Validation Report

Reference Number: PCV:PRC 2011-61
Project Number: 32336
Loan Number: 2014
December 2011

People’s Republic of China: Western Yunnan Roads Development Project

Independent Evaluation Department

Asian Development Bank
ABBREVIATIONS

ADB – Asian Development Bank
EIRR – economic internal rate of return
GMS – Greater Mekong Subregion
PCR – project completion report
PPMS – project performance management system
PRC – People’s Republic of China
YBEC – Yunnan Baolong Expressway Company
YPDOT – Yunnan Provincial Department of Transport

NOTES

(i) In this report, “$” refers to US dollars.

Key Words
prc, adb, asian development bank, expressway, greater mekong subregion, independent evaluation department, national trunk highway system, performance evaluation, road development, yunnan province

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To the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

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I. PROJECT DESCRIPTION

A. Rationale

1. The Western Yunnan Roads Development Project was the third project supported by the Asian Development Bank (ADB) for expressway development in Yunnan, which is among the largest and poorest provinces in the People’s Republic of China (PRC). It was to contribute to the implementation of the Western Region Development Strategy adopted by the PRC, designed to increase the western region’s participation in the accelerated pace of growth in the coastal provinces. Like previous projects financed by ADB, the project’s expressway section is also a segment of the Greater Mekong Subregion (GMS) network and the Asian Highway route. It was a step toward the achievement of the Shanghai–Kunming–Ruili (Myanmar border) link in the PRC’s National Trunk Highway System. The project would replace a remaining section of the historic national highway (NH) 320 between Kunming and the Myanmar border. The stretch between Baoshan City and Longling is of poor quality and insufficient capacity, being congested and frequently prone to landslides and fog during the rainy season. A large infrastructure upgrade was intended to promote broader development, reducing high rural poverty and increasing trade with Myanmar, consistent with increased cooperation among GMS countries, which ADB has long supported.

B. Expected Impact

2. The project was to (i) promote pro-poor economic growth (e.g., local per-capita incomes compared with provincial average, rural poverty reduced by 15%); and (ii) support regional development in the GMS (e.g., cross-border trade and traffic between Myanmar and Yunnan).²

¹ ADB. 2003. Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People’s Republic of China for the Western Yunnan Roads Development Project. Manila (paras. 18–21).
² The original list of indicators measured pro-poor growth in Yunnan only and did not specify targets. The project completion report focused on two growth indicators and added a regional indicator (but with no specific target).
C. Objectives or Expected Outcomes

2. The more immediate outcome was an efficient, safe, and sustainable road transport system in the project area leading to reduced congestion, travel time, and vehicle operating costs; improved road safety; increased road capacity; private sector involvement; improved access of the poor to markets, social services, and jobs; lower travel costs; reliable and frequent bus service; corporate governance; and environmental protection reforms (footnote 1, para. 22, and Appendix 1).

D. Components and/or Outputs

3. The key outputs comprised (i) construction of an expressway, (ii) upgrading of selected rural roads, and (iii) installation of operating equipment. The 77-kilometer (km) expressway, including many bridges and tunnels, would have four interchanges and require 14.5 km of access roads as well as toll stations, service areas, and administrative buildings. The selected rural roads, aggregating 294 km, were to provide all-weather access for some of the poorest parts of Baoshan. Operating equipment was mainly for construction quality control and testing, bridge and tunnel maintenance and operation, and monitoring and/or tolling of expressway traffic.

E. Provision of Inputs

4. Project expenditures totaled $766.7 million. This was 32% above the planned cost, although half of this increase was accounted for by an appreciation of the PRC yuan to the US dollar since 2006. An increase in real terms was due entirely to expressway works, which cost 25% more than planned as a result of changes in the final design, mainly additional bridging and tunneling and measures to reduce geological and environmental hazards. The cost overruns were fully covered by increases in the government grants for the project and in a loan provided by Kunming City Commercial Bank. The full amount of the ADB loan was disbursed, as well as $38.0 million equivalent by the Agence Française de Développement.

