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Project Number: 35388
Loan Number: 2089
January 2015*

People’s Republic of China: Hunan Roads Development II Project

Independent Evaluation Department
Asian Development Bank

* Revised May 2015.
ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>CECC</td>
<td>Changji Expressway Construction and Development Company</td>
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<tr>
<td>DMF</td>
<td>design and monitoring framework</td>
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<tr>
<td>EIRR</td>
<td>economic internal rate of return</td>
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<tr>
<td>FIRR</td>
<td>financial internal rate of return</td>
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<tr>
<td>GDP</td>
<td>gross domestic product</td>
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<tr>
<td>HPTD</td>
<td>Hunan Provincial Transportation Department</td>
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<tr>
<td>km</td>
<td>Kilometer</td>
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<tr>
<td>MTE</td>
<td>medium truck equivalent</td>
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<tr>
<td>O&amp;M</td>
<td>operation and maintenance</td>
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<td>PCR</td>
<td>project completion report</td>
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<td>PCU</td>
<td>passenger car unit</td>
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<td>PRC</td>
<td>People’s Republic of China</td>
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<td>TA</td>
<td>technical assistance</td>
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<td>WACC</td>
<td>weighted average cost of capital</td>
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NOTE

In this report, “$” refers to US dollars and CNY refers to yuan.

Key Words

adb, asian development bank, cecc, expressway, hunan, ict, lessons, people’s republic of china, performance evaluation, prc, project completion report, road maintenance, rural roads, transport, vehicle, voc

The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. To the knowledge of IED management, 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. Hunan, a landlocked province in the interior of the People’s Republic of China (PRC), ranked 21st among 31 provinces and municipalities in per capita gross domestic product (GDP). The western part of Hunan Province was one of the poorest regions in the PRC. Despite previous investment, the road network was inadequate in providing access to large parts of the province. Of the Hunan roads, 86% were below the class III technical standard. The national highway, NR319, which ran parallel to the envisaged expressway, was in poor condition. It was often congested and experienced interference from non-motorized traffic. Highway traffic was estimated to grow 7.3% annually and could exceed highway capacity by 2008.

ADB = Asian Development Bank; ADF = Asian Development Fund; ICT = information and communication technology; IED1 = Independent Evaluation Department, Division 1; IED2 = Independent Evaluation Department, Division 2; OCR = ordinary capital resources; PCR = project completion report.
2. The project area, located on the western part of Hunan Province, was largely rural and mountainous and had limited access. The project aimed to construct an expressway and improve local roads, which could form the backbone for a better road network that facilitate economic growth and connect the poor, isolated western regions with the economic centers.

B. Expected Impact

3. The project’s design and monitoring framework (DMF) envisaged impact as the promotion of economic development and lower poverty incidence in the project area. The impact indicators were: (i) 10% GDP growth over 3 years, (ii) 10% reduction in poverty incidence in the project area over 5 years, (iii) 10% increase in nonfarm employment over 5 years, (iv) 10% increase in rural enterprises within 3 years, and (v) 10% increase in trade in the western regions within 3 years. Baselines for these indicators are reported in the project completion report (PCR)² (Appendix 1, Project Framework).

C. Objectives or Expected Outcome

4. The project’s expected outcomes were: (i) improved transport efficiency, (ii) better access to markets and social services for rural areas, and (iii) improved road safety in the transport corridor. Indicators for transport efficiency, which were expected to be achieved within 3 years, were: (i) a 10% decrease in traffic congestion along NR319, (ii) a 10% reduction in vehicle operating cost or transport fares, (iii) a 10% improvement in input and output prices, and (iv) an annual 10% increase in interprovincial traffic—passengers and tonnage. Improved access to market and social services was to be measured in 10% reduced travel time to the nearest markets, health facilities, and schools within 3 years. Another outcome indicator was a 10% increase in traffic from villages to townships and counties compared with that in the control area. For improved road safety, a 25% decrease in the accident rate on the project roads during the first 5 years of operation was envisaged.

D. Outputs

5. The project had four components. The first component was the construction of (i) a 173-kilometer (km) four-lane, access-controlled toll expressway from Changde to Huaihua, including 11 km of class II connector roads; (ii) 81 bridges, including three extra-large bridges; (iii) seven interchanges; and (iv) toll stations. The second component was the upgrade and improvement of 517 km of local roads. The third component was to provide equipment for road maintenance and safety, toll collection, surveillance and communications, tunnel ventilation and lighting, vehicle axle road testing, and environmental protection. The last component would provide consulting services and overseas training (para. 9).

