

**Document of  
The World Bank**

**Report No.: 48966**

**PROJECT PERFORMANCE ASSESSMENT REPORT**

**CHINA**

**TRI-PROVINCIAL HIGHWAY PROJECT  
(LOAN 4356-CHA)**

**AND**

**HUBEI-XIAOGAN-XIANGFAN HIGHWAY PROJECT  
(LOAN 4677-CHA)**

**June 17, 2009**

*Sector Evaluation Division  
Independent Evaluation Group (World Bank)*

## Currency Equivalents (annual averages)

*Currency Unit = Yuan, USD1.00 = 7.32 Y (RMB)*

1998	US\$1.00	Y 8.28
1999	US\$1.00	Y 8.27
2000	US\$1.00	Y 8.27
2001	US\$1.00	Y 8.27
2002	US\$1.00	Y 8.27
2003	US\$1.00	Y 8.27
2004	US\$1.00	Y 8.27
2005	US\$1.00	Y 8.20
2006	US\$1.00	Y 7.97
2007	US\$1.00	Y 7.50

## Abbreviations and Acronyms

AA	Alternative Analysis
ADT	Average Daily Traffic
BDH	Baotou-Dongsheng Highway
BDR	Baotou-Dongsheng Road
BFH	Baiinchagan-Fengzhen Highway
CAS	Country Assistance Strategy
CPS	Country Partnership Strategy
DPL	Development Policy Loan
EA	Environmental Assessment
EAP	Environmental Action Plan
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ENPV	Economic Net Present Value
ERR	Economic Rate of Return
FIDIC	Fédération Internationale des Ingénieurs-Conseils
FRR	Financial Rate of Return
FNPV	Financial Net Present Value
GNP	Gross National Product
GOC	Government of China
GRP	Gross Regional Product
GOVAI	Gross Output Value of Agriculture and Industry
GPCD	Gansu Provincial Communications Department
GWH	Guyaozi-Wangquanliang Highway
ICR	Implementation Completion Report
ICB	International Competitive Bidding
IEGWB	Independent Evaluation Group
IMPCD	Inner Mongolia Provincial Communications Department
HPCD	Hubei Provincial Communications Department
HTH	Hekou-Tungouwan Highway
ICB	International Competitive Bidding
ICR	Implementation Completion and Results Report
IFI	International Financial Institution

IMCD	Inner Mongolia Communications Department
LZE	Liugouhe-Zhonghe Expressway
M&E	Monitoring and Evaluation
MOT	Ministry of Transport
MOF	Ministry of Finance
MTE	Medium Truck Equivalent
NCB	National Competitive Bidding
NPCD	Ningxia Provincial Communications Department
NDRC	National Development and Reform Commission
NTHS	National Trunk Highway System
PAD	Project Appraisal Document
PCD	Provincial Communications Department
PDO	Project Development Objective
PMO	Project Management Office
PPAR	Project Performance Assessment Report
QCBS	Quality and Cost Based Selection
RAP	Resettlement Action Plan
RAP	Resettlement Action Plan
RIPA	Roads Improvement Program for Poverty Alleviation
RMB	Renmimbi (China's currency-Yuan)
RRIP	Rural Road Improvement Program
SEPA	State Environment Protection Agency
SOE	State Owned Enterprise
XJH	Xujiamo-Jiepaicun Highway
YXH	Yanchi-Xingren Highway
XXE	Xiaogan-Xiangfan Expressway

## **Fiscal Year**

Government: January 1 to December 31

Director-General, Evaluation	:	Mr. Vinod Thomas
Director, Independent Evaluation Group (World Bank)	:	Ms. Cheryl Gray
Manager, Sector Evaluation Division	:	Ms. Monika Huppi
Task Manager	:	Mr. Peter Freeman



**IEGWB Mission: Enhancing development effectiveness through excellence and independence in evaluation.**

### **About this Report**

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEGWB annually assesses about 25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEGWB staff examine project files and other documents, interview operational staff, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEGWB peer review, Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. IEGWB incorporates the comments as relevant. The completed PPAR is then sent to the borrower for review; the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

### **About the IEGWB Rating System**

IEGWB's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEGWB evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEGWB website: <http://worldbank.org/ieg>).

**Outcome:** The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Risk to Development Outcome:** The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High Significant, Moderate, Negligible to Low, Not Evaluable.

**Bank Performance:** The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Borrower Performance:** The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.



# Contents

<b>KEY STAFF RESPONSIBLE.....</b>	<b>V</b>
<b>PREFACE.....</b>	<b>VII</b>
<b>SUMMARY .....</b>	<b>IX</b>
<b>1. BACKGROUND .....</b>	<b>1</b>
<b>Tri-provincial Highway Project.....</b>	<b>1</b>
<b>Hubei-Xiaogan-Xiangfan Highway Project.....</b>	<b>2</b>
<b>2. PROJECT OBJECTIVES AND COMPONENTS .....</b>	<b>3</b>
<b>3. PROJECT DESIGN .....</b>	<b>7</b>
<b>4. MONITORING AND EVALUATION .....</b>	<b>8</b>
<b>5. IMPLEMENTATION .....</b>	<b>9</b>
<b>Implementation and Implementation Issues.....</b>	<b>9</b>
Project approvals and project content changes.....	9
Traffic safety and the institutional components.....	9
The rural roads .....	10
Safeguards .....	11
Maintenance and supervision practices.....	15
<b>6. RATINGS.....</b>	<b>16</b>
<b>The Tri-provincial Highway Project .....</b>	<b>16</b>
Relevance .....	16
Efficacy .....	16
Efficiency .....	17
Outcome .....	18
Risk to Development Outcome .....	18
Bank Performance.....	18
Borrower Performance .....	19
<b>Hubei-Xiogan-Xiangfan Highway Project.....</b>	<b>19</b>
Relevance .....	19
Efficacy .....	20
Efficiency .....	21
Outcome .....	21
<b>Risk to Development Outcome .....</b>	<b>21</b>
<b>Bank Performance.....</b>	<b>21</b>
<b>Borrower Performance.....</b>	<b>22</b>

<b>7. CONCLUSION AND LESSONS .....</b>	<b>23</b>
<b>ANNEX A: A FRAMEWORK FOR PROJECT IDENTIFICATION AND PREPARATION, AND ITS COORDINATION WITH THE PUBLIC PARTICIPATION PROCESSES.....</b>	<b>25</b>
<b>The public participation processes. ....</b>	<b>27</b>
<b>ANNEX B. BASIC DATA SHEET .....</b>	<b>29</b>
<b>Tables</b>	
<b>Table 1: Project Cost By Component (In US\$ Million Equivalent) .....</b>	<b>6</b>
<b>Table 2: Summary of the PDO Indicator(s): Original Targets and Values at Completion and at PPAR.....</b>	<b>7</b>
<b>Figures</b>	
<b>Figure 1: Schematic Framework for Road Planning Process.....</b>	<b>28</b>
<b>Figure 2: Public Participation Process in the Context of the Planning Process.....</b>	<b>30</b>



## Principal Ratings: Tri-provincial Highway Project (Loan 4356-CHA)

	<i>ICR*</i>	<i>ICR Review*</i>	<i>PPAR</i>
Outcome	Satisfactory	Highly Satisfactory	Satisfactory
Risk to Development Outcome	Negligible to low	Negligible to low	Negligible to low
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

\* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.

### Key Staff Responsible

<i>Project</i>	<i>Task Manager/Leader</i>	<i>Division Chief/ Sector Director</i>	<i>Country Director</i>
Appraisal	Hatim M. Hajj	Jeffrey Gutman	Yukon Huang
Completion	Wenlai Zhang	Junhui Wu	David Dollar

## Principal Ratings: Hubei-Xiaogan-Xiangfan Highway Project (Loan 4590-CHA)

	<i>ICR*</i>	<i>ICR Review*</i>	<i>PPAR</i>
Outcome	Satisfactory	Satisfactory	Satisfactory
Risk to Development Outcome	Negligible to low	Negligible to low	Negligible to low
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

\* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.

### Key Staff Responsible

<i>Project</i>	<i>Task Manager/Leader</i>	<i>Division Chief/ Sector Director</i>	<i>Country Director</i>
Appraisal	Michel Bellier	Jitendra Bajpai	Yukon Huang
Completion	Christopher Bennett	Junhui Wu	David Dollar



## Preface

This is the Project Performance Assessment Report (PPAR) prepared by the Independent Evaluation Group (IEG) for two projects: *Tri-provincial Highway Project* (Loan 4356-CHA) and *Hubei-Xiaogan-Xiangfan Highway Project*, (Loan 4590-CHA). The International Bank for Reconstruction and Development (IBRD) loan to the Government of China (GOC) for the Tri-provincial project was approved by the Board of Directors on June 23, 1998 in the amount of US\$230.0 million. At appraisal the total project cost was estimated to be US\$658.7 million, with US\$428.7 million to be contributed by the GOC. The final project cost was US\$649.3 million of which the loan contributed US\$225.0 million. The IBRD loan to GOC for the Hubei project was approved by the Board of Directors on September 17, 2002 in the amount of US\$250.0 million. At appraisal the total project cost was estimated to be US\$690.90 million, with US\$440.9 million to be contributed by the GOC. The final project cost was US\$862.5 million of which the loan contributed US\$221.7 million.

The projects were completed as planned. There were, however, significant road design changes to increase the capacity of the main highway component in both projects. In the Tri-provincial project the costs of these changes were paid from the savings that resulted from conservative cost estimates. At completion about US\$5 million of the loan remained undisbursed and was canceled. In the Hubei project the savings in the rural roads component of about US\$30 million were canceled because the State Ministry of Finance did not approve their use for additional rural roads - the increased costs (40 percent) of the main roads were funded by the province.

The projects were selected for assessment because of the comprehensive road network improvement involving several road owners; their road traffic safety components; their sizable institutional development and training aspects to strengthen road management, including land acquisition, resettlement and environment safeguards; and socioeconomic development to reduce poverty or provide better access to “lagging regions”. Useful lessons are drawn from this project which will be valuable for other projects in the region and elsewhere, while the experiences in the management of the safeguard issues will provide an input into an ongoing IEG study of the effectiveness of the World Bank Group’s safeguard policies.

IEG prepared this report based on an examination of the relevant Project Appraisal Documents (PAD), Implementation Completion Reports (ICR), legal agreements, project files and archives, as well as other relevant reports, memoranda, and working papers. Discussions were also held with Bank staff in both Washington D.C. and in China, both in Beijing and the provincial capitals. An IEG field mission visited China in February and March 2009, conducted site visits, and discussed both the project and the effectiveness of Bank assistance with relevant officials and stakeholders. The mission appreciates the support and attention given by beneficiary officials well as the Bank’s office in Beijing.