F. Implementation Arrangements

5. The executing agency was the Yunnan Provincial Department of Transport (YPDOT), and the implementing agency was the Yunnan Baolong Expressway Company (YBEC), which was established in 2003 as a separate corporation to build and operate the expressway. The rural road component of the project was implemented by the communication bureaus of the concerned counties under the supervision of YPDOT. YBEC staff were well qualified and many had gained valuable experience on the earlier ADB-financed expressway projects in the province. They were assisted by an international consulting firm through brief high-level inputs on select topics, and by national firms for project management and monitoring, bid preparation and evaluation, and quality assurance and testing.

6. The project was a category A project from the environmental standpoint. An environmental impact assessment and management plan, as well as a resettlement plan for the land acquisition that would be needed, were prepared, agreed, and widely circulated. YBEC was required to hire an independent entity to review and report regularly on resettlement and compensation for land acquisition. It also contracted out monitoring work on trends in the broader areas of poverty reduction, local-level production, and transport-sector performance, which the project was intended to improve. YBEC was to report on fulfillment of environmental standards. To counter the risks of HIV transmission from the extensive multiyear civil works activity in the province (Yunnan has already suffered more from HIV/AIDS than other provinces), ADB mobilized an $800,000 grant to support a major 3-year information and advisory

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3  Bridges and tunnels together account for half of the 76.3-km final length of the expressway.
campaign. Systematic follow-up surveys indicated that this did elicit appropriate behavioral responses among workers and local inhabitants.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

7. The project completion report (PCR) assessed the project *highly relevant* to the country’s needs at the time of loan approval and completion of works (footnote 5, paras. 30–31). Its components were consistent with ADB’s strategy and template of assistance for the PRC road sector and effective arrangements were made for timely and efficient execution. On the other hand, the validation sees room for improvement. First, there was an apparent lack of attention to ensure sound and adequate information in formulating such a project with its complex geological conditions (paras. 4 and 21). Second, traffic forecasting at appraisal seemed overly optimistic. The PCR could have explained the large shortfall from appraisal targets of initial expressway traffic (paras. 11, 18, and 26). Overall, the validation rates the project *relevant*.

B. Effectiveness in Achieving Project Outcomes

8. The PCR rated the project *highly effective*, citing many of its achievements but also favorable aspects of broader recent trends in western Yunnan that are probably due more to factors other than road building and management activities (footnote 5, paras. 32–38). But there is evidence that the project delivered effective results on the objectives identified in its project framework. Congestion, which was becoming serious on sections of the old main road between Baoshan City and Longling, was reduced; travel time from one town to the other was approximately halved, and road safety on this route vastly improved. The expressway’s safety performance was enhanced by YBEC’s special attention to this aspect in the project’s final design, adding parking areas and signs; replacing hard retaining walls wherever possible with wide, shallow ditches; and building 11 escape ramps (in the event of brake failure) at appropriate points on continuous downhill stretches (up to 30 km long) and at sharp bends.

9. The large increase in road capacity on this part of the Shanghai–Ruili road fulfilled its expected contribution to the expansion of capacity to the Myanmar border. This effect will be further enhanced in the coming years with the completion of the last section from Longling to Ruili. YBEC has established a good management record since its corporatization in 2003 and has further benefited from its intensive cooperation with ADB, as well as some training programs arranged by ADB and Denmark.

10. Yunnan did not show further interest then in attracting private capital for expressway operations, as ADB had been encouraging (para. 17). But it did create a holding company in 2006 for all of the province’s expressways, the Yunnan Highway Investment and Development Company, subsequently renamed the Yunnan Highway Investment Corporation. The latter has been introducing cost-efficiency measures and innovations. A study of the rural areas of Baoshan Prefecture by a monitoring consultant demonstrated significant improvements in village access to markets and social services from the road improvements and an expansion of bus services. A sample survey of 26 villages in areas traversed by the expressway indicates that 100% of the villagers, up from less than two-thirds in 2004, can now reach markets and secondary schools in 30 minutes and health clinics in 10 minutes. The validation agrees with the PCR rating of *highly effective*.