E. Provision of Inputs

6. At appraisal, the total project cost was estimated at $778.1 million, consisting of $314.2 million foreign exchange cost and the equivalent of $463.9 local currency cost. The cost of civil works for the expressway was estimated at $496.3 million and $81.9 million for the local road program. Equipment was expected to cost $8.8 million. The cost of land acquisition and resettlement was estimated at $46.0 million. At completion, the actual cost of the project was $989.7 million or 27.2% higher than appraisal estimates, largely because of the appreciation of the local currency against the United States dollar. At appraisal, the exchange rate was

CNY8.27 to $1.00. At project completion, the yuan had appreciated to CNY6.49 to $1.00. In local currency, the actual cost of expressway civil works was CNY468 million or CNY2 million less than the estimate of CNY470 million.

7. Asian Development Bank (ADB) provided a preparatory technical assistance (TA) in September 2002 to assess the project’s technical feasibility and financial viability, including its environmental and resettlement impact. The TA was completed in November 2003, and its outcome confirmed the technical, financial, and economic viability of the project and the adequacy of its environmental and social measures. On 9 September 2004, ADB approved a $312.5 million loan from its ordinary capital resources to finance the foreign exchange component, with $12.5 million being allocated for the local road component. The loan was to finance 40.2% of total project cost. The national government was to finance $106.4 million (13.7%) on a grant basis, the Hunan provincial government to finance $40.0 million (5.1%) from its own funds, and to source the remaining $319.2 million from the China Development Bank. At completion, the loan amounted to $312.3 million, which financed 32% of the total project cost. The national government covered 24%, the Hunan provincial government’s share was 11%, and China Development Bank’s share was 33%. The remaining $0.2 million of the original loan was canceled.

8. Actual international consulting inputs was lower than planned but domestic consultants provided more person-months than anticipated. The international consultant was mobilized in October 2005 and provided cumulative inputs of 40 person-months until October 2008. Inputs were provided to highway construction, quality control, pavement design and construction, tunnel construction, road safety, and operation and maintenance concession. Consultants for domestic construction supervision provided 6,390 person-months of services or 23% more than originally envisioned.

9. Seven overseas training programs were conducted in road construction and supervision, and bridge and tunnel construction. The implementing agency also conducted six domestic training programs for some 700 participants. Domestic training programs covered quality control, project management, pavement construction, construction safety, and other engineering-related subjects. The PCR assessed the performance of the international consultants as satisfactory as they had established a good working relationship with the Hunan Provincial Transportation Department (HPTD) and the Changji Expressway Construction and Development Company (CECC) and had performed the services required by their respective terms of reference. The national consultants likewise provided highly satisfactory services. No associated advisory TA was attached to the project.

10. The project’s environmental impact was assessed as Category A. During appraisal, major environmental impacts were identified, such as soil and water conservation, erosion control, borrow and disposal site management, and revegetation. Borrow and spoil disposal sites were identified at 10 km intervals. An erosion control and protection plan was prepared separately from the environmental impact assessment and was subsequently approved by the Water Resources Bureau. Environmental mitigating measures were to be incorporated in the bidding documents and bills of quantities of the civil work contracts.

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F. Implementation Arrangements

11. The HPTD, as executing agency, was responsible for the overall project implementation. A project management office was established under the HPTD to administer and coordinate project implementation activities. Local highway agencies, under the overall guidance of the HPTD, upgraded the local roads. The 135 km Zhangyuan highway, financed by ADB under the local roads improvement program component, was divided into two sections: a 75 km stretch in Yuanling County (Yuanling section) and a 60 km stretch in Zhangjiajie Municipality (Zhangjiajie section). The Huaihua Zhangyuan Highway Construction Ltd implemented the Yuanling section while Zhangjiajie Zhangyuan Highway Construction Ltd implemented the Zhangjiajie section.

12. Actual implementation arrangements were as envisaged at appraisal. The CECC, a state-owned enterprise, was the implementing agency responsible for the planning and operation and maintenance of the project expressway. The project implementation unit established within the CECC was responsible for expressway construction. A supervision unit was established under the CECC for construction supervision and quality control. A representative from the executing agency, a chief engineer, and international consultants formed part of the supervision office.