Following IEG practice, copies of the draft PPAR was sent to government officials and agencies for their review, but no comments were received.



## Summary

This is the Project Performance Assessment Report (PPAR) for two highway projects in China: *Tri-provincial Highway Project* (Loan 4356-CHA) and *Hubei-Xiaogan-Xiangfan Highway Project*, (Loan 4590-CHA). The projects formed part of the extensive lending by the International Bank for Reconstruction and Development (IBRD) to China's road sector to help finance the ambitious program of completing the 44,000 km of the National Trunk Highway System (NTHS) by 2020. Both projects featured tolled expressways. The Tri-provincial highway project was the first IBRD loan to the western provinces of Gansu, Ningxia, and Inner Mongolia, whose highway networks lagged behind the more developed eastern provinces. Hubei is located at the center of the NTHS, and also ranks among the less developed provinces. In addition to the highway development, both projects included a rural roads component to improve access to poor counties as well as a road safety component. The total project cost was close to US\$650 million in the three provinces and slightly over US\$860 million in Hubei, of which the Bank loans contributed US\$245 million and US\$220 million, respectively.

The projects had similar development objectives: to increase the efficiency and safety of traffic in highway priority corridors in order to facilitate faster socioeconomic development; to provide improved access to targeted poor counties; to improve highway sector institutional capacity; and to improve the safety of road transport.

Three factors merit to be singled out in respect of the projects' implementation. The first was China's phenomenal economic growth during the implementation period, which led to an upward revision of the highways' design parameters. The second factor was a growing perception of the importance of the environment and other safeguard policies in highway development, which—after advice from the Bank's teams—were consistently and reliably addressed. Third, although the rural roads do not fall under the jurisdiction of the implementing entities, they were (after some difficulty) successfully implemented and may have had a catalytic effect in accelerating the unlocking of the potential benefits of improved access to poor areas.

The projects were implemented on schedule even with an expanded scope of the road works. Because substantial funds remained unspent, the Tri-provincial project was extended by two years to permit upgrading of a Class II road in Gansu. The Hubei project was completed as scheduled.

The overall outcome of both projects is *satisfactory*. All the components were completed successfully and mostly exceeded the target values for the project development objectives. This rating is also supported by substantial relevance and high ratings for efficiency with economic rates of return of over 25 percent. Risk to development outcome is rated *negligible to low* based on the financial viability of the projects on the basis of expected traffic growth, a new funding mechanism for rural roads, strong institutions, and the competence of the professionals involved in project operation and maintenance.

The design for monitoring and evaluation (M&E) for these projects was a challenging task. Several of the measures and diverse objectives with many jurisdictions were difficult to monitor in a project context, but needed to be addressed at higher administrative and management levels. There may have also been changes in the way statistics were reported. Output and outcome measures for the main highway component enabled monitoring of project progress, and measures for the broad socioeconomic objectives were used, although there were some attribution problems. Given the solid performance in implementation and the setting up of systems that can be utilized for future planning and monitoring, M&E is regarded as *substantial*.

Bank performance was *satisfactory*. The project concepts, their identification and preparation were not without issues in either project: there were problems with project costing and jurisdiction in the case of both the road safety and rural roads components, but the shortcomings in preparation were compensated for by exceptionally good supervision. The construction component of the projects was implemented well to good design standards; institutional capacity and traffic safety have improved considerably; and the Bank safeguard policies were implemented beyond mere compliance. It also is likely that the rural roads components have had an influence on the Government's recent emphasis on and funding for rural roads, while the sound application of the Bank safeguards policies and entrenchment in provincial practices was a positive development.

The Borrower performance rating is also *satisfactory* for both projects. There was effective cooperation between the Borrower and the Bank throughout preparation and implementation. The central and provincial governments were fully committed, assisted in the preparation, followed the projects closely and helped to resolve issues promptly. With the local governments' support, land acquisition and resettlement were addressed and carried out satisfactorily and without delay. The implementing agencies in all the Provincial Communication Departments demonstrated commitment towards achieving the project objectives, to carrying out Environment Management Plans and the safeguard policies to the letter—occasionally with the Bank's support and through firmness of supervision to the many institutional strengthening activities, as evidenced by timely completion of the project, the extensive and sustained training, and adoption of new concepts in road maintenance. The project has motivated the Provincial Communications Departments' staff and has improved their professional skills and awareness of good road management practices.

The Bank's lending to China's highway sector continues to deliver some important benefits. The value of the Bank support lies less, however, in the actual loans (which are a tiny percentage of the country's total transport investments), but more in the form of less quantifiable benefits such as the best practice application of safeguard policies and the development of road management methodology through studies, advice and training. In the projects reviewed in this PPAR the inclusion of the rural road components also over time may help to unlock the potentially substantial benefits that can come from improving rural access by contributing to the debate about how jurisdictional and funding issues can be overcome. According to several officials interviewed by the IEG mission, the Bank has had a very useful and even transformational effect on motivating local transport sector professionals to think "out of the box". From this overview come four lessons:

- *It is important to ensure during project preparation that the mandate of the implementing entity is consistent with the scope of the project.* The implementation of the two highway projects in China proved unexpectedly challenging because the implementing entity had no jurisdiction over the rural roads and the traffic safety components.
- *A middle income country can still benefit substantially from the Bank's technical assistance and expertise.* The provincial officials involved in these major highway projects learnt quickly from the experiences from the training programs, study tours and advice from Bank staff. In respect of safeguards policies there was ample evidence of a movement from a compliant paradigm to one in which society was better off because of the intervention. Technical expertise was also passed on in respect of inter alia road maintenance by contract, expressway management, and good practice in road safety.
- *Some adjustments in the scheduling of safeguards procedures could be considered.* The completion of the full Resettlement Action Plan before the preliminary engineering highway design was completed wasted scarce resources as it had to be re-done because the road alignments changed significantly.
- *Since the gap between safeguard policies in the Bank and China on highway projects is now quite small, good supervision is the key to ensuring that the policies are followed.* In China, at least in the provinces where the projects were assessed, performance-based project lending has sufficed in respect of safeguards, but the application of the country systems with periodic supervision by the Bank could be contemplated.

Vinod Thomas  
Director-General  
Evaluation





## 1. Background

1.1 China's provinces are at different levels of development. China's Gross National Product (GNP) in 2007 was about \$3.8 billion, or US\$2,830 per capita and has grown by nearly 11 percent annually over the past 10 years, though this is expected to slow with the current world wide recession. Even so, for comparison the poorest project province had per capita income of about half of China's average, while the richest province was twice the average.

1.2 China has been a major borrower in the transport sector. Between 1995-2000 China's share of the World Bank's commitments for transport were US\$4.2 billion, 24 percent of total Bank transport commitments. Between 2001 and 2006 India overtook China's position with US\$4.2 billion in commitments (25 percent share), but China still ranked second with US\$2.3 billion in commitments.<sup>1</sup> A large share of these loans has been for tolled expressways, which can generate the revenue to repay the loans.<sup>2</sup>

1.3 The Tri-provincial Highway Project for the three adjoining provinces—Gansu, Ningxia and Inner Mongolia—was the first Bank supported highway project in these provinces, while the Hubei-Xiogan-Xiangfan Highway (XXE) Project was the third Bank highway project for Hubei province.

### The project context

#### Tri-provincial Highway Project

1.4 Gansu Province has a population of 26 million with an annual Gross Regional Product (GRP) of US\$40 billion and a per capita income of US\$1,550, about 55 percent of the China's average. Gansu is classified as a developing province with a higher than average poverty level. Nevertheless, Gansu, whose main industries are mining, agriculture, and tourism, has been growing at an annual rate of 11-12 percent accompanied with changes in its industry structure.

1.5 When the project was prepared in 1997 Gansu had just 14 km of modern highways. Reflecting a phenomenal pace of economic development, Gansu's highway system now consists of nearly 6,500 km of highways of which 1,316 km are expressways (and part from the National Expressway Network, [NEN]). Several hundred additional kilometers are currently under construction. The local governments, the counties, townships and villages, are responsible for maintaining the rural roads of about 92,500 km. Only about 20 percent of these rural roads are paved. The Gansu Provincial Communications Department (GPCD) provides technical assistance in their planning and

---

1. The World Bank, Independent Evaluation Group *A Decade of Action in Transport An Evaluation of World Bank Assistance to the Transport Sector, 1995-2005*, p.21.

2. Ibid, p. 41, and Ping Li, Zhang Sanli and Antti Talvitie, "New Models for Financing and Managing Highways: Asset-based Road Corporations in China." *Transportation* 26, pp 67-86, 1999

road management, and subsidizes their maintenance. Nonetheless adequate funding of the current expenditures for rural roads remains an issue.

1.6 Ningxia Province is China's smallest with a population of 7-8 million. It is also classified as a developing province with annual GRP of US\$13.3 billion and per capita income of US\$1,780, about 60 percent of China's average. The poverty level is higher than the average for China. Ningxia's main industries are mining, chemicals, and agriculture. Ningxia's economy has until recently been growing at an annual rate of 12 percent and has been characterized by changes in industry structure.

1.7 When the project was prepared in 1997 Ningxia had only one modern highway under construction. Subsequent development in Ningxia has been rapid. It currently has over 4,000 km of highways of which a quarter are expressways. Several hundred kilometers are under construction. There are also about 16,500 km of rural roads, owned by the counties, townships and villages. As in Gansu, the Ningxia PCD provides technical assistance in planning and road management, and subsidizes the maintenance of the rural roads on a 50-50 basis; the Province, through NPCD and the Ministry of Transport, cover part of the rehabilitation and construction costs through grants.

1.8 Inner Mongolia Province has a population of 24 million spread over a vast territory (its length is 4,200 km). Inner Mongolia is the wealthiest of the four provinces with the annual GRP of US\$90 billion and per capita income of US\$4,500 about 60 percent above China's average. The annual growth rate has been about 20 percent and the poverty level is low. Inner Mongolia is rich in natural resources whose extraction and utilization constitute the main industries: coal, ferrous metals, oil and related industries, and agriculture.

1.9 When the Tri-provincial project was prepared in 1997 Inner Mongolia had only one expressway. Since then development in Inner Mongolia has been more rapid than in the other three provinces. Its National Road System consists of over 15,000 km of highways of which 1,800 km are expressways. Several hundred kilometers of roads are under construction or rehabilitation. There are also about 104,000 km of rural roads, owned by the counties, townships and villages. The Inner Mongolia Provincial Communications Department (IMPCD) provides technical assistance for planning and road management, and subsidizes their maintenance; construction grants are provided by the state through IMPCD.