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C. Efficiency of Resource Use in Achieving Outcomes and Outputs

11. The PCR rated the project efficient, based on its updated economic internal rate of return (EIRR). The EIRR for the whole project was 15.7% compared with the appraisal estimate of 18.7%. Sensitivity analysis indicated that the former would fall to 13.3% if benefits were to be 20% less than projected. The reduced returns were due to substantially lower traffic than forecast at appraisal and the significant cost overrun for the expressway. In 2009, expressway traffic was less than 60% of the appraisal forecast for that year. Limited traffic data for the Baoshan–Longling corridor suggest considerable fluctuations yearly rather than the steady growth that might be expected from sustained increases in gross domestic product, as indicated by official statistics for the counties traversed (significantly more rapid than expected at appraisal).6 The PCR’s assumptions about future expressway traffic growth (i.e., 25% in 2010, then 16% per annum until 2015, and 20% for 2 or 3 years thereafter) envisaged increases following the expected completion of connecting highways (without much effect from the railway developments also underway).7 These assumptions were optimistic, but not unreasonable. An increase in requests by enterprises for permission to invest in Longling County is a positive sign. But at the time, there remained a substantial risk of a serious shortfall from the revised traffic projections, with consequent further downward adjustments in the EIRR, but with explicit recognition that this depended on sustained and substantial growth of expressway traffic toward levels projected at appraisal. Overall, the validation agrees with the PCR rating of efficient.

D. Preliminary Assessment of Sustainability

12. The PCR rated sustainability likely. It stressed that YPDOT and YBEC handled the risks inherent in the unstable geology of the area traversed by the expressway well in terms of both design and execution, and that the construction used high-quality materials. Close attention was given to the contractors’ adherence to established geological and environmental standards. The local roads built have been regularly maintained by the county communication bureaus. YBEC is well organized and has the requisite capacity to maintain and operate the expressway and its access roads.

13. On the other hand, the PCR noted that tolls currently levied are below those assumed at appraisal. To achieve the needed reinforcement of the company’s financial position, the PCR assumed a 15% increase in basic toll rates in 2012. Information available in project monitoring reports indicated that the structure of toll charges had changed substantially from earlier practices in the province and tentative subsequent objectives, with higher levels now for cars and small trucks, and much lower levels for larger vehicles. This may reflect what was considered necessary to attract greater numbers of larger vehicles to use the toll road rather than NH320. This development may continue to constrain YBEC’s revenue increases. Given YBEC’s financial prospects and ability to achieve the financial performance levels required by ADB’s loan agreement, this validation agrees with the PCR rating of likely sustainable.

E. Impact

14. The PCR focused on socioeconomic trends in areas directly affected by the project (footnote 5, Appendix 1). It also referred to the impact on those who lost land or houses to make way for the expressway, and to the project’s broader environmental impact. It stressed the strong economic growth in the counties traversed and noted this project’s substantial contribution in terms of employment and, indirectly, through provision of supplies. The PCR reported that land acquisition was well handled, with extensive advance information and

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6 Past traffic figures indicated rapid growth, equivalent to 25% per year, from 2006 to 2009, but much slower growth, equivalent to 10% per year, from 2002, base year of the ADB appraisal, to 2009.