13. Civil works for the expressway commenced on September 2005, about 6 months behind schedule although construction was completed ahead of schedule. For the local roads, civil works for the Yuanling section started in November 2006 while the Zhangjiajie section was delayed by 2 years with civil works commencing in April 2009.

14. Land acquisition and resettlement for the expressway commenced at the end of 2003, with most of it completed in 2004. The project was expected to acquire 1,348.9 hectares of land. Land acquisition was expected to affect 30,564 people, and house and/or building demolition was to affect an area covering 225,139 square meters. The PCR reported that the local governments of Zhangjiajie and Yuanling carried out the land acquisition and resettlement for local roads. The project permanently acquired 1,307.5 hectares of land, which was 3.1% less than the estimated area; and 418,746 square meters of buildings were demolished, which was 78.2% more than estimated. Land acquisition affected 47,417 people, and the houses of 8,280 people were demolished. The major reason for the significant increase in house demolition was that potential landslides threatened some houses close to the expressway. The readjustment of farmlands in most of the affected villages in the Dingchen district after land acquisition increased the number of people affected by the land acquisition. Although more villagers were affected, the extent of the impact was lesser. People affected by land acquisition and house demolition were compensated accordingly. An April 2005 update in the Hunan provincial government’s policy required the HPTD to provide supplementary compensation to the affected people. This supplementary compensation was distributed and the updated compensation rate was higher than provided for in the resettlement plan.

\[At\ at\ appraisal\ and\ until\ 31\ May\ 2009,\ the\ agency\ was\ called\ Hunan\ Provincial\ Communications\ Department.\ In\ addition\ to\ the\ responsibilities\ of\ this\ former\ department,\ the\ HPTD\ also\ became\ responsible\ for\ developing\ and\ implementing\ programs\ and\ policies\ covering\ service\ management\ of\ urban\ public\ transport\ and\ civil\ aviation\ administration.\]
II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

15. The PCR rated the project’s design and formulation highly relevant. The project supported the government’s Tenth Five-Year Plan and the Western Region Development Strategy. The Tenth Five-Year Plan called for accelerating the construction of the network of highways and national roads, with focus on the five north–south and seven east–west sections of the national trunk highway system; and the construction of eight new highways in the western region. The National Development and Reform Commission’s long-term strategy also recommended the development of infrastructure in the western region. The Western Region Development Strategy assigned a high priority to road sector development to promote economic growth.

16. The country operational strategy of ADB\(^5\) for the PRC identified inadequate road network, particularly in the western region, as a major issue that had to be addressed to promote economic growth and enhance the poverty reduction impacts of transport investments. Part of the ADB transport strategy focuses on poor interior regions and aims to link hinterlands to expressways. Improved road network in the province would facilitate economic growth by generating nonfarm jobs, improving access to markets and social services, and fostering intra-provincial trade.

17. The project facilities were constructed as designed at appraisal. The technical design appears to have incorporated the lessons from implementing road projects in the PRC. An improved design-based slope subgrade construction research on mountain terrain resulted in savings of CNY21 million. A minor setback in project implementation was the start-up delay in the Zhangjiajie portion of the local roads because of: (i) the need to fine-tune the detailed design, (ii) delays in mobilizing domestic counterpart funding, and (iii) uncertainty in urban planning.

18. Despite the satisfactory construction work, at the time of project completion review and validation, there were lingering doubts about the economic value and financial viability of the project expressway (paras. 23 and 26). These stem from design related issues such as slower-than-projected build-up of traffic (para. 25) and higher-than-expected operation and maintenance (O&M) cost, and lack of clarity about sources of funding for O&M. This validation rates the project relevant.

B. Effectiveness in Achieving Project Outcomes and Outputs

19. The PCR rated the project effective based on: (i) enhanced economic development and poverty reduction in the project area, (ii) increased transport efficiency, (iii) better access to markets and social services for farmers, and (iv) improved road safety in the transport corridor. These were a combination of the project’s envisaged impact and outcomes. The assessment of effectiveness should have been based on the extent the project’s targeted outcomes and outputs were achieved.

