$1.2 million is recommended for consultants for training and supervision of the highway construction. Expenditures incurred after February 1, 1994 would be eligible for retroactive financing. The project costs and financing plan are shown in Schedule A. Amounts and methods of procurement and disbursements, and the disbursement schedule are shown in Schedule B. A timetable of key project processing events and the status of Bank Group operations in China are given in Schedules C and D, respectively. The Staff Appraisal Report, No. 12552-CHA dated March 22, 1994, is being distributed separately.
- 8. <u>Project Sustainability</u>. China has a good record in the sustainability of its highway investments, including those financed by the Bank. The physical components of the project would be sustainable subject to adequate

budgetary and institutional support from the Provinces to assure an appropriate level of maintenance. Revenues for road maintenance are expected to continue to increase with traffic, and toll revenues from the proposed highway would provide additional resources. Toll levels would be determined taking into consideration the full cost recovery for expressway maintenance and operation, and maintenance capacity will be improved under the project. A sustainable flow of economic benefits from the project is also expected. Since the late 1970s China, and the area of influence of the project in particular, have experienced a high rate of economic growth, which translated into very high transport demand. The existing highway's antiquated design, heavy congestion, and resulting high transport costs would ensure that, with the traffic volumes expected in the future, the project's flow of economic benefits would be sustained.

- Lessons Learned from Previous Bank/IDA Involvement. The lessons learned from the implementation of previous Bank Group-financed highway projects of over \$1 billion include the need for careful review of highway design with the help of external assistance, adoption of stricter prequalification criteria for contractors, advance preparation of bidding documents, and early definition of the organizational arrangements for construction supervision. The lessons learned have been incorporated in the formulation of the proposed project. A team of international consultants has been involved in the preparation and review of the highway design. The procurement preparation process for this project has been running parallel with project preparation, reducing the risk of initial delay in implementation following effectiveness of the Bank loan. Furthermore, the selection of foreign supervisors and other preparatory work for construction supervision is under way, assuring timely mobilization of the supervision personnel. Highway contracts under the project would be sized and packaged to attract international and large, experienced Chinese contractors.
- Rationale for Bank Involvement. The Bank's involvement in the highway sector is consistent with the Country Assistance Strategy for China presented to the Board in August 1993, and with its further elaboration in the report: Highway Development and Management Issues, Options, and Strategies (Report No. 11819-CHA), dated February 24, 1994. Infrastructure bottlenecks, and in particular inadequate transport infrastructure, were cited as one of the key constraints to growth. It was also noted that, given the severe imbalance in the Chinese transport system toward the railways, priority will be given to the development of the NTHS and the upgrading of the provincial road networks. Highway lending will also be expected to address environmental protection, resettlement, road safety, improved methodologies for investment analysis, and transfer of technology for design and implementation. Furthermore, the Bank will provide assistance for institutional development, sectoral reforms, enhancement of the quality of construction and modernization of highway operations and its management.
- 11. The proposed project complies with the Bank's Country Assistance Strategy for China, as presented to the Board on August 3, 1993. Central to the Bank Group's assistance strategy for China is the support to economic reforms and the modernization of productive sectors. By helping China to plan and build the NTHS, of which the project highway is a key element, the Bank supports this essential long-term solution to the country's serious transport

problems, removing bottlenecks, facilitating interprovincial traffic and promoting long-distance transport. This would help arrest a growing regionalism while furthering the liberalization, facilitation and cost reduction of transport-key requirements for market-oriented reforms to succeed. The lack of interprovincial coordination for the preparation, implementation and operation of interprovincial highways is a pressing issue. Appropriate coordination arrangements were affirmed during project preparation and will be further developed during its implementation and operation under a coordination strengthening plan.

- 12. Further to the basic objective of system integration, priority attention is given under the project to the improvement of interconnecting roads at all interchanges of the project highway. The project will thus help to counter the prevalent GOC approach to confine the development of the NTHS to the trunk roads themselves, benefiting long-distance, end-to-end traffic and seriously limiting any sharing in the project benefits by the area along-side the expressway. The project would also introduce institutional and technical improvements to highway planning and management. Growing attention is being given to removing administrative and physical barriers to interprovincial trade, and to strengthening the development and management of the highway system. The project's traffic facilitation and highway capacity studies will provide guidance, both to the provinces and to the country, on ways to plan and implement better cooperation in highway improvements and utilization, thus supporting key objectives of the Bank's highway sector assistance strategy.
- Agreed Actions. During negotiations, agreement was reached with the Borrower regarding the onlending arrangements for the proceeds of the loan to Hebei and Henan Provinces. Assurances were also obtained from Hebei and Henan Provinces concerning: (a) the improvement of interconnecting roads in the Shijiazhuang and Anyang areas; (b) the undertaking of interprovincial traffic facilitation and highway capacity studies, and a staff training program; (c) the organizational arrangements and execution of a Highway Operation Coordination Plan; (d) the execution of Environmental Action Plans (EAPs) satisfactory to the Bank; (e) resettlement under the project in accordance with plans satisfactory to the Bank; (f) the auditing of project accounts and the Special Account by independent auditors; and (g) submission of recommendations regarding the rationale for setting appropriate toll levels for the Shijiazhuang-Xinxiang Highway.
- Environmental/Resettlement Aspects. The Environmental Assessments (EAs) have been prepared for Hebei by the Highway Research Institute and for Henan by the Henan Provincial Environmental Protection Institute. Both EAs were completed in 1993. The assessments indicate that the highway will not affect ecologically sensitive areas and, if appropriate actions are taken, the project will result in no adverse environmental impacts. Based on the findings of the EAs and discussions between representatives of the Hebei and Henan Provinces and Bank staff, Environmental Action Plans (EAPs) have been prepared that specify the measures and organizational monitoring arrangements required to mitigate potential adverse effects on the environment during the construction and operation of the highway. The EAPs have been reviewed by Bank staff and found to be satisfactory. Major preventive measures are incorporated in the bid documents for execution under the civil works contracts for both provinces and include actions to mitigate social disruption and potential impacts