7 Actual traffic figures for the Baoshan–Longling road corridor in 2010 would have been available, but the ADB Resident Mission declined requests to provide these to the Independent Evaluation Department.
consultation, timely payment of compensation at the rates agreed for each county, and extensive assistance for adjusting to the change (such as adopting new crops or cultivation practices, beginning non-agricultural employment, or building a new house). Measures to mitigate the project’s environmental impact (in line with the environmental management plan and the soil erosion protection plan) that were approved in 2003 proved effective and adequate. The project left no lasting negative impact. When ADB appraised the project, specific environmental targets were not set for the period of operation upon completion of construction, but the PCR indicated a likely positive effect in the form of reduced carbon dioxide emissions on the Baoshan-Longling corridor as a result of (i) shortened road length (from 92 km to 76 km), (ii) reduced congestion, and (iii) regulatory improvements in fuel and vehicle emission controls.

15. The project framework specified the main impact targets of income growth and poverty reduction in terms of what might happen in 2007 when the project was completed. The earliest broad targets were for 2010. Since the PCR was prepared in mid-2010, it could not provide much feedback on these targets given that the expressway was completed about a year later than planned and was fully opened to traffic only in September 2008. But the positive economic trends of the intervening period—20% annual growth in per-capita gross domestic product in Baoshan, Longyang, and Longling between 2004 and 2008, and 10%–12% annual growth in rural per-capita net income—establish a good basis for substantial impact from the project. It is likely that the macroeconomic target for 2010, including reduced rural poverty to less than 15% of the population, was met.

16. Other economic impacts from the project relate to areas served by its rural roads, which were completed in 2004–2005. These impacts included households affected by land acquisition for the expressway, and women, more generally (footnote 5, Appendix 14). The project roads went through 11 townships and some 100 villages, with a total population of around 110,000. The YBEC completion report indicates that rural per-capita net income in these areas rose from CNY1,380 in 2000 to CNY2,625 in 2008. The improved conditions brought in agricultural inputs, facilitated the selling of produce, and allowed more access to social and commercial services. More than 6,000 households (or nearly 26,000 people) lost land or houses to the project. The Kunming University of Science and Technology, which served as an independent monitor, prepared biannual reports for the project. A final round of surveys (on a sample of 314 households which lost land and/or a house) indicated that the average per-capita net income rose from CNY836 in 2003 (prior to land acquisition) to CNY1,768 in 2007 (footnote 5, Appendix 14). The university’s project monitoring report in 2009 concluded that households that had lost land were generally able to maintain their earlier overall economic condition but also gained from better environmental conditions and often better jobs. The households of vulnerable groups were now generally enjoying improved conditions. The same report drew on other surveys for its assessment of the effect of project activity on women. It found that women had taken some 15%–20% of the jobs in the main construction contracts and received generally rising wages to some CNY25–CNY30/day. A broader trend in areas where rural roads were improved was the large improvement in women’s access to medical and other social services, as well as markets and wider opportunities. Overall, there is a strong indication that the project’s impact will be significant.

III. OTHER PERFORMANCE ASSESSMENTS

A. Performance of the Borrower and Executing Agency

17. YPDOT, the executing agency, and its corporatized subsidiary, YBEC, implemented the project efficiently and to high standards of quality, and the PCR covered the different dimensions of their performance well. The relatively long gap of 9 months between Board approval of the ADB loan (October 2003) and loan signing (August 2004) reflected PRC
government requirements for completion and internal approval of the preliminary project design and an updated cost estimate prior to finalization of the financial arrangements. Main construction work began in December 2004. The project was implemented according to the arrangements envisaged at appraisal. Based on available information from the PCR, the land acquisition and resettlement process appears to have been carried out effectively and to have complied with ADB policies. The borrower and the executing agency ensured that the larger than expected requirements for counterpart financing were met when needed. The borrower and executing agency complied with all 19 covenants (footnote 5, Appendix 9). The proactive measures taken by the executing and implementing agencies, with the aid of their senior PRC and international consultants, to mitigate geological and environmental risks and improve traffic safety have proved effective and constitute particularly valuable contributions. YBEC analyzed the possibility of private sector participation in project facilities, but this was not deemed feasible at this stage based on the current structure of road maintenance and operation in Yunnan. This validation agrees with the PCR assessment that borrower and executing agency performance was, overall, satisfactory.