## **Hubei-Xiaogan-Xiangfan Highway Project**

1.10 Hubei Province has a population of 60 million. Its annual GRP is about US\$140 billion, and has until recently grown at 12 percent annually. The per capita income of US\$2,300 is about 80 percent of China's average. Historically Hubei has been a relatively wealthy province, but in the past two decades has lagged behind the eastern seashore provinces and is now below average among all China's provinces. Hubei has a diverse industrial structure: auto manufacturing, steel, agriculture, and service industries, especially in and around the provincial capital of Wuhan. There is a large income differential between the capital city of Wuhan and the rest of the province, especially the western rural counties, which have a high incidence of poverty.

1.11 Hubei is at the center of China's National Highway Transport System. It currently consists of nearly 6,000 km of National Roads of which about 2,800 km are NEN expressways. Several hundred kilometers are under construction. There are about 170,000 km of rural roads, owned by the counties, townships and villages. As in most other provinces the Hubei Provincial Communications Department (HPCD) provides technical assistance in planning, road management and local governments' maintenance activities.

1.12 In China, the National Expressway Network has been a major focus of transport development and investment. The two projects in four provinces continue that pattern, but they also indicate a shift of emphasis to the development of the inland provinces. This PPAR evaluates, among other things, the value added of the Bank in supporting typical highway projects in China. In particular, the PPAR shows that the Bank supported projects continue to be of value to China, both on technical grounds and because of the Bank's safeguard policies.

## **2. Project Objectives and Components**

2.1 The scope of the project development objectives (PDO) in the loan agreements was similar in both projects. For the Tri-provincial project the objectives were:

- 1) To increase the efficiency and safety of traffic in highway priority corridors in order to facilitate faster socioeconomic development;
- 2) To provide improved access to targeted poor counties;
- 3) To improve highway sector institutional capacity; and
- 4) To improve the safety of road transport.

For the Hubei-Xiaogan-Xiangfan there was an overarching PDO: "To improve the efficiency, safety, and cost-effectiveness of the transport infrastructure in support of the social and economic development of Hubei province."

2.2 The objectives and the PDO indicators are similar, but not identical as shown in Tables 1 and 2. The Tri-provincial project put more emphasis on the financial and fiscal impacts while in the Hubei project their importance is less pronounced, perhaps because there the toll road administration and management is already well-established. The project objectives are relevant and in line with the Country Assistance Strategy (CAS 1998) and China's transport development plans for road network capacity, traffic safety, and poverty alleviation. They remain relevant to the Bank's FY06-10 Country Partnership Strategy (CPS): to reduce barriers to trade and investment; manage resource scarcity and environmental challenges; and reduce poverty, inequality and social exclusion. The projects' main highway components are part of the Government's planned development of the National Expressway Network, to be completed by 2020.

2.3 The project components effectively map one-to-one to the project objectives. The allocation of project costs at appraisal to the objectives is summarized in Table 1. The projects were classified as Environmental Category A under the Bank's Operational Directives and Policy 4.01. IEG agrees with this classification. The Tri-provincial Project triggered two safeguard policies (Environmental Assessment, and Involuntary Resettlement) and the Hubei project three (Environmental Assessment, Involuntary Resettlement, and Cultural Heritage).

**Table 1: Project Cost by Component (in USD Million equivalent)**

Components	Tri-provincial Highway Project			Hubei Highway Project		
	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal (%)	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal (%)
Construction of main highways and connecting or Class 2 highways	472.40	576.48	122	562.41	802.61	143
Construction of rural roads in poor counties	33.00	43.50	132	60.00	42.0	70
-- Resettlement and land acquisition costs (also included in the above costs)	29.37	61.35	208.9	74.0	94.6	127.8
Institutional strengthening and training	28.60	28.72	100	10.09	15.46	150
Highway safety	1.50	0.57	38	0.42	Incl. above	
<b>Total Baseline Cost</b>	535.50	649.27	121	632.92	859.97	136
Physical Contingencies	47.60			33.80		
Price Contingencies	75.60			21.68		
<b>Total Project Costs</b>	658.70	649.27	99		859.97	125
Front-end fee IBRD	0.00	0.00	0	2.50	2.50	100
<b>Total Financing Required</b>	658.70	649.27	99	690.90	862.47	125

**Financing**

Source of Funds	Tri-provincial Highway Project			Hubei Highway Project		
	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal (%)	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal (%)
International Bank for Reconstruction and Development	230.0	225.0	98	250.00	221.72	89
Government	176.8	156.0	89	440.90	640.75	145
Gansu	101.7	92.3	91	-	-	-
Inner Mongolia	112.9	107.3	95	-	-	-
Ningxia	37.3	68.7	184	-	-	-

**Table 2: Summary of the PDO Indicator(s): Original Targets and Values at Completion and at PPAR**

Indicator	Tri-provincial project (Completion 2003, PPAR 2008)		Hubei Project (Completion 2006, PPAR 2008)	
	Original Target Values	Actual Value Achieved at Completion	Value at PPAR	Original Target Values
<b>Indicator 1: Objective 1</b> Traffic Volume in the Main Line Corridor (ADT)	6,300 (range: 1,700 – 14,000)	6,500 (range: 1,000 – 20,000)	18,700* (range: 9,100 – 28,500)	12,435 (range: 12,000 – 14,000)
<b>Indicator 2: Objective 1</b> Average speed in the main Line Corridor (kmph)	35 - 75	50 - 82	50 – 90	Not used. However, the travel times were reduced significantly in the project corridor and the adjacent areas
<b>Indicator 3 : Objectives 3, 4</b> Accident rates in the main corridor (per 10m veh/km)	4.4 – 7.7	0.4 – 5.0	0.43 – 2.3	4.5
<b>Indicator 4 : Objective 2</b> Daily traffic on rural road sections (RRIP and RIPA)	4,450 (sum on all RIPA)	8,850	No information (Best estimate: +5% per annum)	400
<b>Indicator 5 : Objective 2</b> No. of days RRIP roads closed to traffic/year	83 (sum on all RIPA)	1	0	0
<b>Indicator 6 : Objective 2</b> Income indicator served by RRIP roads	38.9** (GOVAI Index)**	61.6 (GOVAI) (214.5 GRP)	No information (322.5 GRP) 50 % increase	8,820 (av HH income)
<b>Indicator 7 : Obj 2</b> High school enrollment in RRIP road areas (% of teenagers)	Not used	--	--	3.8
<b>Indicator 8 : Objective 4</b> No. of treated black spots:	There was a successful black spot elimination program of 100 spots. Accident rates were reduced by more than 50%.	Not used		165
<b>Indicator 9: Objective 3</b> Bank loan to be covered by tolls on the main highways	Toll system implemented successfully. See text. At current toll and traffic levels, the expressway toll revenues cover the operation, maintenance and debt service costs			Not used. See text. At current toll and traffic levels, the expressway toll revenues cover the operation, maintenance and debt service costs.
<b>Indicator 10: Percent of training completed (months)</b>	100/100	245/92 Domestic/Foreign	245/92	100 Domestic 100

- The most significant traffic increase was in Ningxia where traffic at the time of the PPAR was 120 percent greater than the original target value and 400 percent greater than the value at completion because of completion of connecting links. The respective percentages in Gansu were 30/30, and in Inner Mongolia 100/45.

- \*\*Gross output value of agriculture and industry (RMB billion). This statistic is no longer collected, replaced by Gross Regional Product (GRP) \*\*\* There was a heavy snow storm at the end of 2008 during which numerous accidents occurred; in 2007 the accident rate was 4.3.

### 3. Project Design

3.1 The implementing agency in each province was the provincial communications department (PCD). A World Bank Financed Project Management Office, (PMO for short), was established in each PCD headquarters and was responsible for project preparation and coordination, implementation of the traffic safety, and the institutional strengthening components. The rural roads improvement program was carried out by the county level construction office under the auspices of the respective Highway Administration Bureau of the PCD. The implementation of the principal component, the highway and related roads, was carried by a construction management office in the PCD, or a project company fully owned by the PCD. The staff at the headquarters PMO and the construction management office were largely the same. As planned, after completion the construction management entity was either reorganized to operate and maintain the (toll) road or the project roads were transferred to a new entity for maintenance and operation. The financial management was undertaken by the Provincial Finance Bureaus. This institutional arrangement for project implementation, although logical at appraisal, did not, however, take into account the local administrative mandates and practices.

3.2 In the Tri-provincial project the unusually large contingencies covered any cost increases with money left over, which was used to add a Class 2 road to the project in Gansu. The large contingency was agreed to because the project was the first Bank project in the province and there was no information on prices under competitive procurement rules. In the Hubei project the contingency cost was in line with industry practice, and the cost estimate for the main highway was consistent with the past experience in similar projects (project ICR p.20), but it proved to be too low. The cost estimate was reviewed by international consultants who recommended a higher cost estimate, but the Bank's Hubei task team was unable to persuade the client to adopt more realistic cost estimates. The final costs were 30 percent higher than the appraisal estimate and the province covered the overrun. The cost increases stemmed from road alignment changes, related resettlement costs, the 4-lane connecting roads, and appreciation of the Yuan.<sup>3</sup> According to provincial government policy, the savings in the rural roads, in Hubei, could not be used for expanding that component. Land acquisition and resettlement costs also increased noticeably in both projects, partly due to design changes and partly due to higher compensation standards in a Bank financed project.

3.3 The projects were not reviewed at entry by the Bank's Quality Assurance Group. Project risks were, however, adequately considered, the safeguard policies were addressed during preparation in compliance with Bank guidelines, and the engineering designs, cost estimates, and electrical and mechanical facilities were reviewed by international engineering consultants. IEG notes, nonetheless that there were issues with the cost estimates and also institutional design issues with both the road safety and rural roads components (see par.5.3-5.5).

---

3. After these projects, the Bank and the Borrower agreed to adopt as realistic cost estimates as possible and to reduce the size of the contingency.

## 4. Monitoring and Evaluation

4.1 Design. Since the indicators are almost identical for both projects the M&E ratings apply to both cases. The two projects covered four distinct areas: the dominant expressway construction; poverty alleviation through the rural roads component; institutional development, which included training, a broad array of studies, equipment acquisition for road maintenance; and, traffic safety initiatives. To design M&E measures for projects with such diverse objectives was a challenge. Of the PDO outcome monitoring indicators, shown in Table 2, indicators 1-3 and 8-10 are useful and relevant to the project expressways, their construction and operation, and the roads under the jurisdiction of the PCD. The intermediate output indicators used in the project (not shown) were traditional engineering milestones and measurable. They established useful benchmarks to monitor and track the implementation progress of the project components, especially the expressways and adjoining provincial roads.