on air quality, noise, water management and control of traffic. The highway construction may also affect areas of archaeological significance. Comprehensive cultural relics surveys of these areas have been conducted and programs to find and excavate those relics have been implemented (including 1 million borings at the 13 potential sites) to avoid adverse impacts. Approximately 19,225 persons are expected to be affected by the construction in Hebei, and 9,699 persons in Henan, taking the right-of-way of both the expressway and the interconnecting roads into account. Temporary land use will affect 10,589 persons in Hebei and 344 persons in Henan. All affected by the construction of the highway will be adequately compensated and, when necessary, resettled in accordance with Resettlement Action Plans that have been submitted to the Bank and found to be satisfactory.

- 15. Project Benefits. The main quantifiable benefits associated with the development of the highway and the IRIP roads include a decrease in traffic congestion along the existing highway, reduced travel distances and journey time, and improvement in the condition and capacity of the interconnecting provincial highways, as well as savings in road maintenance costs and improved safety. Benefits from the project would accrue to inter- and intraprovincial trade and people's mobility in the form of lower transport costs and reduced travel time and accident rates. Many of the road users are own-account operators for the producer enterprises and, mostly in the rural areas, a growing segment of privately owned operators and farmers, who would capture the benefits of the project directly. Public freight and passenger services are also likely to respond to increased competition so that transport costs savings would be passed on to the users. At minimum, reduced operating costs would hold future price increases down. Lower transport costs and travel times are expected to increase the proximity of the two provinces to the large consumer markets of Beijing and Tianjin, thus generating the benefit of substantial additional trade. Passengers would, in addition, enjoy the time savings and greater riding comfort offered by the project.
- 16. Institutional benefits accrue from better highway management, maintenance, and utilization through the establishment of a highway coordination plan, the study of highway capacity and the study of interprovincial traffic facilitation, and the provision of modern maintenance equipment. From these project components, substantial (but unquantified) benefits are expected to accrue to infrastructure users through better planned and maintained highways with associated lower vehicle operating costs, and to the provinces through more cost-effective use of investment funds. The proper design of the project highways should reduce the number of accidents, and reduced congestion on the project's existing road should improve conditions for local traffic, including bicycles and agricultural vehicles.
- 17. Risks. Based on Bank experience with ongoing highway projects, the main risk is implementation delays, particularly for the highway components. Particular attention to the preparation of engineering and especially to the prequalification of contractors is expected to mitigate such risk. Both the Hebei and Henan implementing agencies have some experience in expressway construction and with implementation of Bank-financed highway projects. The preparation of the project has benefited substantially from the Bank's similar previous experience in China, as well as from the involvement of MOC, and the assistance of foreign experts in the road design and the preparation of bid-

ding documents and technical specifications. Packaging of contracts to attract large, experienced contractors and the careful formulation of supervision arrangements for regular implementation monitoring and effective quality control are expected to be sufficient safeguards to minimize delays. Interprovincial traffic faces the potential risk that border-crossing impediments would curtail its growth, thus preventing the project from realizing its full benefits. The coordination of expressway operation and the study of interprovincial traffic facilitation are appropriate initial steps for the removal of these impediments.

18. Recommendation. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank and recommend that the Executive Directors approve the proposed loan.

Lewis T. Preston President

Attachments

Washington, D.C. March 22, 1994

CHINA

NATIONAL HIGHWAY PROJECT

# Estimated Costs and Financing Plan (\$ million)

	Local	Foreign	Total	
Works				
Expressways				
Civil works	241.4	242.6	494.0	
E&M works	8.1	32.4	40.5	
Interconnecting roads	21.0	13.5	34.5	
Subtotal	<u>270.5</u>	288.5	559.0	
Supervision of Construction				
Expressway	5.5	6.0	11.5	
Interconnecting roads	0.8	-	0.8	
Subtotal	6.3	6.0	12.3	
Equipment				
Expressway operation & maintenance	2.8	18.4	21.2	
Central laboratory	0.1	0.6	0.7	
Environmental monitoring	0.3	0.4	0.7	
Interconnecting roads maintenance	0.5	5.8	6.3	
PMS/RDB	0.1	0.7	0.8	
Subtotal	3.8	25.9	29.7	
Staff Training				
General training	<b>v.1</b>	1.2	1.3	
Supervision training	0.3	1.0	1.3	
Subtocal	0.4	2.2	2.6	
<u>Studies</u>				
Highway capacity Interprovincial traffic facilitation	0.5	0.5	1.0	
and coordination	0.1	0.4	0.5	
Subtotal	0.6	0.9	<u>1.5</u>	
Base Cost /a	<u> 281.6</u>	<u>323.5</u>	605.1	