20. The project generally achieved its intended outputs. The PCR stated that the expressway was completed, including 5 interchanges, 40 overpasses, 8 flyovers, 433 underpasses, 285 culverts, 74 large and super large-span bridges, 61 medium-span bridges, and 5 small-span bridges. It also indicated that 510 km of local roads were improved, compared

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with 517 km envisaged at appraisal. Equipment for toll collection, surveillance, and communications that was procured in 2007 became operational the following year.

21. On outcomes, the project improved transport efficiency and reduced cost, which was an outcome goal of the project. The PCR stated that because of better road conditions and shorter distance, the expressway in 2010 carried 47% of the corridor traffic. During 2008–2010, passenger transport increased by 20.9% and freight transport by 41.9%. The PCR noted improvements in road safety. In 2010, there were 16.6 accidents per 100 million vehicle km compared with 22.7 accidents per 100 million vehicle km on the parallel existing road. Traffic congestion along the national highway 319 (G319) between Changde and Huaihua was reported to have been significantly reduced. Regular bus services through improved local roads provided remote villages and townships better access to markets and social services. Despite the generally achieved outputs and encouraging outcome data, only two out of seven DMF outcome targets were confirmed. The PCR did not report if the other five outcome targets were achieved but reflected other indicators and achievements instead. This is believed to reflect more of a shortcoming in monitoring and evaluation. This validation rates the project effective.

C. Efficiency of Resource Use in Achieving Outcome and Outputs

22. The PCR rated the project less efficient based on the reevaluated economic internal rate of return (EIRR) of 11.3% for the expressway. There was no issue in terms of schedule of implementation. Although the construction of the expressway was 6 months late because civil works procurement took extra time, the expressway was still completed ahead of the original schedule because of the early approval of preliminary and detailed designs. The lower EIRR mainly reflected the: (i) lower actual expressway traffic than projected at appraisal, (ii) higher unit construction costs than those of other completed expressways in Hunan province, and (iii) higher O&M costs. The recalculated EIRR was significantly lower than the 18.6% appraisal estimate and marginally lower than the 12% hurdle rate. The PCR indicated that even if the net benefits generated by improvements in local roads were included, the project’s EIRR would be similar to the 12.0% economic opportunity cost of capital.

23. This validation holds a similar view as the PCR on the need to further assess the project’s economic viability, given the lower traffic volumes realized, high investment, and operating costs. During this validation in late 2014, additional data were provided by the expressway operator showing substantially higher actual traffic volumes in the expressway (26%–77% higher) than the PCR estimates for 2011–2013, although these figures were substantially less than the original appraised estimates. An examination of the EIRR method by this validation concluded that more comprehensive information and/or data are needed to update the EIRR analysis in the PCR. For example, newer data are needed on the (i) comprehensive traffic flow change in the corridor to account for potential traffic diversion from alternative routes to the expressway (para. 21), (ii) additional capital investments on the expressway during 2011–2013 (new interconnections and tolling system), and (iii) changes in the O&M costs. The reevaluation would also need to recheck the methodology used (e.g., in traffic volume count and economic price conversion). Given the substantial shortfall in traffic flows, and lack of data on additional capital expenditure, the validation’s project efficiency rating concurs with the PCR, which is less than efficient. This validation suggests that a more in-depth economic assessment be done in the future to better gauge the economic value of the project.
D. Preliminary Assessment of Sustainability

24. The PCR rated the project likely sustainable based on its forecast of toll revenues and sound engineering technology used in constructing the project roads. The HPTD and local governments have demonstrated their commitment to maintain the local and rural road networks by providing adequate budgets since 2006. The HPTD and local governments also have the technical capacity to manage the local and/or rural road.

25. The CECC, established as a state-owned enterprise, is responsible for operating the expressway—the main component of the project. The PCR indicated the CECC will only be able to comply with the covenant targets on the company's financial ratios by 2016. ADB raised a concern about the high debt ratio (72%), and the high O&M costs of the toll expressway. The PCR (Appendix 9, Table A9.1) reported the average actual traffic in the expressway during 2008–2009 to be 2,341 passenger car units (PCU)/day, which was much lower compared to the appraisal estimate of 13,226 PCU/day for the period. For the toll expressway and the CECC, the PCR estimated a financial internal rate of return (FIRR) of 6% compared to the 7.6% at appraisal (PCR, Appendix 10). The FIRR was higher than the weighted average cost of capital (WACC) of 3.7% in the PCR and the original appraisal WACC of 4.4%.