4.2 However, the other outcome indicators pertaining to traffic safety and access to poor counties fall under the jurisdiction of other entities and several road owners. The projects covered only a portion of the rural road network, which is not under the direct jurisdiction of the implementing entity, while the implementation of an M&E framework with collection of road data and related socioeconomic data are not within the mandate of the PCD. For this reason those PDO indicators that relate to rural roads, poverty, and to an extent for traffic safety, proved difficult to formulate.

4.3 In traffic safety, the removal of black spots will reduce collisions. However, traffic safety work consisted of several other activities and the catch-all outcome measure—the accident rate—although concise and universally used will not indicate the separate effectiveness of these measures. It is important to note, however, that the accident recording system that was established will in time enable the analysis of the kinds of issues just mentioned. Accident monitoring requires data over a long time period to establish trends and causality. The same indefiniteness pertains to the institutional development indicator—person months of training. It is concise and useful output measure, but unlikely to capture the effects of the many activities that were undertaken under the institutional development component. The school enrollment indicator is also affected by many endogenous factors that make attribution to the project speculative. Finally, the table includes no indicators for the safeguards. M&E during design is considered moderate.

4.4 Implementation. Road data collection and the accident data record systems were diligently established for the project roads. These data systems are used to deliver the values of the project outcome indicators. The system can be expanded to cover the entire network, but its full implementation (and utilization) will take several years. The rural roads will normally be the last to be included in such data systems. For traffic safety and institutional development, the chosen indicators were straightforward and easy to collect. Because of their “catch-all” nature, they were also observed and monitored during supervision using a mixture of indicators and checklists to gauge the implementation progress. In IEG’s view M&E during implementation in both projects is substantial.



4.5 Utilization. The design of the M&E system described above was carried out with a view to utilizing it not only to monitor and evaluate the project progress, but also its effects beyond the implementation period. The indicators in Table 2, their target values at completion and at the time of the PPAR mission, remain useful and informative about the projects' lasting impacts even though a longer trend period is necessary before some of the indicators will be useful. M&E utilization is regarded at this stage as substantial.

4.6 Overall, M&E is rated substantial.

## 5. Implementation

### Implementation and Implementation Issues

#### PROJECT APPROVALS AND PROJECT CONTENT CHANGES

5.1 *The Tri-provincial project* was approved on June 3, 1997. There were three different task managers, but the discontinuity did not have an impact on performance. Supervision averaged two missions a year and the project as originally conceived was completed by mid 2005, but was then extended by two years to June 30 2007 in order to utilize project savings in Gansu. This enabled the rehabilitation of an additional 85 km of existing Class 2 road. At project completion US\$5 million was cancelled. In Ningxia, the Guyaozi-Wangquanliang Highway (GWH) was upgraded from a 2-lane road to a full 4-lane expressway standard for functional classification, safety and maintenance reasons. The Bank agreed to the change following a review of a supplemental feasibility study and the Loan Agreement was amended accordingly on February 1, 2001. Also in Inner Mongolia there was a design change. The Batou-Dongsheng Road was built as a 4-lane expressway, not 2-lanes as planned. This enabled the old Class 2 Baotou-Dongsheng Road, to be rehabilitated to function as a parallel auxiliary road to serve slow moving local traffic and non-motorized vehicles, but sharing the bridge over the Yellow River. IEG notes that these changes were well justified from the engineering point of view and are also supported by current traffic volumes and the ex-post economic analyses.

5.2 *The Hubei project* was approved on September 17, 2002, and completed and closed as scheduled on December 31, 2007. At completion about US\$ 28.3 million remained undisbursed and was cancelled. There were no major changes to the components.

#### TRAFFIC SAFETY AND THE INSTITUTIONAL COMPONENTS

5.3 *The traffic safety* component was problematic in some respects in both projects even though the outcomes were relatively successful in the end. Both projects had road traffic safety experts involved in preparation. In the Tri-province project a coordinating group and a road safety unit were established in each of the project provinces. In Hubei, a Road Traffic Safety Training Center was established to ensure that the HPCD implemented procedures for safety audits

5.4 However, traffic safety, broadly defined, was not part of the PCD mandate—except for the elimination of the traffic accident black spots. Responsibility for traffic safety was transferred to the Public Security Bureau some years ago and the responsible entity became the police. While the police were involved in road safety matters and now have an incipient accident recording system, in most provinces no formal institutional relationship had been established between the police and the PCDs. Such cooperation would have been desirable for the identification of the black spots, if not for road design and reconstruction. Another important fact was that the provinces had very few kilometers of expressways prior to these projects. The traditional roads had design features not meant for modern vehicular traffic and the roadside development—especially access management—proved challenging. Vehicle ownership was low, vehicle mix was diverse and drivers were unaccustomed to driving on expressways.

5.5 A properly designed road safety strategy, in practice, should ideally include many aspects including educating motorists to drive on expressways, vehicle inspection, driver licensing, public awareness and establishing an accident recording system for the wider road network. This wide range of activities, which are national or provincial in scope, normally takes several years to achieve, and would warrant the development of state level involvement for regulations and policies. The safety aspects in these projects had less ambitious intentions intended as the beginning of such a program and covered the establishment of a high-level traffic coordination group, analysis of traffic accident data, implementation of a pilot accident black spot elimination program, provision of traffic law enforcement equipment, and the development of highway safety manuals and audit procedures. Nevertheless, the lack of a proper framework caused problems even for these pioneering measures.

5.6 *The institutional (capacity building) component* included extensive training programs by national and international experts in road construction management, construction quality, environmental management, maintenance management, and the operation of toll roads. There was also training in road works supervision, traffic engineering, road and accident data acquisition, and road safety design and audits. Modern maintenance equipment was acquired for recycling asphalt pavements, which has made road maintenance more appreciated and more effective. The need for further technical cooperation in maintenance contracting, and maintenance management and technologies and the role the Bank could play in this was recognized in all the provinces.

## **THE RURAL ROADS**

5.7 *The rural roads* component faced similar difficulties in all the provinces, especially in Hubei where US\$10 million loan funds were used for their rehabilitation. The Hubei State Audit Office raised questions concerning the possible “misuse” of loan funds because the loan needed to be paid back from the tolls levied on the main highway. The Audit Office eventually accepted the explanation—it was part of the legally binding Loan Agreement—but HPCD, because of the doubts that had been expressed, would prefer not repeat such cross-subsidization in another project. In addition, in all participating provinces, the PCD provides only technical assistance for local roads in terms of planning, programming and design—not funding. Local roads are the responsibility of the counties, townships and villages which also carry out the

implementation. In practice, the provinces do provide limited support for rural road maintenance through PCD; in Ningxia this support matches the local government support of RMB800/km, but this amount is insufficient and will not keep the rural roads from deteriorating. Even so, the PCDs have no jurisdiction to implement the rural roads component and experienced difficulty in supervising it. Increased awareness of these issues likely contributed to a new state rural roads policy last year (2008), by which the state contributes RMB 500,000/km for the renovation or (re)construction of township roads and RMB100,000/km for village roads. Adequate funding for the maintenance of rural roads remains, however, an unresolved problem.

## **SAFEGUARDS**

5.8 *Background.* During preparation of the Tri-provincial Highway Project in the late 1990s, the local Environment Assessment (EA) regulations were at an early stage of evolution. The substantial difference from the Bank environmental safeguards was the absence of mandatory disclosure of the EA documents. In spite of the general consistency with Bank policy<sup>4</sup> requirements, the actual implementation of the Chinese environmental policies fell short in the 1990s; only a simple EA document was required, and there was no follow-up supervision on actual progress. This changed during the implementation of the projects and the Bank's safeguards policies and their supervision ensured improved implementation of environmental and social protection compared to earlier Bank funded projects.

5.9 The Bank's safeguards policies thus helped promote the awareness of environmental and social protection among project staff. The preparation of the safeguards documents and their implementation was completed satisfactorily. This also had positive impacts on non-Bank projects. Although there were occasional lapses that had to be rectified these projects served as models for other projects in these provinces.

5.10 This said, the enhanced implementation capacity meant, in both projects that the safeguard requirements were more rigorously implemented than in domestically-funded projects. All project offices assigned dedicated staff for coordinating environmental and social safeguards implementation. Supervision of Environment Action Plan (EAP) implementation was assigned to the Project Supervision Engineer, while contractors were responsible for implementation. The Resettlement Action Plan (RAP) was satisfactorily implemented by the local governments following approval and was adequately monitored.

5.11 The EMP implementation was monitored by local environmental agencies in accordance with the EAPs. While both the Environment Management Plan (EMP) and Environmental Impact Assessment (EIA) were concluded appropriately in both projects there were some difficulties along the way. In Hubei, in the early stages of construction, the implementation of the EMP, both in XXE and rural road improvement program

---

4. During the project preparation, safeguards requirements of the World Bank were in form of Operation Directives. The Safeguards Operational Policy was officially established in 1999, after the Tri-provincial Highway Project was approved.

(RRIP), fell short of the requirements.<sup>5</sup> Bank supervision required and HPCD diligently addressed the issues and they did not recur. At completion HPCD satisfactorily reclaimed construction and waste disposal areas. EMP compliance was more problematic with the RRIP roads, for which the construction management was done by local authorities not the HPCD. Corrective measures were taken to minimize the negative environmental impact, but only after the Bank had identified them.

5.12 Land acquisition and resettlement were important and significant elements in both projects. In the Tri-provincial Highway Project, the RAP was developed in accordance with Bank requirements and found to be satisfactory. In Hubei, the HPCD had prior experience and was well prepared and resettlement proceeded smoothly. The work was audited by both the government and an independent monitoring consultant.

5.13 In the Tri-provincial project, in Ningxia, because of design changes from the planned 2-lane to a 4-lane road during preliminary engineering, the RAP estimate for the land acquisition and the floor area of demolished homes needed to be substantially revised upward. The total cost of resettlement more than doubled<sup>6</sup>. Design and other changes also resulted in an upward revision in the estimate of impacted land area in Inner Mongolia.

5.14 *Moving from “Doing no harm” to “Doing Good”*. An example of good practice resulting from the heightened environmental awareness is the desert hazard control program in Ningxia. Due to the potential risk of sand dunes and a fragile local environment, the NPCD expanded the roadside re-vegetation program to about 600 m into the desert area with special planting techniques using indigenous species. The successful re-vegetation program was also replicated in other (domestic) projects, and awarded a prize by the State Environmental Protection Agency (SEPA), which presented it as a best practice model.

5.15 In Inner Mongolia irrigation was provided to some dry land and the cultivable land in the affected area increased by over 70 percent; low-yielding cultivated grassland was returned to forest. Extra safeguard efforts were also made in the Tri-provincial Highway project. The ancient remains of the Wall of China in Ningxia were restored using project funds although not directly affected by the project. A Minority Development Plan was also developed with the assistance of a social scientist to address the potential impact and plans for ethnic minority people, although the relevant Operational Directive had not been triggered.