	Local	Foreign	Total
Physical contingency	27.7	29.4	57.1
Price contingency	154.6	37.1	191.7
Base Cost with Contingencies	463.9	390.0	<u>853.9</u>
Land Acquisition & Resettlement			
Expressway	35.4	-	35.4
Interconnecting roads	5.4	-	5.4
Subtotal	40.8	=	40.8
Total Project Costs	504.7	390.0	894.7/1
Financing Plan			
Hebei Provincial Government	252.8	7.2	260.0
Henan Provincial Government	139.6	2.8	142.4
Central Government	112.3	-	112.3
IBRD - Hebei Province	-	240.0	240.0
IBRD - Henan Province	-	140.0	140.0
Total Financing	<u>504.7</u>	390.0	894.7

<sup>&</sup>lt;u>/a</u> Identifiable taxes and duties of about \$12.4 million are not shown in the project costs.

Of which \$570.9 million in Hebei Province and \$323.8 million in Henan Province.

CHINA
NATIONAL HIGHWAY PROJECT

# Procurement Methods and Disbursements (\$ million)

	Procurement method				Total
	ICB	LCB	Other	NBF	project cost
Civil Works					
Highway	713.9	26.5	5.5 <u>/b</u>	•	745.9
•	(309.8)	(11.6)	(2.8)		(324.2)
Interconnecting roads	•	50.1	-	-	50.1
-		(16.4)			(16.4)
Equipment	17.6	-	11.0 <u>/c</u>	5.7	34.3
	(17.6)		(11.0)		(28.6)
Consultants and Training /a					
Supervision of construction	-	-	17.7	-	17.7
<u>-</u>			(7.3)		(7.3)
Highway capacity study	-	-	1.4	-	1.4
			(0.7)		(0.7)
Traffic facilitation study	~	-	0.6	-	0.6
			(0.4)		(0.4)
Training	•	•	3.0	-	3.0
			(2.4)		(2.4)
Land Acquisition and Resettlement	-	-	-	40.8	40.8
<u>Total</u>	<u>731.5</u>	<u>77.5</u>	39.2	46.5	894.7
	(327.4)	(28.0)	(24.6)		(380.0)

NBF = Not Bank-financed.

- Notes: (1) Figures in parentheses represent the amounts financed by the Bank Group.
  - (2) All figures are rounded and include estimated physical and price contingencies but exclude the cost of land acquisition and resettlement, which is shown as a separate component.

<sup>1</sup>a Selection of consultants according to the Bank's guidelines.

<sup>/</sup>b Direct negotiations with the local electricity companies.

<sup>1</sup>c Local and international shopping and limited international bidding.

### Disbursements

Category	Amount (\$ million)	Percent
Works	•	
Highway	242.6	50% of total expenditures
E&M Supply & Installation	32.4	80% of total expenditures
Interconnecting Roads		•
Improvement Program	13.5	39% of total expenditures
Equipment	25.9	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 75% of local expenditures for other items procured locally
Consultants/Training	9.1	100% of total expenditures
Unallocated	56.5	•
<u>Total</u>	380.0	

## Zstimated Disbursements:

Bank Group FY	<u>1995</u>	<u> 1996</u>	<u>1997</u> (\$ mi	<u>1998</u> 111on)	<u>1999</u>	2000
Annual	65	76	80	76	64	19
Cumulative	65	141	221	297	361	380

#### **CHINA**

#### NATIONAL HIGHWAY PROJECT

#### Timetable of Key Project Processing Events

(a) Time taken to prepare: 22 months

(b) Prepared by: Hebei and Henan Provincial Communica-

tions Departments

(c) First Bank Group Mission: March 1992

(d) Appraisal mission departure: June 29, 1993

(e) Date of negotiations: February 28, 1994

(f) Planned date of effectiveness: June 30, 1994

(g) List of relevant PCRs and PPARs: PCR 10749, June 29, 1992, Highway Proj-

ect, Ln 2539/Cr 1594-CHA

The report was prepared by José M. Veniard (Senior Operations Officer, Task Manager), with Hatim Hajj (Senior Transport Specialist) and Yasuhiro Kawabata (Consultant). Peer reviewers for the project were Renato Schulz (Senior Economist), Paul Cadario (Chief Administrative Officer, Institutional Aspects) and Michel Ray (Senior Highway Engineer). The Division Chief is Richard Scurfield and the Department Director is Nicholas Hope.