B. Performance of the Asian Development Bank

18. ADB fielded seven review missions (including a safeguard review) or 1.75 missions per year during implementation. This seems adequate. Two ADB officers supervised the project from 2005–2008. Communication and coordination between ADB and YPDOT and YBEC were smooth and effective. ADB’s response to requests from the PRC agencies was prompt and constructive, and ADB disbursement procedures and performance were satisfactory. A strong feature of project appraisal, which was effectively followed up in implementation, was the attention given to systematic monitoring by independent parties of the adherence to standards (e.g., contractors’ fulfillment of environmental and employment standards, local governments’ handling of land acquisition and compensation) and of progress toward intended project impacts (such as reduction of poverty, improved public transport, and better highway safety on the corridor). The reports planned were produced largely to schedule, steadily improved with experience, and contributed significantly to the quality of project management and supervision. On the other hand, an area for improvement was traffic forecasting at appraisal, which is the case for many other toll highways that have been built. The difficulties and uncertainties were well recognized at the time. ADB management also urged more attention to the growth aspect of the project and the development and application of appropriate toll policies. The PCR analysis or lack thereof seems to indicate that more attention could have been given to these matters. Overall, the validation agrees with the PCR rating that ADB performance was satisfactory.

C. Others

19. The report and recommendation of the President indicated that special attention would be given to the needs of ethnic minorities affected by project activities such as land acquisition and HIV/AIDS prevention initiatives. A total of 245 minority households (or about 4% of the eventual total, compared with the more than 10% suggested in the original resettlement plan) lost land and/or a house. ADB headquarters fielded a specialist review mission in September 2005, when land acquisition and resettlement were largely completed and the HIV/AIDS initiative had begun. This mission, as well as a local consultant’s monitoring of land acquisition for the project, confirmed that the few who lost houses ended up with better houses in their traditional village and that supplementary help with living costs or training was provided in a few cases. Indications are that ethnic minorities, like others affected, have been able to regain their

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8 During interdepartmental review, the validating team was informed that PRC institutions are very experienced at forecasting traffic volume and have adequate knowledge to undertake the activity. However, it is not clear whether improvements in traffic forecasting were attributable to the project.
earlier living standards. Following the mission visit, the HIV/AIDS prevention team took measures to ensure that minority-group members of the population were effectively reached.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

20. The validation confirms the main ratings proposed in the PCR, except for a downgrading of project relevance. Expressway results were delivered, although initial traffic levels were below expectations. Overall, the project is rated *successful*. Its potential for sustained success is dependent on whether traffic will prove quickly to reach the magnitudes projected by ADB at appraisal.

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<td>Quality of project completion report</td>
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IED = Independent Evaluation Department, PCR = project completion report.
Source: Independent Evaluation Department.

B. Identification of Lessons

21. The PCR draws well-founded lessons from the high-quality engineering management of the project: (i) the merits of planting and taking other protective measures for slopes immediately after earth excavation, (ii) the notable safety benefits that can result from escape ramps, and (iii) the cost-efficiency of proactive rather than reactive treatment of the geological hazards associated with excavation (footnote 5, para. 54). More broadly, the PCR recommends that in areas with complex geological conditions an in-depth geological survey should be conducted as part of the feasibility study for a proposed project or that the project’s preliminary design should be started early to ensure the availability of more complete information at project appraisal. Such an approach could improve the quality of decisions and avoid unexpected cost increases.

22. The borrower’s own PCR places particular emphasis on the high value of the HIV/AIDS prevention initiative and suggests that similar programs should be taken up in connection with other major engineering works, as a joint effort between the responsible engineering organization and a government’s national anti-AIDS committee or campaign, with support from an international agency or NGO. This conclusion is important because it contrasts strongly with the reluctance that Chinese engineering circles had manifested when ADB had first proposed such action in early project discussions in 2002–2003.