5.16 In Hubei, the RAP was developed by Wuhan University under guidance of the Bank task team, and was found to be of good quality and in compliance with Bank requirements. The RAP adequately addressed the community impact through an

---

5. Bank team identified inadequacies in EMP implementation: poor living conditions in labor camps, inadequacy of sanitary facilities, construction dust, and uncovered material transport and storage. In the rural road projects there was improper disposal of waste and insufficient slope protection. All defects were corrected during implementation.

6. A total of 9,226 mu of land was acquired, 13 households, 63 people and 6 enterprises were affected. Total compensation paid amounted to 28 million RMB, an increase of 69 percent over the RAP estimate.

inventory of affected assets, a census of the project affected persons, a social assessment and consultation with local governments. Only a handful of complaints were received, mainly concerning damages to village facilities such as roads and irrigation ditches. All complaints were addressed by the HPCD and satisfactorily resolved.

5.17 HPCD also went an extra mile to protect a cultural heritage site. The project passed by the Baizhaoshan Forest Park, at a distance of 1.2 km. Although it was concluded that there would be no direct project impact, the project provided assistance to the park by relocating a parking lot and building sanitary facilities to help handle the anticipated increase of tourists upon completion of the XXE project.

5.18 *Application of the environmental and involuntary settlement safeguard policies* is of great interest to the road sector officials. All the provinces shared the view that the Bank's safeguard policies and their application and enforcement had a significant positive effect on China's own safeguard policies<sup>7</sup>. Today there is little material difference between the safeguard policies of the Bank and those in China. They are applied uniformly in projects regardless of funding source. There also now exists local competence in most aspects of the safeguard policies and a certification procedure has been developed and adopted by SEPA, which also approves the EAs. There are two issues, nevertheless, that may require reconsideration. The first concerns the timing of the preparation of the RAP (also see Annex A). Currently the Bank requires the full RAP at project appraisal, at the feasibility study phase. However, for many reasons the road alignment, both vertical and horizontal, can change in the preliminary engineering phase (as happened in both of these projects). Consequently, the RAP must be redone. This is time-consuming and expensive, and also can affect the credibility and impartiality of the PCD.

5.19 The second issue concerns the (independent) safeguard supervisor who normally visits the construction site at three month intervals to supervise the implementation of the EMP and the RAP. According to some provincial road professionals this may be unnecessary for two reasons: the site supervisors now – it is claimed - have sufficient competence to ensure the implementation of the EMP; and, the independent supervisor must rely to a large extent on information supplied by the international supervising engineer or the PMO.<sup>8</sup> This warrants further analysis by the Bank staff responsible for supervision to assess the validity of such assertions.

## **Financial management and procurement**

5.20 *Procurement.* In Ningxia, early in the project, there was a misunderstanding of the Bank's approval requirement for design changes. Work on the higher construction

---

7. National procedures are informed in part by the Circular on Strengthening Environmental Impact Assessment Management for Construction Projects Financed by International Organizations.

8. The YBE Project (Hubei-Yichang-Badong Expressway) has further increased environmental supervision by establishing a Client's Environmental Supervisor Consultancy which is resident on site and supervises the implementation of the EMP independently of the (Supervision) Engineer. This Bank approach to the implementation of the EMP adds a new layer of supervision. It merits a careful assessment during and after the project.

standard of the GWH expressway had commenced before prior approval of the Bank was obtained, and one contract was withdrawn from Bank financing, because the work had advanced too far to justify Bank (retroactive) financing. Part of the increased cost of upgrading GWH was financed by the funds released from this withdrawn contract. After clarification, contract management proceeded from then on satisfactorily.

5.21 *Financial management* compliance in respect of independent annual auditing was good; the project accounts were found to be satisfactory in both projects. The loan disbursements were consistent with the construction progress, but appeared slow and cumbersome from the Borrower's perspective.

5.22 *Financing of the NHTS and the provincial roads.* In all provinces the same pattern of road financing is followed: roads are financed from the provincial budget, with the PCDs proposing the road budget from the bottom up to the provincial government. The toll income is, thus, part of the general income of the province through the Provincial Finance Bureau. The toll rates are uniform and set by the provincial government; the same applies to vehicle overweight charges. The PCD budgets also include funding proposals from International Financial Institutions (IFIs) and, later, for maintenance of IFI funded roads. The project roads, excluding the rural roads, are usually tolled. In Gansu the parallel road Class 2 road was also tolled at the entrances, primarily to prevent diversion from the expressway. In Inner Mongolia, expressways built with local funds are not tolled. In all the project provinces the road budget was sufficient for servicing both the loan and road maintenance and operation.

5.23 The PCD has a corporate office with several subordinate entities for tolled highways each managing 3-4 tolled (and in Inner Mongolia also untolled) road segments. These entities keep accounts (income statements, balance sheet and application of funds) by road segment and aggregate them for budget proposal purposes. They are also required to have a positive cash balance after loan servicing and other expenses. Because of accumulated depreciation, all road corporations have enough cash flow to service the loans even if traffic, and the toll income, does not reach the projected level in the early years of operation. This financing system has worked well in China for the rapid expansion of the NHTS. Tolling of the expressways, and occasionally of provincial roads to prevent diversion, has generated funds and facilitated the leveraging of loans from the IFIs. There may be equity issues, however, because not all expressways are tolled and other issues of conflict may arise if decision-making is not transparent.<sup>9</sup> The expressway companies, although state-owned, keep auditable accounts, remit the toll revenue to the Provincial Finance Bureaus, and the provincial budget process is used to allocate funds. A newly instituted fuel tax may at some point provide a new, expanded source for financing road programs, including maintenance. This is particularly relevant in view of the increased funding needed for the construction and rehabilitation of the rural roads.

5.24 *Rural roads financing* have gained the attention of the government, which in 2008 introduced a new grant policy. Some states have been more able than others to use

---

9. These and other issues are discussed in World Bank, op.cit p.41, and Li Ping et al pp 83-85 op.cit.

such grants. IEG's discussions with selected county and village officials and observations on site visits showed evidence of socioeconomic development associated with better road access to these villages. Whether such development is a result of improved roads or vice versa cannot however be fully ascertained without detailed studies. An issue that still needs more attention is how to organize and integrate road (re)construction, maintenance, planning, and funding of the rural roads. Currently, the PCD gives technical assistance to plan, design and maintain the roads, and the county road bureaus carry out the works.

## **MAINTENANCE AND SUPERVISION PRACTICES**

5.25 *Maintenance and road data and management systems* are still evolving practices in the concerned provinces. In Hubei, where the practices are more advanced, the competitively awarded routine maintenance contracts for roads and bridges are for three year periods, in others the contracts are for one year. The practice is likely to cover all the Class I and Class II roads soon.<sup>10</sup> In Inner Mongolia maintenance contracting is beginning on a pilot basis with project-financed recycling equipment on a negotiated "plant pool" basis. Also Ningxia acquired a "recycling train" using project funds. The provinces share the view that more technical assistance and cooperation on new maintenance practices, methods, and technologies is needed. Road data systems are central to road maintenance. All the provinces have such systems but of varying complexity. Hubei is the most advanced where the road data acquisition was outsourced to consultants; in the other provinces road data acquisition was performed by the project company, often without up-to-date equipment.

5.26 *Supervision* elicited much discussion. Bank supervision was seen to be useful—as long as all project components were supervised during the same visit rather than separately (requiring much client time and input). The international supervision consultant (the FIDIC Engineer or the Project Manager) was considered unnecessary (and the Bank has now largely discontinued this practice in China). The supervision engineer is chosen using the same process as for contractors. The new method of selecting the project supervision consultant is welcome. To complement it, for effective supervision, the Bank and China could also adopt the international practice on large projects of having unspecified technical assistance funding in the loan to call on recognized experts to solve, supervise or provide knowhow on demanding or unusual construction (or maintenance) issues on a time-limited basis. Design reviews by recognized experts are also a useful practice.

5.27 *Procurement by the lowest evaluated bid is problematic in China.* State-Owned Enterprise (SOE) construction firms account for the largest portion of construction by volume in China and follow the practice of maintaining that volume without necessarily making a profit (as the state will cover the losses). At the same time private firms are more numerous, but they must make a profit in order to survive. It is claimed that the SOEs sometimes make low bids to win the contract and then try to minimize the loss by doing less (in quality or quantity). Scrupulous supervision and rigorous selection of supervisors has been the response to avoid quality problems, but problems with SOEs

---

10. Roll-in of maintenance by contract was an intermediate output indicator in the Hubei project. It was fully achieved.

still occasionally occur. Different provinces have adopted different approaches to address the issue for non-Bank-financed projects. In Inner Mongolia, the system is similar to the Quality and Cost Based Selection (QCBS) selection of consultants; in Hubei the winning proposal is the one which is closest to the average of all the bids from below; and MOT for its part has issued a request that no bid evaluation panel member shall recommend bid selection, which is less than the engineering estimate. For the evaluation panel MOT has evolved a certification system of bid evaluators (and project supervisors). The panel, two-thirds inter-provincial, is selected by the MOT from a pool of certified evaluators one day prior to the evaluation. Because the SOE construction companies present a vexing problem in China, the Bank should reconsider, together with the client, the selection process of the winning bidder, which does not necessarily always work in the way that was anticipated.

## 6. Ratings

6.1 The ratings are presented separately for the Tri-provincial Highway project and the Hubei-Xiogan-Xiangfan Highway project. Because of the similarity of the PDOs some repetition is unavoidable.

### The Tri-provincial Highway Project

#### RELEVANCE

6.2 The project objectives were consistent with China's transport development plans and are part of the Government's development of the National Expressway Network. The components were consistent with the then prevailing Bank lending priorities, the CAS, and the later CPS: construction or rehabilitation of the expressways and highways; improving traffic safety; institutional development; and improving access to targeted poor rural counties. *Relevance of the project and its objectives is high.* Relevance of design, however, is *modest* since there were shortcomings in the institutional design arrangements in respect of rural roads and road safety improvements, because the mandate had not been clarified and the legislation enacted to support the project intentions. For the rural roads there was also a lack of clarity regarding the financing mechanism (cross subsidization with revenue from the main highways). The overall relevance is *substantial*.

#### EFFICACY

6.3 The PDO indicators at completion, the original target values, baseline values and actual values at the time of the PPAR mission are shown in full in Table 2. Achievements of each objective follow:

(a) To increase the efficiency and safety of traffic in highway priority corridors in order to facilitate faster socioeconomic development. The values of the PDO indicators (1, 2, 3, and 8) for this objective need no explanation: the target values were exceeded both in terms of traffic volume, economic rate of return (ERR), travel times, and traffic safety.