26. This validation, however, notes that the FIRR in the PCR was derived based on overly optimistic and/or aggressive revenue growth assumptions, especially for 2013–2028 or years 5–20 of operation (Table 1). To further examine the expected financial return, an updated revenue analysis was carried out by this validation in consultation with the project staff. As shown in Table 1, scenario 1 adopts the actual realized revenue growth during 2008-2013, which was 29.4% per year, higher than 26.0% estimated in the PCR. The high increase was not unusual for the first 5 years of operations due to the rapid buildup in traffic and there were tariff increases in 2012 with the introduction of a weight-based tolling system. However, revenue growth rates—in real terms—in the following 15 years (2013–2028) were assumed to be less than those in the PCR.

27. Scenario 1 assumes revenue increases that are at par with the expected traffic buildup during 2013–2018, which is from 13,499 PCU/day (recorded actual for 2013) to 23,438 PCU/day (estimated 2018 as provided in the report and recommendation of the President [RRP]). This scenario is based on an assumed growth of 11.7% per year for the period. Further revenue growth for 2019–2028 is rather generously assumed at 3% per annum, and does not take into account capacity constraints or an increase in traffic congestion. In total scenario 1 yields an FIRR of 3%. Scenario 2 assumes a more optimistic revenue growth scenario of 15.9% per annum during 2013–2018 and 3% per annum during 2019–2028. Scenario 2 yields an FIRR of 4.2% (Table 1). These and other revenue scenarios yield FIRRs that are not convincingly above the WACC of 3.7%. In other words, the project's financial viability remains vulnerable to reasonably anticipated future risks, such as (i) lower-than-expected traffic volume, (ii) challenges in further raising toll rates in future years, (iii) rising O&M costs, and (iv) real interest rate increases. Beyond revising revenue projections, in updating the FIRR, this validation would like to highlight that there were additional expenses that have not been considered in the updates, such as the (i) additional investment cost in toll booths and systems to introduce weight-based tolling, (ii) costs of other improvements on the expressway after project completion, and (iii) updated O&M and periodic repaving cost estimates.

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6 Appraisal estimates were 6,613 medium truck equivalent (MTE) per day for 2008–2009 and 11,719 MTE per day for 2018, where 1 MTE = 2 PCUs.

7 This is a generous assumption because at the present growth the expressway is likely to reach capacity in 2018 (10 years after opening) or even before.
Table 1: Revenue Scenario and FIRR

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<th>Annual Revenue Growth</th>
<th>FIRR</th>
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<tbody>
<tr>
<td>PCR</td>
<td>26.0%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Scenario 1 RRP traffic reached in 2018 (10th yr)</td>
<td>29.4%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>29.4%</td>
<td>15.9%</td>
</tr>
<tr>
<td>WACC</td>
<td>3.7%</td>
<td></td>
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</tbody>
</table>

28. Given the less than robust FIRR and high level indebtedness of CECC, there is a persistent concern that the expressway would not be sustainable as a self-funding entity. In such a case, there would be a necessity for the state (central or provincial government) to step in to provide financial assistance/subsidies. Reverting to state/tax base funding would be a step backward in the project’s and government's intention to manage state assets more efficiently, and there are no provisions in place to ensure that such an accommodation would be made, or that maintenance would be timely or sufficient. Given the inadequate FIRR and institutional arrangements, this validation rates the project less than likely sustainable.8

E. Impact

29. The PCR did not rate project impact. Hunan Province experienced robust economic development with GDP growth to have increased from 9% in 2000 to 12.8% in 2011 (PCR, Appendix 1). After the opening of the project expressway, GDP growth rates in the project-influenced areas reached 15.2% in Changde in 2010 (from 11.8% in 2005) and 14.8% in Huaihua (from 11.6% in 2005). The higher growth rates suggested that the project may have helped in spurring investments and production. The PCR indicated that nonfarm jobs in Changde increased from 27% in 2006 to 38% in 2010; and in Huaihua from 23% in 2006 to 34% in 2010. Private enterprises in Changde increased from 174,000 in 2004 to 267,000 (53% growth) in 2008, and in Huaihua from 139,000 in 2004 to 153,000 (10% growth) in 2008. Consumer retail sales to Hunan likewise increased. These exceeded indicative impact targets in the DMF. Poverty incidence declined in Changde from 10.2% in 2006 to 7.5% in 2010 and in Huaihua from 12.2% in 2006 to 9% in 2010. The annual per capita income of Changde in 2010 grew by 16.1%, while in Huaihua it grew by 16.4%.