C. Recommendations for Follow-Ups

23. The PCR emphasizes the following covenanted reporting responsibilities of YPDOT and YBEC: (i) to provide ADB with annual project performance monitoring reports through 2011 and annual audited accounts on the expressway during its first 5 years of operation; and (ii) prior to submitting any toll revision proposals to YPDOT, YBEC should seek ADB comments thereon. At project completion review, YPDOT was more than a year behind in submitting its annual monitoring report.
V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Evaluation Design, Implementation, and Utilization

24. Three principal monitoring systems were envisaged and effectively established: (i) a project performance management system (PPMS), corresponding to the objectives and targeted impacts outlined in the project framework, which YBEC was expected to handle; (ii) monitoring and evaluation focusing on implementation of land acquisition and resettlement and the economic situation of affected households, to be handled by an independent contractor appointed by YBEC; and (iii) an assemblage (by YBEC) of environmental monitoring data from appropriate local sources, covering matters such as noise and vehicle emissions, which were to be treated in the environmental management plan. A notable feature of the project was the care taken at appraisal to prepare a comprehensive list of the questions, priorities, and best approaches to the work the PPMS was to follow, and at implementation to work out, with the aid of the international consultant. This monitoring work was also contracted out to a local institute. Both PPMS and land acquisition and resettlement monitoring efforts supplemented their various sources of data with their own periodic sample surveys. Those conducted by PPMS covered 26 villages. Those by land acquisition and resettlement monitoring efforts included one covering all 10 heavily affected villages and another of 314 households randomly selected to be representative of the more than 6,000 households involved (para. 16). All three systems produced periodic reports, usually every 3 to 6 months. Each was also successful in gathering meaningful and up-to-date data on trends in Baoshan Prefecture, the two counties, and the area directly affected by the project. Effective coverage of a few issues mentioned in the report and recommendation of the President that involved higher-level institutions not directly involved with the project seems to have been more problematic. The data that were collected were heavily used by management at all levels and by ADB staff working on the project.

B. Comments on Project Completion Report Quality

25. On the whole, PCR quality is judged satisfactory. It is generally well written, interesting, thorough, and internally consistent. The PCR lessons are also able to demonstrate past good work and success (footnote 5, para. 54). On the other hand, the validation sees room for more candidness in acknowledging performance, including lessons on how ADB could have helped even more. The project experienced design changes, major cost overruns, and delays, which is not typical of PRC expressway projects. For example, the analysis could have delved further into the extent of the shortfall of initial traffic from forecast levels and the quadrupling of the number of households affected by land acquisition. The PCR also had little to say on regional impacts (e.g., trade and passenger flow between Shanghai and Kunming and into Myanmar). It cites lagged benefits from construction delays of two connecting expressways, without clarifying whether the project’s assumptions were overly optimistic (footnote 5, para. 39).

C. Data Sources for Validation

26. Records of management review meetings and related discussions, Board papers, back-to-office reports of ADB loan review missions (other than the first one and the midterm review mission, for which ADB was not able to locate the records), samples of reports from the three main monitoring efforts, the borrower’s PCR, and ADB’s website.

D. Recommendation for Independent Evaluation Department Follow-Up

27. The preparation of a project performance evaluation report is not necessary.
REGIONAL DEPARTMENT'S RESPONSE TO THE
PROJECT COMPLETION REPORT VALIDATION REPORT

On 1 December 2011, the director of the Independent Evaluation Division 2, Independent Evaluation Department, received the following comments from the People’s Republic of China Resident Mission, East Asia Department:

   We appreciate that the comments we made on the earlier draft have been incorporated to the extent possible in the final draft, except that it is still debatable to downgrade the relevance rating from highly relevant to relevant. We have no further comment.