Although there was no indicator for the black spots, there was a successful black spot elimination program of 100 spots. Accident rates were reduced by more than 50 percent in these locations. *The achievement of this objective is high.*

(b) To provide improved access to targeted poor counties. The achievement of this objective is shown by indicators 4, 5, 6, and 7 in Table 2. The rural roads were rehabilitated as planned and provide year round access. The traffic volumes have grown steadily, also after completion, and exceed the target values. However, the traffic counts are not yet systematic and the reliability of this information may be low. The income indicator, now measured by GRP, is the most reliable of the indicators for measuring the effects of better rural access. It has increased over 50 percent since project completion over the target value, but attribution to the project is unclear. *The achievement of this objective is substantial.*

(c) To improve highway sector institutional capacity. Staff training and a studies program were completed in all the provinces (indicator 10). Domestic training was over twice as extensive as planned, but overseas training was less than planned. In the Tri-provincial project, the training covered highway design and maintenance, highway materials, construction management and supervision, and operation of and maintenance of expressways. Studies were undertaken and manuals written for traffic accident audits and traffic safety, and for organizing and managing toll roads and determination of toll rates. However, the extent of the skills transfer, the outcome, was not measured. *The achievement of this objective is substantial.*

(d) To improve the safety of road transport. Traffic safety has improved and there was a significant reduction in collision rates from the range of 7-11 accidents per 10 million vehicle km. to 0.4-5.0. The black spot program was implemented with good results. A ‘Traffic safety coordination group’ with the police was established to help identify black spots and analyze accident causes. *The achievement of this objective is high.*

## **EFFICIENCY**

6.4 The benefit-cost analyses were not recalculated for the PPAR.<sup>11</sup> The ERR in the ICR, was between 10 and 44 percent, with an average of slightly over 20 percent, and in line with the PAD estimates. Table 2 shows that the traffic volumes on the expressways in the Tri-province area have grown substantially since completion in 2005, due to completion of missing road links in Shanxi and strong economic growth. The robust traffic growth and improved traffic safety translates directly to user benefits. This means that the ERR (five years after completion) is likely much higher. The financial rate of return in the ICR is also an under-estimate for the same reason. The Borrowers

---

11. The person who calculated the ICR ERR values has retired and the files describing the network and the traffic flows have been lost. Even in the absence of the recalculated ERR, a reliable “guestimate” can be extrapolated on the basis of the current traffic and using the same growth rate as in the ICR.

indicated that the current cash flow covers the maintenance and debt service costs, and the road segments will turn profitable in 2011.<sup>12</sup>

6.5 The calculation of the ERR for the local road projects is problematic because of the variety of the difficulty of obtaining reliable traffic counts, and an absence of user willingness to pay information. Traffic volumes have also grown in the rural roads, whether they were part of the project or not. *The efficiency of the project investments is high.*

#### **OUTCOME**

6.6 Two project objectives were highly achieved and substantial achievement was attained in the other two, despite some uncertainties in measurement and some institutional shortcomings. Relevance was substantial and efficiency high. The overall outcome is thus rated as *satisfactory*.

#### **RISK TO DEVELOPMENT OUTCOME**

6.7 The traffic volumes on the main roads have increased. The toll income in all the provinces is sufficient to cover the loan servicing costs as well as road operation and maintenance. The overweight charges and overweight enforcement have also helped control the overloading problem while providing substantial revenue (for example, in Ningxia, after the overweight charges were instituted in 2007, the toll road income increased nearly 80 percent and a further 80 percent in 2008; although a proportion of this increase in toll revenue also has to do with the completion of the missing links connected to the Guwang Expressway). There is sustained improvement in road traffic safety in spite of the strong growth in traffic. The institutional development and training has increased institutional capacity and the new equipment is in good use. The new state-wide rural road financing initiatives are expected to lead to substantial improvements in the vast rural network over the next decade.

6.8 In sum, the benefits to the users from the highways and the rural roads will likely remain and increase with traffic. The institutions are soundly managed and the benefits from safety improvements should also be sustained provided that a comprehensive strategy for road safety is developed. Further training and other capacity building will likely continue to support the sector. *Risk to development outcome is negligible to low.*

#### **BANK PERFORMANCE**

6.9 Bank performance during identification, preparation, and appraisal of the project was satisfactory with some caveats. Risks were adequately considered and counteracted. Staff was prepared for the safeguard management with suitable training abroad. The socioeconomic justification for the projects was sound, but conservative. The

---

12. The income statement shows negative profit until 2011 or so in most provinces. (There are differences: Inner Mongolia expects to pay back its loan by 2011). When depreciation is added back in the income statement it provides, even now, a buffer for the cash flow being able to cover the debt service from the toll revenue. It is debatable if depreciation should be a cost element at all because current maintenance, fully funded, should counteract depreciation.

large contingencies in the loan, however, are questionable despite the argument concerning the lack of cost information from previously competitively tendered projects. The jurisdictional and coordination difficulties between the lead-agencies for safety and rural roads components were also not considered sufficiently. The environmental and social assessments, the RAP and consultations of the affected population on the other hand were satisfactory. Rating of Bank performance in project preparation is *satisfactory*.

6.10 Supervision of all components was superior. Once the revisions to the designs (4-lane expressway instead of expandable 2-lane design in Ningxia and Inner Mongolia) had been satisfactorily resolved, the highway components were implemented almost flawlessly and ahead of schedule. The task team was receptive and flexible to proposals to improve road designs, and responded to client needs as circumstances changed. The project's first highway contract in Ningxia was not awarded on procedural grounds and this allowed a greater funding for the redesigned sections of highway. Training on environmental management was organized during project implementation both in China and abroad. Compliance with environmental safeguards was especially noteworthy in that there was a movement from "doing no harm" to "doing good". An assessment of the RAP indicated general appreciation of the process and compensation. The Borrower was given assistance to work comprehensively in traffic safety and in completing the RIPA component in spite of lacking the lead-agency mandate. Bank performance in supervision is rated *highly satisfactory*. The overall evaluation of Bank performance is rated *satisfactory*.

#### **BORROWER PERFORMANCE**

6.11 There was effective cooperation between the Borrower and the Bank throughout preparation and implementation. The central and provincial governments were fully committed. The MOT and MOF, at the central level, assisted as needed in the preparation of the projects. During the implementation stage, they followed the projects closely and helped to resolve issues promptly. With the local governments' support in land acquisition and resettlement, all the safeguard issues raised at this level were appropriately addressed. Government performance was *satisfactory*.

6.12 The performance of the implementing agencies was *highly satisfactory*. All the PCDs demonstrated strong commitment towards achieving the project objectives, from the road works to carrying out the EMP and the safeguard policies were implemented beyond mere compliance. In general the project was executed as agreed and outputs achieved as planned. The project motivated the PCD staffs involved in the project, and improved their professional skills and awareness of good road management practices. The observed professional thinking and behavior during the PPAR mission was exemplary. The overall Borrower performance rating is *satisfactory*.

### **Hubei-Xiogan-Xiangfan Highway Project**

#### **RELEVANCE**

6.13 The project objective was consistent with China's transport development plan and part of the Government's National Expressway Network. The project components were consistent with the then prevailing Bank lending priorities, the CAS, and the later

CPS: construction or rehabilitation of the expressways and highways; improving traffic safety; institutional development; and improving access to targeted poor rural counties. *Relevance of the project and its objectives is high.* The design suffered from the same shortcomings as observed in the Tri-provincial project with regard to rural roads jurisdiction, cross subsidization and road safety. However, in this case the cost estimates were 30 percent too low. Relevance of the design is therefore *modest* and overall relevance *substantial*.

## **EFFICACY**

6.14 The PDO of the project was: to improve the efficiency, safety, and cost-effectiveness of the transport infrastructure in support of the social and economic development of Hubei province. The indicators for the achievement of the PDO at completion (“ICR target values”) and at the time of the PPAR mission are in Table 2. Note that in this case the project closed just one year before the PPAR mission and so the traffic growth could only be measured for this period. The project objective is multidimensional and its achievement needs to be judged using the project’s outcome indicators and the PPAR mission observations.

- The increased traffic volumes in the XXE corridor and in the rural roads and the increased incomes in the targeted poor counties are evidence of the project’s support to economic development and poverty reduction in the province. Other indicators such as school enrollment have an attribution problem since the counterfactual is unclear.
- The black spot program was completed (165 improvements) and that activity has continued since project completion (to 210 improvements). A Traffic Safety Training Center was established as part of the project, as was the pilot road traffic accident information system to help analyze and identify black spots. The target accident rates were met at project completion, but have worsened slightly since due to numerous accidents that occurred in a heavy snow storm.
- The project included an extensive training and studies program, which covered construction management, engineering supervision, expressway operation and safeguards management (resettlement), road safety, and quality control. Training and manuals were developed for road safety audits, maintenance standards and maintenance management, and expressway management. Maintenance by contract documents were prepared and also employed in practice for maintenance contracts. Modern maintenance equipment (recycling) was acquired.
- Part of the overall cost-effectiveness of the transport infrastructure is the well-managed safeguard management and the now standard use of Bank-harmonized safeguard policies in all the projects regardless of the funding source.

On the basis of the values of the project's outcome indicators and the mission observations *the achievement of the project's PDO is substantial*. This is a conservative valuation.<sup>13</sup>

### **EFFICIENCY**

6.15 The benefit-cost analyses were not recalculated for the PPAR for the same reason as in the Tri-provincial Highway project. Also, in the Hubei case, traffic is expected to grow substantially when the expressway link to Shanxi is finished. The robust traffic growth and improved traffic safety translates directly to user benefits. The Economic Rate of Return (ERR) in the ICRs, slightly over 23 percent and in line with the PAD estimates, is probably underestimated. The financial rate of return in the ICR is also an under-estimate. As in the Tri-provincial Highway project, the Borrower indicated that the current cash flow covers the maintenance and debt service costs, and the XXE road segment will turn profitable in 2011.

6.16 Traffic volumes have also grown on the rural roads and the new State policy for funding rural roads will likely stimulate further growth in the future. *The efficiency of the project investments is high*.

### **OUTCOME**

6.17 The project objective was substantially achieved with a few shortcomings and efficacy is substantial. Relevance and efficiency are substantial and high respectively. Therefore the overall outcome rating is *satisfactory*.

### **Risk to Development Outcome**

6.18 The traffic volumes on the project corridor have increased; the toll income is sufficient to cover the loan servicing costs and road operation and maintenance; there is sustained improvement in road traffic safety management; and the extensive institutional development through training and studies was successful.