30. While the socioeconomic figures were positive, these results were not solely attributed to the project. The observed traffic on completed local road was low at project completion and the EIRR presented in the PCR is less than the expected 12% EIRR threshold. This validation recognizes that the economic benefits of the built and/or repaired roads extend beyond those estimated in the EIRR. Nonetheless, due to the continuing concern over the project economic value and financial sustainability, this validation rates the project impact moderate.

31. The PCR noted that during construction, all contractors fulfilled their obligations to safeguard the environment and to implement mitigation measures in their construction schemes. The CECC implemented the project's environmental management plan. Thus, the adverse effects associated with project construction on the surrounding environment were

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8 The regional department disagrees with the downgrade of the PCR rating.
minimized. During project preparation, key poverty and social issues were identified. Based on these, a poverty and social analysis was carried out to ensure that the project would meet the ADB safeguard policy requirements for involuntary resettlement and indigenous peoples. An ethnic minority development plan was prepared and implemented to mitigate any adverse impact on minorities in a culturally appropriate way. The Hunan University monitored the implementation, which was according to plan.

III. OTHER PERFORMANCE ASSESSMENTS

A. Performance of the Borrower and Executing Agency

32. The PCR rated the performance of the HPTD and the CECC *highly satisfactory* based on the timely completion of the project expressway, availability of counterpart funds, implementation of the resettlement plan, and the quality of project output. It indicated that an advanced project management system was established to ensure the effective use of funds. Domestic funds were mobilized on time. Withdrawal applications were submitted in a timely manner, and contractors were likewise paid on time. The required land acquisition and resettlement were completed on schedule. The borrower and executing agency performed well on implementation matters. Nonetheless, this validation notes that the project has ongoing concerns over its economic efficiency and financial sustainability, which is partly an entry design issue, and because of these, this validation rates the borrower and executing agency *satisfactory*.

B. Performance of the Asian Development Bank

33. The PCR rated ADB performance *highly satisfactory* based on the regular review missions fielded and the effective advice given to the executing and implementing agencies. ADB provided appropriate support throughout the project. Five review missions were carried out, including the midterm review mission during which ADB staff provided support and guidance on management issues and in the implementation of the resettlement plan. At entry, ADB assisted in refining the feasibility study to ensure that the project conformed to ADB requirements. However, this validation finds that the project experienced a significant funding shortfall from the loan financing and ADB also shares accountability over concerns on project efficiency and sustainability. Based on the foregoing, this validation rates ADB performance *satisfactory*.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

34. This validation considered the project *relevant, effective, less than efficient, and less than likely sustainable*. It was *relevant* to the government’s development strategy and ADB country operational strategy for the PRC. The expressway and local road components were constructed as designed at appraisal, although the demand projection (traffic growth) took much longer to build up than originally envisaged. The project was *less than efficient* in view of lower than expected economic returns at closing, high investment, and high operating cost of the tollway. The project’s financial sustainability was also uncertain at completion. Due to the lower ratings on economic efficiency and sustainability, this validation rates the project *less than successful* overall. The project is a success from engineering and implementation perspectives, but there is a persistent concern over its economic returns and financial sustainability. This validation suggests the efficiency and sustainability of the project be further assessed as more evidence is gathered in
the future. This work would contribute to a broader discussion on the expected cost and sources of funding for public infrastructure, including new expressways.