6.19 In sum, the benefits to the users from the highways and the rural roads will likely remain and increase with traffic. The benefits from road safety and black spot improvements are also probably sustainable. Finally, the institutional capacity building is the strongest of the four provinces assessed in this PPAR. *Risk to development outcome is thus negligible to low*.

### **Bank Performance**

6.20 The Hubei Xiogan-Xiangfan project. The Bank team had the benefit of prior experience with projects in Hubei. The risks were defined carefully and counteracted including the risks with regard to safeguard policy implementation, especially possible delays in land acquisition and resettlement. Environmental and social assessments were

---

13. After only one year the socioeconomic environment around the project has not had time to fully adjust and take advantage of the new road. Based on PPAR mission observations the Hubei PCD, on its third Bank supported project, is a more sophisticated road organization than those in the other provinces.

made available to the affected parties. The assessments and consultations with the public altered the road alignment in several places to reduce adverse impacts. A financial management review was undertaken to ensure compliance with the Bank's procedures. Socioeconomic justification for the project was sound. The engineering designs and other documents, cost estimates, electrical and mechanical facilities, were reviewed by international engineering consultants. There were concerns regarding the implementation of traffic safety and rural roads components—both important matters to the Borrower and to the Bank. It is likely that the institutional responsibilities and the functioning of the road sector institutions with regard to these components were not fully understood, and taken into account in project. It is noted that the Bank no longer includes rural road components in highway project lending in China. The cost estimates for the project were too low, but the team was unable to convince the Hubei authorities to adjust them. Rating of Bank performance in project preparation is *satisfactory*, but with caveats.

6.21 Supervision of the project's components was of a high standard. In the early stages of construction the EMP implementation did not meet the requirements, but after the Bank's intervention HPCD took sustained corrective actions. On another occasion the Bank team temporarily downgraded the project's implementation progress to 'unsatisfactory', on account of unsafe design of the connecting roads and continued to follow up on this matter until the designs were rectified. Rural roads were supervised comprehensively and built well. All the safeguard policies and environmental mitigation measures for noise and dust were carried out appropriately. *Bank performance in supervision is rated satisfactory.*

6.22 Overall evaluation of Bank performance is rated *satisfactory*

## **Borrower Performance**

6.23 There was effective cooperation between the Borrower and the Bank throughout preparation and implementation of both projects. The central and provincial governments were fully committed, and assisted in the preparation of the project. During the implementation, they helped to resolve issues promptly. With the local governments' support in land acquisition and resettlement, all the safeguard issues were addressed and carried out satisfactorily and without delay. Government performance was *satisfactory*.

6.24 The performance of the implementing agencies was also *satisfactory*. The HPCDs built the XXE project to a high standard and on time. It was committed to achieving the project objectives, to carrying out the EMP and the safeguard policies beyond the letter—occasionally at the Bank's prodding and firmness of supervision—and to the many institutional strengthening activities, as evidenced by the extensive training courses. The Hubei Chutian Expressway Company was listed on the Shanghai Stock Exchange, while good and cooperative relationships were maintained with the township and city transport entities. Overall Borrower performance was *satisfactory*.

## 7. Conclusion and Lessons

7.1 The Bank's lending to China's highway sector continues to deliver some important benefits. The value of the Bank support lies less, however, in the actual loans (which are a tiny percentage of the country's total transport investments), but more in the form of less quantifiable benefits such as the best practice application of safeguard policies and the development of road management methodology through studies, advice and training. In the projects reviewed in this PPAR the inclusion of the rural road components also over time may help to unlock the potentially substantial benefits that can come from improving rural access by contributing to the debate about how jurisdictional and funding issues can be overcome. According to several officials interviewed by the IEG mission, the Bank has had a very useful and even transformational effect on motivating local transport sector professionals to think "out of the box". From this overview come four lessons:

- *It is important to ensure during project preparation that the mandate of the implementing entity is consistent with the scope of the project.* The implementation of the two highway projects in China proved unexpectedly challenging because the implementing entity had no jurisdiction over the rural roads and the traffic safety components.
- *A middle income country can still benefit substantially from the Bank's technical assistance and expertise.* The provincial officials involved in these major highway projects learnt quickly from the experiences from the training programs, study tours and advice from Bank staff. In respect of safeguards policies there was ample evidence of a movement from a compliant paradigm to one in which society was better off because of the intervention. Technical expertise was also passed on in respect of inter alia road maintenance by contract, expressway management, and good practice in road safety.
- *Some adjustments in the scheduling of safeguards procedures could be considered.* The completion of the full Resettlement Action Plan before the preliminary engineering highway design was completed wasted scarce resources as it had to be re-done because the road alignments changed significantly.
- *Since the gap between safeguard policies in the Bank and China on highway projects is now quite small, good supervision is the key to ensuring that the policies are followed.* In China, at least in the provinces where the projects were assessed, performance-based project lending has sufficed in respect of safeguards, but the application of the country systems with periodic supervision by the Bank could be contemplated.

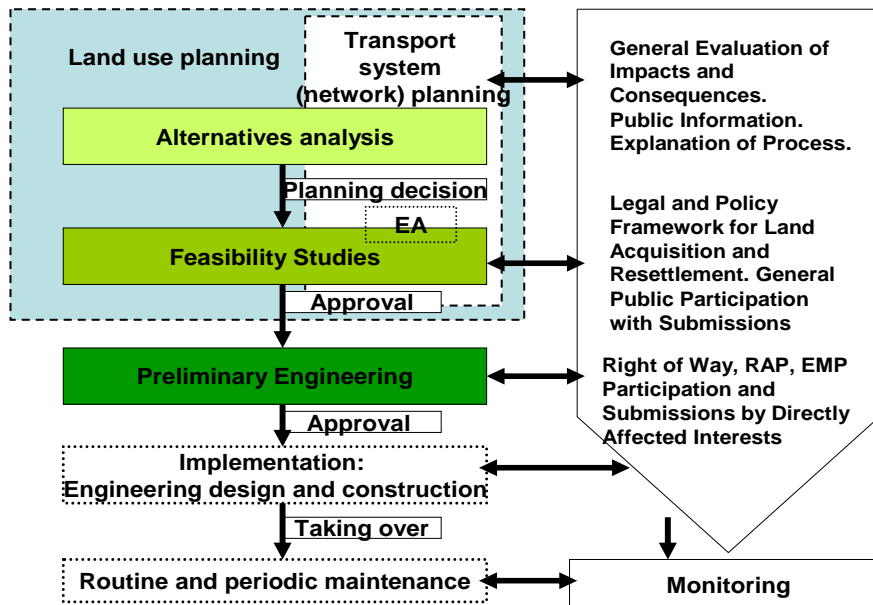




## **Annex A: A framework for project identification and preparation, and its coordination with the public participation processes.**

1. It was noted in the main text that the broad scope of the projects required the involvement of many road sector entities (some of which had relatively narrow perspectives) that were not directly under the jurisdiction of the implementing entity. The Bank in the projects covered by this PPAR may also not have fully appreciated the complexity of the mandate, functioning and jurisdiction of the provincial road sector administrative entities during preparation. The resulting implementation arrangements meant that the PDOs could not be properly addressed in a project context, because some needed rather to be addressed at higher administrative and management levels.
2. This is why project preparation did not flow seamlessly through implementation and supervision. Nevertheless, through joint efforts by the Bank and Borrower teams the difficulties in supervision were overcome. To remove the above difficulty, not uncommon in Bank supported transport projects, this annex proposes a general framework for how the transport sector (in any country) might organize its planning-implementation-maintenance-monitoring functions in a coherent way. Through this framework the several continuous and incremental steps that managers in any reasonably mature road administration need to address are shown together with the sequence in which they may be best accomplished.
3. Figure 1 shows a transport administration framework that is flexible enough to encompass the practices in most countries. The box with light background covers planning work that is embedded in a societal context. The public participation process that is associated with this framework follows.

Figure 1: Schematic Framework for Road Planning Process



4. The process starts with general planning and analyses of transport network, modal and approximate road alignment alternatives embedded in a broad societal context and discourse. Concurrently, general information of this dialogue and planning activities, their most important impacts and consequences, and explanation of the process to be followed are publicized through several media. This process results in the selection of the *preferred alternative*. At some point in time a decision is made to carry out a feasibility study<sup>14</sup> and an environmental assessment.

5. The feasibility study, normally carried out at a scale of 1:5000 (1 cm on the map is 50 meters; in rural areas 1:10,000 maybe sufficient), to determine the preferred alignment location (within 50-100 meters), and vertical alignment within 2-3 meters, at critical places a smaller scale may be necessary. There is general public participation with feedback as will be explained. It is important that at this stage the legal framework and the appeals process is in place—Policy Framework in the Bank’s parlance. The scale employed in this stage is small enough to allow good judgments to be made between alternative alignments and their relation to land uses. However, this scale is too coarse to identify the exact land parcels or buildings that need to be relocated. Such details will be determined in *preliminary engineering*. In the feasibility study and in public participation associated in it the *preferred alignment* is chosen.

6. Preliminary engineering, normally at scale 1:2000, with smaller scale at critical places, establishes the location of the road horizontally (~4m) and vertically (+/-0.5m). That document normally has legal effects enabling the road administration to acquire land

14. The feasibility study is carried out if substantial time has elapsed since the Alternative Analysis (AA) was conducted to ensure that there are no new issues, and that the assumptions and general forecasts that applied during the AA are still valid.

by purchase or eminent domain. In that phase the road geometry, right-of-way, resettlement, environmental mitigation, traffic safety, and other issues are considered in detail. The directly affected people are personally informed and involved in the negotiations process. Using Bank terminology, the EMP and RAP should be prepared during preliminary engineering; this is also important from the point of view of costs: 40 percent of the road construction costs (at the chosen alignment) are determined by material movements to build the road. Most important are, however, the legal obligations of the chosen alignment.

7. This is followed by detailed engineering, construction, maintenance, and monitoring. Note that public participation, legal and policy frameworks, appeals, evaluation of impacts and monitoring occur not only within the road administration, but involve the society at large; therefore, the “box” describing them is set outside the planning process.

8. It also is important to note that the schematic planning process framework divides itself between policy development and project development (boxes from preliminary engineering forward). Note also that this scheme relates naturally to both Development Policy Lending (DPL) and project lending. In China, the DPL type issues could consist of the following activities: road classification (administrative and functional); planning of provincial lower class network<sup>15</sup> and associated methods; supervision of engineering and environmental issues; procurement practice; financing of rural roads; road traffic safety regulations (state wide uniformity is required); road user charges and their collection; area-wide maintenance contracting, and many others. Loans, perhaps with the Ministry of Transport as the lead agency, could be structured around these issues, perhaps with the rural road rehabilitation as the anchor.

9. The project loans would focus on implementing and maintaining important road segments efficiently. These projects could involve innovative features in terms of financing, procurement (e.g. Public Private Partnerships in which the entire sequence after preliminary engineering is contracted out—with due process provisions for design changes to encourage innovations). Several technical issues are best addressed in project context. In China they could include: maintenance by contract, maintenance technology, toll collection technology, approaches to dealing with overweight trucks, toll road management, approaches to dealing with thorny, project specific engineering or environmental issues, and so on.

### **The public participation processes.**

10. Figure 2 shows the recommended public participation process; again local variations are possible. In principle, however, there are two public participation processes: the *alignment location inquiry* and the *design inquiry*. In the context of the

---

15. This kind of activity is already taking place. The Mission visited a Tuyou county in Inner Mongolia where county road professionals had already developed a comprehensive plan for the county and township networks, and several rural roads were being improved, presumably as part of the plan.

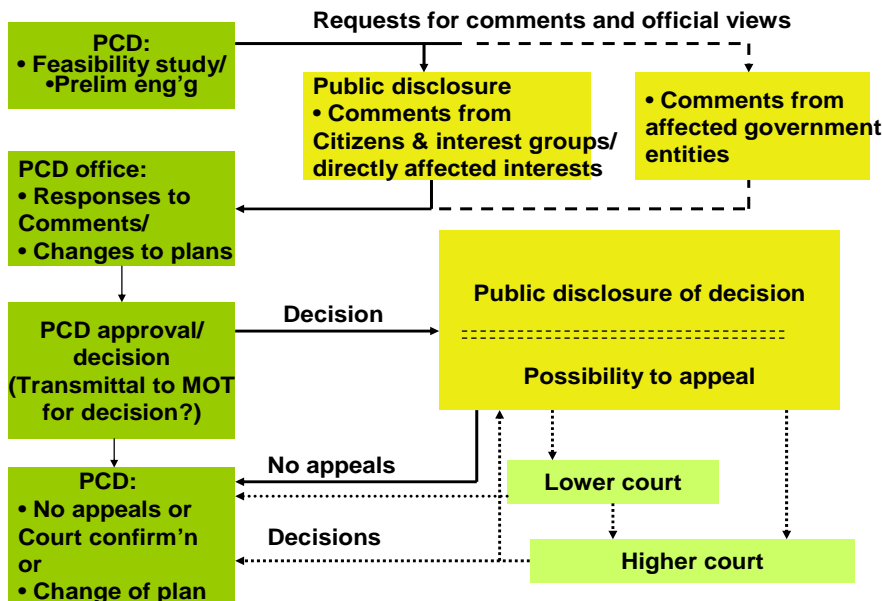
EA, there is also normally a scoping exercise that identifies what issues are important in the environmental assessment.

11. The general scheme of the public participation is the same in the alternative analysis/feasibility study stage. Plans are disclosed publicly and all affected interests can participate and may make submissions. Specific submissions and comments are solicited from government entities. The PCD would respond to these comments, and possibly revise plans or the evaluation of alternatives (value engineering). There would be public disclosure of the *preferred alignment*, which may be appealed.

12. The same basic flow chart is followed in preliminary engineering phase. The only difference is that public participation now involves only directly affected interests—whose land or buildings may be condemned, or access to land, even if not taken, is severely changed. After adjustments to the preliminary engineering design in response to submissions, the PCD will decide (or in some cases refer to the MOT for a decision), which may again be appealed according to the law.

13. The integrated planning process framework described above will be applicable in any country, with adjustments to the administrative culture, legal processes, and competence of the client. It could lead to a speeding up of loan preparations, and make them less costly and more focused. This would especially be true with regard to the design and engineering details and possibly the application of the safeguard policies.

**Figure 2: Public participation process in the context of the planning process**



## Annex B. Basic Data Sheet

### TRI-PROVINCIAL HIGHWAY PROJECT (LOAN 4536-CHA)

#### Key Project Data *(amounts in US\$ million)*

	<b>Appraisal estimate</b>	<b>Actual or current estimate</b>	<b>Actual as % of appraisal estimate</b>
Total project costs	658.70	649.27	98.6
Loan amount	230.00	225.00	97.8
Cofinancing	-	-	-
Cancellation		5.00	2.2

#### Project Dates

	<b>Original</b>	<b>Actual</b>
Appraisal	04/14/1998	04/14/1998
Negotiations	05/18/1998	05/18/1998
Board approval	06/23/1998	06/23/1998
Signing	12/18/1998	12/18/1998
Effectiveness	03/18/1999	03/18/1999
Closing date	06/30/2005	06/30/2007

**Staff Input - Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD '000 (incl. travel and consultant costs)
<b>Lending</b>		
FY97	-	85.55
FY98	-	261.90
<b>Total:</b>	-	347.45
<b>Supervision/ICR</b>		
FY98	-	4.29
FY99	-	70.00
FY00	28.73	98.76
FY01	33.67	113.72
FY02	25.77	51.26
FY03	22.33	40.29
FY04	18.87	38.02
FY05	13.9	18.13
FY06	16.95	33.87
<b>Total:</b>	160.22	468.34

**Mission Data – Bank Lending and Implementation Support/Supervision Process**

Task Team Members Names	Title	Unit	Responsibility/ Speciality
<b>Lending</b>			
Hatim Hajj	Principal Transport Specialist	EASTR	Task Manager
Chongwu Sun	Environmental Specialist	EASCS	Environment
<b>Supervision ICR</b>			
Supee Teravaaninthorn	Program Coordinator	AFTTR	Task Team Leader
Hatim Hajj	Principal Transport Specialist	EASTR	Task Team Leader
Xin Chen	Program Assistant	EACCF	Team Support
Yi Geng	Financial Management Specialist	EAPCO	Financial Management
Peishen Wang	Environmental Specialist	EASRE	Environment
Han-Kang Yen	Research Analyst	EASTE	Economic Analysis
Wenlai Zhang	Transport Specialist	EASCS	Task Team Leader
Youlan Zou	Social Specialist	EASRE	Resettlement
Jun Zeng	Social Specialist	EASRE	Resettlement
Kek Choo Chung	Consultant	EASCS	Engineering
Xiaofeng Li	Sr. Program Assistant	EACCF	Team Support
Boping Gao	Consultant	EASCS	Task Team Leader
Dawei Yang	Procurement Specialist	EAPCO	Procurement

## HUBEI XIAOGAN-XINGFAN HIGHWAY PROJECT (LOAN 4677-CHA)

### Key Project Data (amounts in US\$ million)

	<b>Appraisal estimate</b>	<b>Actual or current estimate</b>	<b>Actual as % of appraisal estimate</b>
Total project costs	690.90	862.47	125.8
Loan amount	250.00	221.72	88.7
Cofinancing	-	-	-
Cancellation	-	28.30	11.3

### Project Dates

	<b>Original</b>	<b>Actual</b>
Appraisal	07/16/2001	05/06/2002
Negotiations	08/15/2001	07/08/2002
Board approval	09/17/2002	09/17/2002
Signing	-	-
Effectiveness	02/27/2003	02/27/2003
Closing date	12/31/2007	12/31/2007

### Staff Inputs – Time and Costs (Bank Budget Only)

<b>Stage of Project Cycle</b>	<b>Staff Weeks</b>	<b>Costs (US\$)*</b>
<b>Lending</b>		
FY01	7	43.59
FY02	45	237.50
FY03	7	38.05
FY04	-	0.00
FY05	-	0.00
FY06	-	0.00
FY07	-	0.00
FY08	-	0.00
<b>Total:</b>	<b>59</b>	<b>319.14</b>
<b>Supervision/ICR</b>		
FY02	-	0.00
FY03	10	48.85
FY04	10	76.04
FY05	10	64.49
FY06	10	91.46
FY07	8	68.07
FY08	1	3.87
<b>Total:</b>	<b>49</b>	<b>352.78</b>

\*Including travel and consultant costs

### Mission Data – Bank Lending and Implementation Support/Supervision Process

Task Team Members Names	Title	Unit	Responsibility/ Specialty
<b>Lending</b>			
Michel Bellier	Lead Transport Specialist	EASTR	Task Team Leader
Anil Somani	Senior Environment Specialist	EASES	Environment
Zhefu Liu	Resettlement/Social Assessment Spec.	EACCF	Resettlement
Dan Gibson	Resettlement/Social Assessment Spec.	EACCF	Resettlement
Jean-Marie Braun	Highway Engineering Consultant	EASTR	Road Design
Dick Jonsson	Institutional Strengthening and Road Traffic Safety Consultant	EASTR	Institutional Specialist Traffic Safety
Han-Kang Yen	Research Analyst	EASTR	Economic Analysis
Robin Carruthers	Economist	EASTR	Economic Analysis
Rodrigo Archondo-Callao	Economist	INFTD	Economic Analysis
Dawei Yang	Procurement Specialist	EACCF	Procurement
R.I. Gopalkrishnan	Procurement Consultant	EAPCO	Procurement
Haiyan Wang	Financial Management Specialist	EACCF	Financial Management
Simon Bradhury	Senior Financial Management Specialist	LOAG3	Financial Management
Yi-Ling Liu	Disbursement Analyst	LOAG3	Disbursement
Nina Masako Eejima	Senior Counsel	LEGEA	Lawyer
Hoi-Chan Nguyen	Senior Counsel	LEGEA	Lawyer
Teresuta Irtega	Team Assistant	EASTR	Team Member
<b>Supervision/ICR</b>			
Anil H. Somani	Consultant	EASTE	Environment
Aurelio Menendez	Lead Transport Specialist	EASTE	Peer Reviewer
Christopher R. Bennett	Sr. Transport Specialist	EASTE	Task Team Leader
Dawei Yang	Procurement Spec.	EAPCO	Procurement
Emily Dubin	Junior Professional Associate	EASTE	Team Support
Esperanza Miranda	Operations Officer	EASSD	Team Support
Haiyan Wang	Finance Officer	LOADM	Financial Management
Hong Chen	Peer Reviewer/Operations Officer	EASOP	Peer Reviewer
Jean-Marie Braun	Consultant	EASTE	Road Design
Nurul Alam	Senior Procurement Spec.	EAPCO	Procurement
Pan Wen	Consultant	EASTE	
Wenlai Zhang	Transport Specialist	EASTE	Team Member
Wenling Chen	Junior Professional Associate	EASTE	Team Member
Yi Chen	Financial Management Specialist	EAPCO	Financial Management
Zhefu Liu	Senior Social Development Spec.	EASCS	Resettlement
Tersita Ortega	Program Assistant	EASTE	Team Support