### Overall Ratings

<table>
<thead>
<tr>
<th>Criteria</th>
<th>PCR</th>
<th>IED Review</th>
<th>Reason for Disagreement and/or Comments</th>
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<tbody>
<tr>
<td>Relevance</td>
<td>Highly relevant</td>
<td>Relevant</td>
<td>Despite the satisfactory construction work, the expressway design lacked sufficiently accurate operating cost estimate and demand/traffic projections (para. 18).</td>
</tr>
<tr>
<td>Effectiveness in achieving project outcome and outputs</td>
<td>Effective</td>
<td>Effective</td>
<td></td>
</tr>
<tr>
<td>Efficiency in achieving outcome and outputs</td>
<td>Less efficient</td>
<td>Less than efficient</td>
<td>The reestimated EIRR by the PCR is 11.3%. There are encouraging signs that economic benefits may be higher than previously estimated in the PCR, but the additional data available after the PCR is not comprehensive (paras. 22–23).</td>
</tr>
<tr>
<td>Preliminary assessment of sustainability</td>
<td>Likely sustainable</td>
<td>Less than likely sustainable</td>
<td>Revenue forecast in the PCR was overly optimistic and various alternative revenue forecasts do not yield sufficiently robust financial returns. There is a concern about the sustainability of the expressway to operate as a self-financing entity, which is a key objective of the project (paras. 24–28).</td>
</tr>
<tr>
<td>Overall assessment</td>
<td>Successful</td>
<td>Less than successful</td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>Not rated</td>
<td>Moderate</td>
<td>There are concerns over the project’s economic contribution (economic returns) and financial viability (paras. 29–30).</td>
</tr>
<tr>
<td>Borrower and executing agency</td>
<td>Highly satisfactory</td>
<td>Satisfactory</td>
<td>The borrower and executing agency performed well on implementation matters, but there are ongoing concerns over the project’s economic return and financial viability, which is partly attributed to the borrower’s assessment at entry (para. 32).</td>
</tr>
<tr>
<td>Performance of ADB</td>
<td>Highly satisfactory</td>
<td>Satisfactory</td>
<td>ADB funding was short due to the appreciation of the CNY. ADB shares in the accountability for concerns over the project’s economic return and sustainability (para. 33).</td>
</tr>
<tr>
<td>Quality of PCR</td>
<td>Satisfactory</td>
<td>Refer to para. 38.</td>
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ADB = Asian Development Bank, CNY = yuan, EIRR = economic internal rate of return, IED = Independent Evaluation Department, PCR = project completion report.

Note: From May 2012, IED views the PCR rating terminology of "partly" or "less" as equivalent to "less than" and uses this terminology for its own rating categories to improve clarity.

Source: ADB Independent Evaluation Department.
B. Lessons

35. The PCR identified three lessons: (i) early preparation and readiness, and achievement of key milestones contribute to timely project completion; (ii) the importance of an appropriate traffic survey; and (iii) the importance of early completion of the resettlement plan. This validation agrees that a sound traffic survey is the heart of a preparatory study for road projects. An understanding of the assumptions used in the forecast and the methodology employed would have made this lesson more meaningful. This validation also notes that poverty incidence declined in the project areas as more jobs were created for local residents, including the ethnic minority groups.

C. Recommendations for Follow-Up

36. This validation concurs with the PCR recommendation that the CECC should, in cooperation with concerned government agencies, ensure that high safety standards and performance for the expressway are maintained. The project ran into a significant cost overrun in US dollars because of a substantial strengthening of the yuan. ADB needs to find a mechanism to mitigate this risk, which imposed a heavy burden for the borrower to overcome by a higher requirement of counterpart funds. In view of the discussion on the project’s sustainability (paras. 24–28), this validation recommends that the CECC financial status be monitored regularly given its high operating cost and debt burden.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Evaluation Design, Implementation, and Utilization

37. The project performance management system began collecting baseline data in 2004. It was updated at project completion in 2008 and was to be updated again after 3 years. ADB has to ensure that the system continues to be operational and data are being collected regularly. The PCR did not report the achievement of the five outcome targets but instead reflected other indicators and/or achievements. This is believed to reflect more of a shortcoming in monitoring and evaluation.

B. Comments on Project Completion Report Quality

38. The quality of the PCR is satisfactory. The report is candid, especially on the efficiency assessment. It is concise and consistent with Project Administration Instructions 6.70A. It provided adequate evidence and analysis to substantiate some of the ratings. There were, however, issues in clearly articulating achievements in the project outcomes and effectiveness in the DMF. The discussion on the achievements in relation to the envisaged outcomes and outputs as specified in the DMF was adequate. The lessons which were drawn from the findings and recommendations were generally sound.

C. Data Sources for Validation

39. Data sources for this validation included the project’s RRP, the PCR, reports of the various ADB review missions, the ADB Country and Strategy Program Update, 2003–2005 for the PRC, and the Country Strategy and Program, 2004–2006 for the PRC.

D. Recommendation for Independent Evaluation Department Follow-Up

40. A project performance evaluation report may have to be carried out. This will allow for a more comprehensive and robust evaluation of the project’s economic and financial viability.